ACADEMIC YEAR

2020 – 2021

PRIST
DEEMED TO BE
UNIVERSITY
NAAC ACCREDITED
THANJAVUR – 613 403 - TAMIL NADU

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

Date: 30.07.2020

MINUTES OF THE MEETING

The Meeting of the Board of Studies in Mechanical Engineering was held on 30.07.2020 at 2.00 PM.

Members present (Internal & External):

Through Online Mode: https://meet.google.com/bwq-revj-kom

S. No.	Name of the Member	Position	Role
1.	Dr S Dhamodi	Professor	Chairman
2.	Dr T Madhu Sudhan	Professor SJC Institution of Technology Bangalore	External member
3.	Mr. A. Leelavinothan	Addl.GM/BHEL Trichy	External member
4.	Dr. T V Christy	Professor	Internal member
5.	Dr V Yalini	Associate Professor	Internal member
6.	Dr. S.Sukumar	Associate Professor	Internal member
7.	Dr.TTM. Kannan	Associate Professor	Internal member
8.	M Abdul Ghani Khan	Associate Professor	Internal member
9.	R Tamizh Selvan	Assistant Professor	Internal member
10.	P Vijayakumar	Assistant Professor	Internal member
11.	R Baskaran	Assistant Professor	Internal member
12.	K Purushothaman	Assistant Professor	Internal member

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13.	M Sudhahar	Assistant Professor	Internal member
14.	P. Sarath Kumar	Assistant Professor	Internal member
15.	N.Sivaharinathan	Assistant Professor	Internal member
16.	J.Rajesh	Assistant Professor	Internal member
17.	G Arunkumar	Assistant Professor	Internal member
18.	G Brithiviraj	Assistant Professor	Internal member
19.	J Selvamani	Assistant Professor	Internal member

The Chairman, Board of Studies welcomed the members and briefed about the existing curriculum and syllabi for various programmes offered by the Department and also the details of feedback on curriculum received from the various stake holders.

After thorough scrutiny of the curriculum and Syllabi and the details of feedback on curriculum received from the Stake holders, the members of the Board unanimously passed the following resolutions:

Resolved to introduce the following Audit courses in B.Tech (Mechanical Engineering) - Full Time curriculum with effect from 2020-21 as per the guidelines of the All India Council for Technical Education:

Sem-I: Induction Training Programme	-	2 credits
Sem-II: Indian Constitution	-	2 credits
Sem-III: Introduction to Gender studies	-	2 credits
Sem IV: Community Engagement	-	2 credits
Sem V: Innovation and Entrepreneurship	-	2 credits
Sem VIII: Professional Ethics and Human Value	–	2 credits

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Further resolved to approve the syllabus for the above mentioned Audit Courses as given in **Annexure- I**

Resolved to introduce the following courses on Soft skills in the B.Tech (Mechanical Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of the All India Council for Technical Education:

Year I: Basic Behavioral Etiquette	-	2 credits
Year II: Technical, General Aptitude and Skill set Development	-	2 credits
Year III: Technical Training	-	2 credits
Year IV: Interview Skills Training and Mock Test	-	2 credits

Further resolved to approve the syllabus for the above mentioned Audit Courses as given in **Annexure-II**

Inclusion of Additional Elective courses in B.Tech-Mechanical Engineering (FT) – (R-2017)

1. Automation in Manufacturing
2. Production Operations and management

Inclusion of New Courses in B.TECH-Mechanical Engineering (FT) –(R-2020)

1. Induction Training Programme
2. Indian Constitution
3. Basic Behavioral Etiquette
4. Introduction to Gender studies
5. Community Engagement
6. Technical, General Aptitude and Skill set Development
7. Innovation and Entrepreneurship
8. Technical training
9. Professional Ethics and Human Values
10. Interview

Resolved to approve the syllabus for the newly introduced Under Graduate Programme. B.Tech (Mechanical Engineering) with specialization in **Internet of Things** in collaboration with **IBM-ICE** with effect from the year 2020-21as given in **Annexure –III.**

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Resolved to continue with the existing curriculum without any change for the following Programmes for the Academic Year 2020-21:

- B. Tech–Mechanical Engineering-Part Time
- M. Tech-Manufacturing Technology–Full Time
- M. Tech–Manufacturing Technology–Part Time

Value Added Courses

Based on the feedback received from various stakeholders, the members accepted to add the following value added courses for B.Tech (Mechanical Engineering) & M.Tech (Manufacturing Technology) programmes.

1. Certificate Course on Industrial Robotics and Automation.
2. Certificate Course on Self Driving Cars.

The members of the Board also scrutinized the updated panel of examiners for B.Tech (Mechanical Engineering) – FT&PT & M.Tech (Manufacturing Technology) – FT&PT. The same was submitted to the Academic Council for approval.

The meeting was concluded with thanks from the Board of Studies Chairman.

Signature of the members:

S.No.	Name of the Member	Position	Signature
1.	Dr S Dhanuskodi	Professor	
2.	Dr T Madhu Sudhan	Professor SJG Institution of Technology, Bangalore.	
3.	Mr. A. Leelavinothan	Addl.GM/BHEL Trichy	
4.	Dr. T V Christy	Professor	Granted leave of absence*
5.	Dr V Yalini	Associate Professor	
6.	Dr. S. Sukumar	Associate Professor	

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7.	Dr.TTM. Kannan	Associate Professor	Granted leave of absence*
8.	M.Abdul Ghani Khan	Associate Professor	Granted leave of absence*
9.	R.Tamizh Selvan	Assistant Professor	
10.	P.Vijayakumar	Assistant Professor	
11.	R.Baskaran	Assistant Professor	
12.	K.Purushothaman	Assistant Professor	
13.	M.Sudhakar	Assistant Professor	
14.	P. Sarath Kumar	Assistant Professor	
15.	N.Sivaharinathan	Assistant Professor	
16.	J.Rajesh	Assistant Professor	
17.	G.Arunkumar	Assistant Professor	
18.	G.Brithiviraj	Assistant Professor	
19.	J.Selvamani	Assistant Professor	

* Oral Inputs Received

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Annexure-I

Student Induction Training

The *Induction Program* is designed to make the newly joined students feel comfortable, sensitize them towards exploring their academic interests and activities, reducing competition and making them work for excellence, promote bonding within them, build relations between teachers and students, give a broader view of life, and building of character.

Induction program	**3 weeks duration**
Induction program for students to be offered right at the start of the first year.	• Physical activity • Creative Arts • Universal Human Values • Literary • Proficiency Modules • Lectures by Eminent People • Visits to local Areas • Familiarization to Dept./Branch & Innovations

The activities during the Induction Program would have an Initial Phase, a Regular Phase and a Closing Phase. The Initial and Closing Phases would be two days each.

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Course on Indian Constitution

Aim:

- To understandthe salient features of the Indian Constitution

Objectives:

- To make the students understand about the Democratic Rule and Parliamentarian Administration.
- To appreciate the salient features of the Indian Constitution.
- To know the fundamental Rights and Constitutional Remedies.
- To make familiar with powers and positions of the Union Executive, Union Parliament and the Supreme Court.
- To exercise the adult franchise of voting and appreciate the Electoral system of Indian Democracy.

Outcomes

- Democratic values and citizenship Training are gained.
- Awareness on Fundamental Rights are established.
- The functions of union Government and State Governments are learnt.
- The power and functions of the Judiciary learnt thoroughly.
- Appreciation of Democratic Parliamentary Rule is learnt.

UNIT I: The Making Offndianconstitution

The Constituent Assembly Organization Character – Work – Salient features of the constitution – Written and Detailed Constitution – Socialism – Secularism – Democracy and Republic.

UNIT II: Fundamental Rights And Fundamental Duties Of The Citizens

Right of Equality – Right of Freedom – Right against Exploitation – Right to Freedom of Religion – Cultural and Educational Rights – Right to Constitutional Remedies – Fundamental Duties.

UNIT III: Directive Principles Of State Policy

Socialism Principles – Gandhian Principles – Liberal and General Principles – Differences between Fundamental Rights and Directive principles.

UNIT IV: The Union Executive, UnionparliamentAnd Supreme Court

Powers and positions of the President – Qualification Method of Election of President and vice president – Prime Minister RajyaSabha- LokSabha – The Supreme Court – High Court – Functions and position of Supreme court and High Court.

UNIT V: State Council – Election System AndParliamentary Democracy In India

State council of Ministers – Chief Minister – Election system in India- Main features – Election Commission - Features of Indian Democracy.

References:

1. Palekar S.A. Indian Constitution Government and politics, ABD Publications, India.
2. AiyerAlladi, Krishnaswami, Constitution and fundamental rights 1955.
3. Markandan K.C. Directive Principles in the Indian Constitution 1966.
4. KashyapSubash C Our Parliament, National Book, Trust New Delhi 1989.

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INTRODUCTION TO GENDER STUDIES

COURSE OUTLINE

Unit-I Concepts
Sex vs. Gender, masculinity, femininity, socialization, patriarchy, public/ private, essentialism, binarylsm, power, hegemony, hierarchy, stereotype, gender roles, gender relation, deconstruction, resistance, sexual division of labour.

Unit-II
Feminist Theory
Liberal, Marxist, Socialist, Radical, Psychoanalytic, postmodernist, eco-feminist.

Unit-III
Women's Movements: Global, National and Local
Rise of Feminism in Europe and America.
Women's Movement in India.

Unit-IV
Gender and Language
Linguistic Forms and Gender.
Gender and narratives.

Unit-V
Gender and Representation
Advertising and popular visual media.
Gender and Representation in Alternative Media.
Gender and social media.

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Community Engagement

a) **Objectives:**

- To developanappreciationofruralculture,life-styleandwisdomamongststudents
- Tolearnaboutthestatusofvariousagriculturalandruraldevelopmentprogrammes
- Tounderstandcausesforruraldistressandpovertyandexploresolutionsforthesame
- Toapply classroom knowledge of courses to field realities and therebyimprove quality of learning

b) **Learning Outcomes:**

After completing this course, student will be able to

- Gain an understanding of rural life, culture and socialrealities
- Developasenseofempathyandbondsofmutualitywithlocalcommunity
- Appreciatesignificantcontributionsoflocalcommunitiestolndiansocietyandeconomy
- Learntovaluethelocalknowledgeandwisdomofthecommunity
- Identify opportunities for contributing to community's socio-economicimprovements

c) **Credit**

2 credit, 30 hours, at least 50% in field, compulsory for all students

d) **Contents**

Divided into four Modules, field immersion is part of each Unit

CourseStructure:2CreditsCourse(1CreditforClassroomandTutorialand1Creditfor FieldEngagement)

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S. No.	Module Title	Module Content	Assignment	Teaching/ Learning Methodology	No. of Classes
1	**Appreciation of Rural Society**	Ruralllifestyle,rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of'soul of India lies in villages' (Gandhi), ruralinfrastructure	Prepare a map (physical, visual or digital) of the village youvisited andwriteanessay about inter-family relations in that village.	- Classroom discussions - Fieldvisit ** - Assignment Map	2 4 2
2	*Understanding rural economy & livelihood*	Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets	Describe your analysis of ruralhouseholdeconomy,its challenges and possible pathways to address them	- Fieldvisit ** - Group discussions in cless - Assignment	3 4 1
3	*Rural Institutions*	Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchsyat, Standing Committees), local civil society, local administration	How effectively are Panchayati rajinstitutions functioning in the village?What wouldyousuggest to improve their effectiveness? Present a case study (written or audio-visual)	- Classroom - Fieldvisit ** - Group presentation ofassignment	2 4 2

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4	*Rural Development Programmes*	History of rural development in India, current national programmes: SarvaShikshaAbhiyan, BetiBachao, BetiPadhao, Ayushman Bharat, Swatchh Bharat, PM AwaasYojana, Skill India, Gram PanchayatDecentralised Planning, NRLM, MNREGA, etc.	Describe the benefits received and challenges faced in the delivery of one of these programmes in the rural community; give suggestions about improving implementation of the programme for the rural poor.	- Classroom - Each student selects one program for field visit** - Written assignment	2 4 2

INNOVATION AND ENTREPRENEURSHIP

Course Outcomes

After the completion of the course, the students will be able to:

- Comprehend the role of bounded rationality, framing, causation and effectuation in entrepreneurial decisionmaking.
- Demonstrate an ability to design a business modelcanvas.
- Evaluate the various sources of raising finance for startupventures.
- Understand the fundamentals of developing and presenting business pitching to potential investors.

Course Content

Module – I

Introduction to Entrepreneurship: Entrepreneurs; entrepreneurial personality and intentions-characteristics, traits and behavioral; entrepreneurial challenges.

Module-II

Module Entrepreneurial Opportunities: Opportunities, discovery/ creation, Pattern identification and recognition for venture creation: prototype and exemplar model, reverse engineering.

Module –III

Entrepreneurial Process and Decision Making: Entrepreneurial ecosystem, Ideation, development and exploitation of opportunities; Negotiation, decision making process and approaches, Effectuation and Causation.

Module-IV

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Crafting business models and Lean Start-ups: Introduction to business models; Creating value propositions-conventional industry logic, value innovation logic; customer focused innovation; building and analyzing business models; Business model canvas, Introduction to lean startups, Business Pitching.

Module – V

Organizing Business and Entrepreneurial Finance: Forms of business organizations; organizational structures; Evolution of Organisation, sources and selection of venture finance options and its managerial implications.Policy Initiatives and focus; role of institutions in promoting entrepreneurship.

Books for References

- *Ries, Eric(2011), The lean Start-up: How constant innovation creates radically successful businesses, Penguin BooksLimited.*
- *Blank, Steve (2013), The Startup Owner's Manual: The Step by Step Guide for Building a Great Company, K&S Ranch*
- *S. Carter and D. Jones-Evans, Enterprise and small business- Principal Practice and Policy, Pearson Education(2006)*
- *T. H. Byers, R. C. Dorf, A. Nelson, Technology Ventures: From Idea to Enterprise, McGraw Hill(2013)*
- *Osterwalder, Alex and Pigneur, Yves (2010) Business ModelGeneration.*
- *Kachru, Upendra, India Land of a Billion Entrepreneurs,Pearson*
- *Bagchi, Subroto, (2008), Go Kiss the World: Life Lessons for the Young Professional, PortfolioPenguin*
- *Bagchi, Subroto, (2012). MBA At 16: a Teenager's Guide to Business, PenguinBooks*
- *Bansal, Rashmi, Stay Hungry Stay Foolish, CIIE, IIMAhmedabad*
- *Bansal, Rashmi, (2013). Follow Every Rainbow,Westland*
- *Mitra, Sramana (2006), Entrepreneur Journeys (Volume 1), BooksurgePublishing*
- *Abrams, R. (2006). Six-week Start-up, Prentice-Hall of India*
- *Verstraete, T. and Laffite, E.J. (2011). a Business Model of Entrepreneurship, Edward ElgarPublishing*
- *Johnson, Steven (2011) Where Good Ideas comes from, Penguin BooksLimited*
- *Gabor, Michael E. (2013), Awakening the Entrepreneur Within,Primento*
- *Guillebeau, Chris (2012), The $100 startup: Fire your Boss, Do what you love and work better to live more, Pan Macmillan*
- *Kelley, Tom (2011), The ten faces of Innovation, CurrencyDoubleday*
- *Prasad, Rohit (2013), Start-up sutra: what the angels won't tell you about business and life, Hachettelndia*

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PROFESSIONAL ETHICS AND HUMAN VALUES

OBJECTIVE:

- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT I HUMAN VALUES

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II ENGINEERING ETHICS

Senses of _Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION

Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk - Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR)– Discrimination.

UNIT V GLOBAL ISSUES

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership –Code of Conduct – Corporate Social Responsibility.

OUTCOMES:

- Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society

TEXT BOOKS:

1. Mike W. Martin and Roland Schinzinger, — Ethics in Engineeringl, Tata McGraw Hill, New Delhi, 2003.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, — Engineering Ethicsl, Prentice Hall of India, New Delhi, 2004.

REFERENCES:

1. Charles B. Fleddermann, —Engineering Ethicsl, Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, —Engineering Ethics – Concepts and Casesl, Cengage Learning, 2009.
3. John R Boatright, —Ethics and the Conduct of Businessl, Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, —Fundamentals of Ethics for Scientists and Engineersl, Oxford University Press, Oxford, 2001.
5. Laura P. Hartman and Joe Desjardins, —Business Ethics: Decision Making for Personal Integrity and Social Responsibilityl McGraw Hill education, India Pvt. Ltd.,New Delhi, 2013.
6. World Community Service Centre, _ Value Education', Vethathiri publications, Erode, 2011.

Web sources:

www.onlineethics.org www.nspe.orgwww.global.orgwww.ethics.org

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Annexure-II

Year I: Basic Behavioral Etiquette-2 credits

Year II: Technical, General Aptitude and Skill set Development-2 credits

Year III: Technical Training-2 credits

Year IV: Interview Skills Training and Mock Test -2 credits

Annexure-III

BTech – MECHANICAL ENGINEERING - Specialization in Internet of Things

S. No.	Year	Semester	Course Name	L	T	P	C
1	1st	II	IT Infrastructure Landscape Overview	2	0	0	2
2	1st	II	Introduction to Internet of Things (IOT)	3	0	0	3
3	2nd	III	Python Programming	3	0	2	4
4	2nd	III	Sensor Technology & Instrumentation	3	0	2	4
5	2nd	IV	Wireless Sensor Networks (WSN) &IoT Standards	3	0	2	4
6	3rd	V	Embedded Technology for IOT	3	0	2	4
7	3rd	VI	Analytics for IOT	3	0	2	4
8	3rd	VI	IOT Enterprise Solution Architecture	3	0	4	5
9	4th	VII	IOT for Industries (Use Case Scenarios)	3	0	2	4
	4th	VIII	Project				

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DEPARTMENT OF
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PROGRAM HANDBOOK

B.Tech – FULL TIME

[Regulation 2020]

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B.E. MECHANICAL ENGINEERING

REGULATIONS – 2020

CHOICE BASED CREDIT SYSTEM

PROGRAMME EDUCATIONAL OBJECTIVES:

Bachelor of Mechanical Engineering curriculum is designed to impart Knowledge, Skill and Attitude on the graduates to

1. Have a successful career in Mechanical Engineering and allied industries.
2. Have expertise in the areas of Design, Thermal, Materials and Manufacturing.
3. Contribute towards technological development through academic research and industrial practices.
4. Practice their profession with good communication, leadership, ethics and social responsibility.
5. Graduates will adapt to evolving technologies through life-long learning.

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

A. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of industrial problems.

B. **Problem analysis**: Identify, formulates, and solve complex engineering problems with high degree of competence.

C. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

D. **Design/development of solutions**: Design solutions for mechanical engineering problems and design components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

E. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering use modern tools, software and equipment to analyze multidisciplinary.

F. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

G. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

H. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

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I. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

J. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

K. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

L. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOMES

PROGRAMME EDUCATIONAL OBJECTIVES	PROGRAMME OUTCOMES												
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	3	3	2	3	2	1	1	2	1	1	3	1	3
2	3	3	3	3	3	1	1	1	1	1	1	2	2
3	3	3	3	3	3	3	2	3	1	2	2	2	2
4	3	3	2	3	3	2	3	2	1	2	2	2	2
5	3	3	3	3	3	3	3	2	2	2	2	2	2

1-Reasonable: 2- Significant: 3- Strong

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I - VIII SEMESTER CURRICULUM AND SYLLABI

B.TECH (FT) MECHANICAL [Regulation 2020]

SEMESTER I

S.NO	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20147S11	Communicative English	4	0	0	4
2.	20148S12	Engineering Mathematics - I	4	0	0	4
3.	20149S13	Engineering Physics	3	0	0	3
4.	20149S14	Engineering Chemistry	3	0	0	3
5.	20154S15	Engineering Graphics	2	0	4	4
6.	20150S16	Problem Solving and Python Programming	3	0	0	3
PRACTICAL						
7.	20150L17	Problem Solving and Python Programming Laboratory	0	0	4	2
8.	20149L18	Physics and Chemistry Laboratory	0	0	4	2
9.	201AGIT	Induction Training Programme				2
TOTAL			19	0	12	27

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SEMESTER II

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20147S21	Technical English (All Branches)	4	0	0	4
2.	20148S22	Engineering Mathematics II (All Branches)	4	0	0	4
3	20149S23C	Material Science (MECH)	3	0	0	3
4.	20149S24A	Environmental Science And Engineering (CSE, EEE, MECH, CIVIL)	3	0	0	3
5.	20153S25D	Basic Electrical, Electronics And Instrumentation Engineering (MECH)	3	0	0	3
6.	20154S26D	Engineering Mechanics (MECH,CIVIL)	3	2	0	4
PRACTICAL						
7.	20154L27	Engineering Practices Lab (All Branches)	0	0	4	2
8.	20153L28D	Basic Electrical, Electronics and Instrumentation Engineering Lab (Mech)	0	0	4	2
9.	201AGIC	Indian Constitution				2
10	201ASBE	Basic Behavioral Etiquette				2
TOTAL			20	2	8	29

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SEMESTER III

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20148C31C	Transforms and Partial Differential Equations	4	0	0	4
2.	20154C32	Engineering Thermodynamics	3	2	0	4
3.	20154C33	Fluid Mechanics and Machinery	4	0	0	4
4.	20154C34	Production Technology - I	4	0	0	4
5.	20154C35	Electrical Drives and Controls	3	2	0	4
		PRACTICAL				
6.	20154L36	Production Technology Laboratory - I	0	0	4	2
7.	20154L37	Computer Aided Machine Drawing	0	0	4	2
8.	20154L38	Electrical Engineering Laboratory	0	0	4	2
9.	20154L39	Interpersonal Skills / Listening & Speaking	0	0	2	1
10	201AGGS	Introduction to Gender studies				2
TOTAL			**17**	**4**	**14**	**27**

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SEMESTER IV

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20148C41D	Statistics and Numerical Methods	3	2	0	4
2.	20154C42	Theory of Machines-I	3	2	0	4
3.	20154C43	Production Technology – II	3	0	0	3
4.	20154C44	Engineering Metallurgy	3	0	0	3
5.	20154C45	Strength of Materials for Mechanical Engineers	3	2	0	4
6.	20154C46	Thermal Engineering- I	3	2	0	4
		PRACTICAL				
7.	20154L47	Production Technology Laboratory - II	0	0	4	2
8.	20154L48	Strength of Materials and Fluid Mechanics and Machinery Laboratory	0	0	4	2
9.	20154L49	Advanced Reading and Writing	0	0	2	1
10	201AGCE	Community Engagement				2
11	201ASTT	Technical, General Aptitude and Skill set Development				2
		TOTAL	19	0	10	28

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SEMESTER V

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20154C51	Thermal Engineering- II	3	2	0	4
2.	20154C52	Design of Machine Elements	3	2	0	4
3.	20154C53	Metrology and Measurements	4	0	0	4
4.	2015-OE54-_	Open Elective I	3	0	0	3
5.	20154C55	Theory of Machines-II	3	2	0	4
		PRACTICAL				
6.	20154L56	Theory of Machines Laboratory	0	0	4	2
7.	20154L57	Thermal Engineering Laboratory	0	0	4	2
8.	20154L58	Metrology and Measurements Laboratory	0	0	4	2
9	201AGIE	Innovation and Entrepreneurship				2
		TOTAL	16	6	12	27

SEMESTER VI

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20154C61	Design of Transmission Systems	3	2	0	4
2.	20154C62	Computer Aided Design And Manufacturing	3	2	0	4
3.	20154C63	Heat and Mass Transfer	3	2	0	4
4.	20154C64	Finite Element Analysis	3	2	0	4
5.	20154C65	Hydraulics And Pneumatics	3	0	0	3
6.	20154E66-_	Elective - 1	3	0	0	3
		PRACTICAL				
6.	20154L67	CAD / CAM Laboratory	0	0	4	2
7.	20154L68	Design and Fabrication Project	0	0	4	2
8.	20154L69	Professional Communication	0	0	2	1
9	201ASTT	Technical Training				2
		TOTAL	18	8	10	29

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SEMESTER VII

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20154C71	Power Plant Engineering	4	0	0	4
2.	20154C72	Process Planning and Cost Estimation	3	2	0	4
3.	20154C73	Mechatronics	4	0	0	4
4.	2015-OE74__	Open ElectiveII	3	0	.0	3
5.	20154E75-	Elective II	3	0	0	3
6.	20154E76-_	Elective III	3	0	0	3
		PRACTICAL				
7.	20154L77	Simulation and Analysis Laboratory	0	0	4	2
8.	20154L78	Mechatronics Laboratory	0	0	4	2
9.	20154L79	Technical Seminar	0	0	2	1
		TOTAL	**20**	**2**	**10**	**26**

SEMESTER VIII

S.No.	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20154C81	Principles of Management	3	0	0	3
2.	20154E82-_	Elective- IV	3	0	0	3
		PRACTICAL				
3.	20154PW83	Project Work	0	0	20	15
4	20154PEE	Program Exit Exam				2
5	201AGPE	Professional Ethics and Human Values				2
6	201ASIM	Interview Skills Training and Mock Test				2
		TOTAL	**6**	**0**	**20**	**27**

TOTAL NO. OF CREDITS: 204

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ELECTIVE – I (VI SEMESTER)

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20154E66A	Automobile Engineering	3	0	0	3
2.	20154E66B	Safety in Engineering industries	3	0	0	3
3.	20154E66C	Gas Dynamics and Jet Propulsion	3	0	0	3
4.	20154E66D	Fundamentals of Nano Science	3	0	0	3

ELECTIVE – II (VII SEMESTER)

	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20154E74A	Renewable Sources of Energy	3	0	0	3
2.	20154E74B	Nonconventional Machining Processes	3	0	0	3
3.	20154E74C	Operations Research	3	0	0	3
4.	20154E74D	Total Quality Management	3	0	0	3

ELECTIVE – III (VII SEMESTER)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20154E76A	Robotics	3	0	0	3
2.	20154E76B	Design of Jigs, Fixtures and Press Tools	3	0	0	3
3.	20154E76C	General Aspects of Energy Management and Energy audit	3	0	0	3
4.	20154E76D	Composite Materials	3	0	0	3

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ELECTIVE – IV (VIII SEMESTER)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20154E82A	Production Planning and Control	3	0	0	3
2.	20154E82B	Computer Integrated Manufacturing Systems	3	0	0	3
3.	20154E82C	Energy Efficiency in Thermal Utilities	3	0	0	3
4.	20154E82D	Vibration and Noise Control	3	0	0	3

OPEN ELECTIVE– I

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	CSE	20150FE54A	Data Base management systems	3	0	0	3
2.		20150FE54B	Cloud computing	3	0	0	3
3.	ECE	20152FE54A	Basics Of Bio Medical Instrumentation	3	0	0	3
4.		20152FE54B	Sensors And Transducers	3	0	0	3
5.	EEE	20153FE54A	Industrial Nano Technology	3	0	0	3
6.		20153FE54B	Energy Conservation and Management	3	0	0	3
7.	MECH	20154FE54A	Renewable energy sources	3	0	0	3
8.		20154FE54B	Automotive Systems	3	0	0	3
9.	CIVIL	20155FE54A	Air Pollution And Control Engineering	3	0	0	3
10.		20155FE54B	Geographic Information Systems	3	0	0	3

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OPEN ELECTIVE– II

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1	CSE	20150FE74A	Introduction to C programming	3	0	0	3
2.		20150FE74B	Data structures and algorithms	3	0	0	3
3.	ECE	20152FE74A	Robotics	3	0	0	3
4.		20152FE74B	Electronic devices	3	0	0	3
5.	EEE	20153FE74A	Basic circuit theory	3	0	0	3
6.		20153FE74B	Introduction to renewable energy systems	3	0	0	3
7.	MECH	20154FE74A	Industrial safety	3	0	0	3
8.		20154FE74B	Testing of materials	3	0	0	3
9.	CIVIL	20155FE74A	Green building design	3	0	0	3
10.		20155FE74B	Waste water treatment	3	0	0	3

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CGPA CREDITS

Semester	Core	Elective	Free elective	Practical	Seminar	Exit exam	Project	Audi Course	Total
I	21	-	-	04	-	-	-	2	27
II	21	-	-	04	-	-	-	4	29
III	20	-	-	07	-	-	-	2	29
IV	22	-	-	05	-	-	-	4	31
V	16	-	03	06	-	-	-	2	27
VI	19	03	-	05	-	-	-	2	29
VII	12	06	03	04	1	-	-	-	26
VIII	03	03	-	-	-	02	15	4	27
TOTAL									225

TOTAL CREDITS	
CGPA CREDITS	225

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SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF
MECHANICAL ENGINEERING

PROGRAM HANDBOOK

B.Tech – FULL TIME

[Regulation 2017]

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COURSE STRUCTURE

B.E. MECHANICAL ENGINEERING

REGULATIONS – 2017

CHOICE BASED CREDIT SYSTEM

PROGRAMME EDUCATIONAL OBJECTIVES:

Bachelor of Mechanical Engineering curriculum is designed to impart Knowledge, Skill and Attitude on the graduates to

1. Have a successful career in Mechanical Engineering and allied industries.
2. Have expertise in the areas of Design, Thermal, Materials and Manufacturing.
3. Contribute towards technological development through academic research and industrial practices.
4. Practice their profession with good communication, leadership, ethics and social responsibility.
5. Graduates will adapt to evolving technologies through life-long learning.

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

A. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of industrial problems.

B. **Problem analysis:** Identify, formulates, and solve complex engineering problems. with high degree of competence.

C. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

D. **Design/development of solutions:** Design solutions for mechanical engineering problems and design components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

E. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering use modern tools, software and equipment to analyze multidisciplinary.

F. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

G. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

H. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

I. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

J. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write

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effective reports and design documentation, make effective presentations, and give and receive clear instructions.

K. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

L. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOMES

PROGRAMME EDUCATIONAL OBJECTIVES	PROGRAMME OUTCOMES												
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	3	3	2	3	2	1	1	2	1	1	3	1	3
2	3	3	3	3	3	1	1	1	1	1	1	2	2
3	3	3	3	3	3	3	2	3	1	2	2	2	2
4	3	3	2	3	3	2	3	2	1	2	2	2	2
5	3	3	3	3	3	3	3	2	2	2	2	2	2

1-Reasonable: 2- Significant: 3- Strong

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I - VIII SEMESTER CURRICULUM AND SYLLABI

B.TECH (FT) MECHANICAL [Regulation 2017] SEMESTER I

S.NO	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	17147S11	Communicative English	5	1	0	4
2.	17148S12	Engineering Mathematics - I	5	1	0	4
3.	17149S13	Engineering Physics	5	1	0	4
4.	17149S14	Engineering Chemistry	5	1	0	4
5.	17154S15	Engineering Graphics	5	1	0	4
6.	17150S16	Problem Solving and Python Programming	5	1	0	4
		PRACTICAL				
7.	17150L17	Problem Solving and Python Programming Laboratory	0	0	3	2
8.	17149L18	Physics and Chemistry Laboratory	0	0	3	2
9.	17IVEA19	Value Education				1
		TOTAL	30	6	6	29

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SEMESTER II

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17147S21	Technical English (All Branches	5	1	0	4
2.	17148S22	Engineering Mathematics II (All Branches)	5	1	0	4
3	17149S23C	Material Science (MECH)	5	1	0	4
4.	17149S24A	Environmental Science And Engineering (CSE, EEE, MECH, CIVIL)	5	1	0	4
5.	17153S25D	Basic Electrical, Electronics And Instrumentation Engineering (MECH)	5	1	0	4
6.	17154S26D	Engineering Mechanics (MECH,CIVIL)	5	1	0	4
PRACTICAL						
7.	17154L27	Engineering Practices Lab . (All Branches)	0	0	3	2
8.	17153L28D	Basic Electrical, Electronics and Instrumentation Engineering Lab (Mech)	0	0	3	2
9.	171ICA29	Fundamentals of Indian constitution and Economy				1
TOTAL			30	6	6	29

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SEMESTER III

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17148C31C	Transforms and Partial Differential Equations	4	0	0	4
2.	17154C32	Engineering Thermodynamics	3	2	0	4
3.	17154C33	Fluid Mechanics and Machinery	4	0	0	4
4.	17154C34	Production Technology - I	3	0	0	3
5.	17154C35	Electrical Drives and Controls	3	0	0	3
PRACTICAL						
6.	17154L36	Production Technology Laboratory - I	0	0	3	2
7.	17154L37	Computer Aided Machine Drawing	0	0	3	2
8.	17154L38	Electrical Engineering Laboratory	0	0	3	2
9.	17154L39	Interpersonal Skills / Listening & Speaking	0	0	2	1
TOTAL			17	2	11	25

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SEMESTER IV

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17148S41D	Statistics and Numerical Methods	4	0	0	4
2.	17154C42	Theory of Machines-I	3	0	0	3
3.	17154C43	Production Technology – II	3	0	0	3
4.	17154C44	Engineering Metallurgy	3	0	0	3
5.	17154C45	Strength of Meterials for Mechanical Engineers	3	0	0	3
6.	17154C46	Thermal Engineering- I	3	0	0	3
PRACTICAL						
7.	17154L47	Production Technology Laboratory - II	0	0	3	2
8.	17154L48	Strength of Materials and Fluid Mechanics and Machinery Laboratory	0	0	3	2
9.	17154L49	Advanced Reading and Writing	0	0	2	1
10.	17154CRS	Research Led Seminar				1
TOTAL			19	0	8	25

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SEMESTER V

S.NO	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	17154C51	Thermal Engineering- II	3	0	0	3
2.	17154C52	Design of Machine Elements	3	0	0	3
3.	17154C53	Metrology and Measurements	3	0	0	3
4.	1715_FE54_	Free Elective I	3	0	0	3
5.	17154C55	Theory of Machines-II	4	2	0	4
		PRACTICAL				
6.	17154L56	Theory of Machines Laboratory	0	0	3	2
7.	17154L57	Thermal Engineering Laboratory	0	0	3	2
8.	17154L58	Metrology and Measurements Laboratory	0	0	3	2
9.	17154CRM	Research Methodology	3	0	0	3
		TOTAL	19	2	9	25

SEMESTER VI

S.NO	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1	17154C61	Design of Transmission Systems	3	0	0	3
2.	17154C62	Computer Aided Design And Manufacturing	3	0	0	3
3	17154C63	Heat and Mass Transfer	3	2	0	4
4	17154C64	Finite Element Analysis	3	0	0	3
5	17154C65	Hydraulics And Pneumatics	3	0	0	3
6	17154E66_	Elective - I	3	0	0	3
		PRACTICAL				
6.	17154L67	CAD / CAM Laboratory	0	0	3	2
7.	17154L68	Design and Fabrication Project	0	0	3	2
8.	17154L69	Professional Communication	0	0	2	1
9.	17154CBR	Participation in Bounded Research				2
		TOTAL	18	2	8	26

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SEMESTER VII

S.No	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1	17154C71	Power Plant Engineering	3	0	0	3
2	17154C72	Process Planning and Cost Estimation	3	0	0	3
3	17154C73	Mechatronics	3	0	0	3
4	1715_FE74__	Free Elective II	3	0	0	3
5	17154E75-	Elective II	3	0	0	3
6	17154E76_	Elective III	3	0	0	3
		PRACTICAL				
7	17154L77	Simulation and Analysis Laboratory	0	0	3	2
8	17154L78	Mechatronics Laboratory	0	0	3	2
9	17154L79	Technical Seminar	0	0	2	1
10	17154CSR	(Design Project /SOCIO Technical Project)				4
11.	17154COM	COMPS				2
		TOTAL	18	0	8	29

SEMESTER VIII

S.No	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1	17154C81	Principles of Management	3	0	0	3
2	17154E82_	Elective– IV	3	0	0	3
		PRACTICAL				
3.	17154PW83	Project Work	0	0	20	10
		TOTAL	6	0	20	16

TOTAL NO. OF CREDITS: 202

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ELECTIVE – I (VI SEMESTER)

S.NO.	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17154E66A	Automobile Engineering	3	0	0	3
2.	17154E66B	Welding Technology	3	0	0	3
3.	17154E66C	Gas Dynamics and Jet Propulsion	3	0	0	3
4.	17154E66D	Intellectual Property Rights	3	0	0	3
5.	17154E66E	Fundamentals of Nano Science	3	0	0	3
6.	17154E66F	Mechanical Vibration	3	0	0	3

ELECTIVE – II (VII SEMESTER)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17154E74A	Refrigeration and Air conditioning	3	0	0	3
2.	17154E74B	Renewable Sources of Energy	3	0	0	3
3.	17154E74C	Quality Control and Reliability Engineering	3	0	0	3
4.	17154E74D	Unconventional Machining Processes	3	0	0	3
5.	17154E74E	Operations Research	3	0	0	3
6.	17154E74F	Additive Manufacturing	3	0	0	3
7.	17154E74G	Total Quality Management	3	0	0	3
8.	17154E74H	Automation in Menufacturing	3	0	0	3

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ELECTIVE – III (VII SEMESTER)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17154E76A	Robotics	3	0	0	3
2.	17154E76B	Design of Jigs, Fixtures and Press Tools	3	0	0	3
3.	17154E76C	Computational Fluid Dynamics	3	0	0	3
4.	17154E76D	Non Destructive Testing and Evaluation	3	0	0	3
5.	17154E76E	Composite Materials and Mechanics	3	0	0	3
6.	17154E76F	Human Rights	3	0	0	3
7.	17154E76G	Disaster Management	3	0	0	3

ELECTIVE – IV (VIII SEMESTER)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17154E82A	Production Planning and Control	3	0	0	3
2.	17154E82B	Entrepreneurship Development	3	0	0	3
3.	17154E82C	Computer Integrated Manufacturing Systems	3	0	0	3
4.	17154E82D	Vibration and Noise Control	3	0	0	3
5.	17154E82E	Micro Electro Mechanical Systems	3	0	0	3
6.	17154E82F	Professional Ethics in Engineering	3	0	0	3
7.	17154E82G	Production operation And Management	3	0	0	3

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FREE ELECTIVE – I

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	CSE	17150FE54A	Data Base management systems	3	0	0	3
2.		17150FE54B	Cloud computing	3	0	0	3
3.	ECE	17152FE54A	Basics Of Bio Medical Instrumentation	3	0	0	3
4.		17152FE54B	Sensors And Transducers	3	0	0	3
5.	EEE	17153FE54A	Industrial Nano Technology	3	0	0	3
6.		17153FE54B	Energy Conservation and Management	3	0	0	3
7.	MECH	17154FE54A	Renewable energy sources	3	0	0	3
8.		17154FE54B	Automotive Systems	3	0	0	3
9.		17154FE54C	MEMS	3	0	0	3
10.	CIVIL	17155FE54A	Air Pollution And Control Engineering	3	0	0	3
11.		17155FE54B	Geographic Information Systems	3	0	0	3

FREE ELECTIVE – II

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1	CSE	17150FE74A	Introduction to C programming	3	0	0	3
2.		17150FE74B	Data structures and algorithms	3	0	0	3
3.	ECE	17152FE74A	Robotics	3	0	0	3
4.		17152FE74B	Electronic devices	3	0	0	3
5.	EEE	17153FE74A	Basic circuit theory	3	0	0	3
6.		17153FE74B	Introduction to renewable energy systems	3	0	0	3
7.	MECH	17154FE74A	Industrial safety	3	0	0	3
8.		17154FE74B	Testing of materials	3	0	0	3
9.	CIVIL	17155FE74A	Green building design	3	0	0	3
10.		17155FE74B	Waste water treatment	3	0	0	3

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CGPA CREDITS

Semester	Core	Elective	Free Elective	Practical	Seminar	Comps	Project	Research	TOTAL
I	24	-	-	04	-	-	-	-	28
II	24	-	-	04	-	-	-	-	28
III	18	-	-	07	-	-	-	-	25
IV	19	-	-	05	-	-	-	01	25
V	13	03	**	06	-	-	-	03	25
VI	16	03	-	05	-	-	-	2	26
VII	09	09	**	04	1	02	-	04	29
VIII	03	03	-	-	-	-	10	-	16
TOTAL									202

NON-CGPA CREDITS

Semester	Add on course	Total
I	01	01
II	01	01
III	-	-
IV	-	-
V	-	-
VI	-	-
VII	-	-
VIII	-	-
Co curricular Activities	In-plant Training , Industrial Visit , Seminars & Conferences	03
TOTAL NON-CGPA CREDITS		05

TOTAL CREDITS	
CGPA CREDITS	202
NON-CGPA CREDITS	05
TOTAL	207

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17154E74H **AUTOMATION IN MANUFACTURING**

UNIT –I Introduction: 9

Types and strategies of automation, pneumatic and hydraulic components circuits, Automation in machine tools, Mechanical Feeding and to changing and machine tool control transfer the automation.

UNIT –II Automated flow lines: 9

Methods or work part transport transfer Mechanical buffer storage control function, design and fabrication consideration. Analysis of Automated flow lines: General terminology and analysis of transfer lines without and with buffer storage, partial automation, implementation of automated flow lines .

UNIT –III Assembly system and line balancing: 9

Assembly process and systems assembly line, line balancing methods, ways of improving line balance, flexible assembly lines.

UNIT –IV Automated material handling: 9

Types of equipment, functions, analysis and design of material handling systems conveyor systems, automated guided vehicle systems. Automated storage systems: Automated storage and retrieval systems; work in process storage, interfacing handling and storage with manufacturing.

UNIT –V Fundamentals of Industrial controls: 9

Review of control theory, logic controls, sensors and actuators, Data communication and LAN in manufacturing. Business process Re-engineering: Introduction to BPE logistics, ERP, Software configuration of BPE.

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17154E82G PRODUCTION OPERATION AND MANAGEMENT

Unit I Introduction to Operations Management:
Definition, need, key decisions of OM, goods vs. services. Operations as a key functional area in an organization; Operation Strategies: Definition, relevance, strategy formulation process; Maintenance Management: Need of maintenance management, equipment life cycle (Bathtub curve), measures for maintenance performance (MTBF, MTTR and availability).Lean production: Definition of lean production, lean Demand Pull logic, waste in operations, 2 card kanban Production Control system; Process Selection: Definition, Characteristics that influence the choice of alternative processes (volume and variety), type of processes- job shop, batch, mass and continuous.

Unit II Layout Decision:
Layout planning, Benefits of good layout, importance, different types of layouts (Process, Product, Group technology and Fixed position layout). Assembly line balancing by using LOT rule;Facility Location: Objective, factors that influence location decision, location evaluation methods- factor rating method.Capacity planning: Definition, input and output measures of capacity, types of capacity planning over time horizon, Decision trees analysis for capacity planning.

Unit III Forecasting:
Definition, types, qualitative (grass roots, market research and Delphi method) and quantitative approach (simple moving average method, weighted moving average and single exponential smoothing method), forecast error, MAD, issues related with forecasting in services; Aggregate Planning: Definition, nature, strategies of aggregate planning, methods of aggregate planning-level plan, chase plan and mixed plan (keeping in mind demand, workforce and average inventory); Scheduling: Operation scheduling, goals of short term scheduling, job sequencing (FCFS, SPT, EDD, LPT, CR) & Johnson's rule on two machines, Gantt charts.

Unit IV Statistical Quality control:
Variations in process (common & assignable causes); Control charts: Variable measures (mean and range chart), Attribute measures (proportion of defects and no. of defects) using control tables; Elementary Queuing Theory: need of queuing theory in service and manufacturing operations, Poisson- Exponential Single Server Model with Infinite Population.(M/M/1 queuing model).

Unit V Introduction to modern productivity techniques

Introduction to modern productivity techniques – just in time, Kanban system. 63-68 10 Total Quality Management & six sigma. 69-79 11 Functions of Purchasing Management – Objectives, Functions: Methods: Procedure. 80-104 12 Value analysis – Concepts. Stock control systems. Virtual factory concept.

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INDUSTRIAL ROBOTICS AND AUTOMATION

UNIT-I INTRODUCTION TO ROBOTICS:

Brief History, Basic Concepts of Robotics such as Definition , Three laws, Elements of Robotic Systems i.e. Robot anatomy, DOF, Misunderstood devices etc., Classification of Robotic systems on the basis of various parameters such as work volume, type of drive, etc., Associated parameters i.e. resolution, accuracy, repeatability, dexterity, compliance, RCC device etc.,

UNIT-II GRIPPERS AND SENSORS FOR ROBOTICS:

Grippers for Robotics - Types of Grippers, Guidelines for design for robotic gripper, Force analysis for various basic gripper systems. Sensors for Robots -Types of Sensors used in Robotics, Classification and applications of sensors, Characteristics of sensing devices, Selections of sensors. Need for sensors and vision system in the working and control of a robot

UNIT-III DEBUGGING A PROCESS:

Step In, Step Out, Step Over, Break point, Introduction to Object Studio and Creating a simple object Read Stage, Write Stage, wait stage, Action Stage, Navigate Stage, Code Stage, creating a simple object Application Modeler, Spying Elements, Attributes, Launch, Attach and Detach, Error Management Exceptions, Recover and Resume, Throwing Exceptions, Preserving the current exception, Exception Bubbling, Exception Blocks.

UNIT-IV CASE MANAGEMENT:

Work Queue creation, Queue Items, Checking Queue in Control Room, Control Room, running a process in Control Room, publishing a process, Log Viewer, Scheduler, System Manager, Credential Manager, Environment Variables, User Roles, Concept of VBO's, importing a VBO Types of Inbuilt VBO's.

UNIT-V RELEASE MANAGER CREATION OF A PACKAGE:

Exporting a process, importing a process. Introduction to Surface Automation, Font Smoothening, Region Mode, Automation using surface automation. Advanced Topics, Casting, Initialize and Clean Up, Dynamic Attributes, Global Send Keys and Send Key Events, Best Coding Practices.

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SELF DRIVING CARS

UNIT I: INTRODUCTION TO CONNECTED, AUTOMATED AND INTELLIGENT CARS

Introduction to Connected, automated and intelligent cars- Automotive-Electronics Overview, Advanced Driver Assistance Electronic-Systems- Connected Car Technology- Connectivity Fundamentals-Navigation and Other Applications-Connected and Autonomous Vehicle Technology-Basic Control System Theory applied to Automobiles.

UNIT II: SENSOR TECHNOLOGY

Sensor Technology for Advanced Driver Assistance Systems- Basics of Radar Technology and Systems, Ultrasonic Sonar Systems, Lidar -Sensor Technology and Systems, Camera Technology, Night Vision Technology, Impaired Driver Technology-Driver Impairment Sensor Technology, Sensor Technology for Driver

UNIT III: INTRODUCTION TO SELF-DRIVING VEHICLE TECHNOLOGY

Fundamentals of state-of-tho-art SLAM, multi-sensor data fusion, and other SDV algorithms. Robot Operating System (ROS) and Open Source Car Control (OSCC)-Wireless System Standards and Standards Organizations-Wireless Networking and Applications to Vehicle Autonomy: Basics of Computer Networking – the Internet of Things, Wireless Networking

UNIT IV: ACCEPTANCE, SECURITY AND ETHICS OF AUTONOMOUS DRIVING

Ethics Matters for Autonomous Driving, Opportunities and Risks -Associated with Autonomous Driving, User / public Acceptance of Autonomous Driving Regulations, Policies And Standards Of Autonomous Driving -Regulatory bodies for highly automated and autonomous driving.

UNIT V : RECENT DRIVER ASSISTANCE SYSTEM AND VEHICLES

Recent Driver Assistance System Technology- Basics of Theory of Operation, Applications – Legacy, Applications

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

MEETING OF BOARD OF STUDIES IN ELECTRONICS AND COMMUNICATION ENGINEERING (29.07.2020)

MINUTES OFTHEMEETING

The Meeting of Board of Studies in Electronics and Communication Engineering was held on 29.07.2020 (ONLINE) at 11.00 am under the Chairmanship of Prof. Dr. Smitha Elsa Peter. (https://meet.google.com/naf-xnsm-fjr)

The following Members attended the meeting :

S.No	Designation	Name
1	Chairperson/HoD	Dr. Smitha elsa peter
2	External Expert-Academic	Dr. Sishaj P. Simon
3	External Expert- Industry	Mr.K.Tamizhselvan
4	Professor	Dr. Smitha elsa peter
5	Professor	Dr. S. Devi
6	Associate Professor	Dr. A. Rijuvana begum
7	Associate Professor	Dr. C. Rajinikanth
8	Assistant Professor	A. Aarthi
9	Assistant Professor	T. Divya manohari
10	Special Invitee-Dean	Prof.R.Tamizhselvan
11	Special Invitee-Alumnus/Alumna	R.UDHAYAN
12	Special Invitee -Current student - UG or PG	A.SABAREESAN

The Chairman, Board of Studies in the Department of Electronics and Communication Engineering welcomed the members and briefed about the existing curriculum and syllabi for various programmes offered by the Department and also the details of feedback on curriculum received from the various stake holders during the Academic year 2019-20.

Head of the Department
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After thorough scrutiny of the curriculum and Syllabi and the details of feedback on curriculum received from the Stake holders during the Year 2019-20, the members of the Board have unanimously passed the following resolutions:

- Resolved to introduce the following Audit courses in B.Tech (Electronics and Communication Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of theAll India Council for Technical Education:

  Sem – I: Induction Training Programme– 2 Credits

  Sem – II: Indian Constitution– 2 Credits

  Sem – III: Introduction to Gender studies– 2 Credits

  Sem – IV: Community Engagement– 2 Credits

  Sem – V: Innovation and Entrepreneurship – 2 Credits

  Sem – VIII: Professional Ethics and Human Value– 2 Credits

Further resolved to approve the syllabus for the above mentioned Audit Courses as given in Annexure – I.

- Resolved to introduce the following Audit courses on Soft kills in the B.Tech (Electronics and Communication Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of the All India Council for Technical Education:

Year I: Basic Behavioral Etiquette– 2 Credits

Year II: Technical, General Aptitude and Skill set Development– 2 Credits

Year III: Technical Training– 2 Credits

Year IV: Interview Skills Training and Mock Test– 2 Credits

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Further resolved to approve the syllabus for the above mentioned Audit Courses as given in Annexure-II

- Resolved to approve the syllabus for the newly introduced Under Graduate Programme B.Tech (ECE) with specialization in Internet of Things in collaboration with IBM-ICE with effect from the year 2020-21as given in Annexure-III.
- Resolved to continue with the existing curriculum with addition of value added courses for the following Programmes for the AcademicYear2020-21.
  - B.Tech – ECE – Part Time
  - M.Tech – Communication Systems – Full Time and Part Time
- Also the members of the board have unanimously recommended continuing with the existing curriculum of Regulation 2017 with addition of 2 new electives in 7th and 8th semester which is to be followed in the academic year 2019 – 20 for B. Tech ECE (Full Time).
- The List of suggested subjects are:

S. No	Course Code	Name of the Course
1	17152E76H	Display Technologies
2	17152E82G	Digital Control Engineering

- Also the suggested value added courses can be used for B. Tech - ECE (Full Time) along with the implementation of change in regulation. The suggested Value added courses are as follows:
  - EMBEDDED SYSTEM INTERFACING WITH ARDUINO
  - MULTIMEDIA
  - NETWORK DESIGN
  - EMBEDDED SYSTEMS DESIGN USING ARM LPC2148

The members of the board also scrutinized and updated the panel of examiners and recommended for the Academic Council for its approval.

The meeting was concluded with thanks from the Board of Studies Chairperson.

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Signature of the members:

S.No	Designation	Name	Signature
1	Chairperson/HoD	Dr. Smitha elsa peter	
2	External Expert-Academic	Dr. Sishaj P. Simon	
3	External Expert- Industry	Mr.K.Tamizhselvan	
4	Professor	Dr. Smitha elsa peter	
5	Professor	Dr. S. Devi	
6	Associate Professor	Dr. A. Rijuvana begum	
7	Associate Professor	Dr. C. Rajinikanth	
8	Assistant Professor	A. Aarthi	
9	Assistant Professor	T. Divya manohari	
10	Special Invitee-Dean	Prof.R.Tamizhselvan	
11	Special Invitee-Alumnus/Alumna	R.UDHAYAN	
12	Special Invitee -Current student - UG or PG	A.SABAREESAN	

Head Of the Department
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Annexure-I

B.TECH (FULL TIME) – ECE – R-2020

I - VIII SEMESTERS CURRICULUM

SEMESTER I

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20147S11	Communicative English	4	0	0	4
2.	20148S12	Engineering Mathematics I	4	0	0	4
3.	20149S13	Engineering Physics	3	0	0	3
4.	20149S14	Engineering Chemistry	3	0	0	3
5.	20154S15	Engineering Graphics	2	0	4	4
6.	20150S16	Problem Solving and Basics of Python Programming	3	0	0	3
PRACTICALS						
7.	20150L17	Problem Solving and Basics of Python Programming Lab	0	0	4	2
8.	20149L18	Physics and Chemistry Laboratory	0	0	4	2
Soft Skills Course						
9.	201AGIT	Induction Training Programme				2
		TOTAL	19	0	12	27

SEMESTER II

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20147S21	Technical English	4	0	0	4
2.	20148S22	Engineering Mathematics II	4	0	0	4
3.	20149S23B	Physics for Electronics Engineering	3	0	0	3
4.	20153S24B	Circuit Analysis	4	0	0	4
5.	20153S25B	Basic Electrical And Instrumentation Engineering	3	0	0	3
6.	20152S26B	Electronic Devices	3	0	0	3
PRACTICALS						
7.	20154L27	Engineering Practices Laboratory	0	0	4	2
8.	20152L28B	Circuits and Devices Laboratory	0	0	4	2
Soft Skills Course						
9.	201AGIC	Indian Constitution				2
10.	201ASBE	Basic Behavioral Etiquette				2
		TOTAL	21	0	8	29

SEMESTER III

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20148S31B	Linear Algebra and Partial Differential Equations	4	0	0	4

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Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
2.	20152S32	Control Systems Engineering	3	0	0	3
3.	20152S33	Fundamentals of Data Structures in C	3	0	0	3
4.	20152C34	Digital Electronics	3	0	0	3
5.	20152C35	Signals and Systems	4	0	0	4
6.	20152C36	Electronic Circuits- I	3	0	0	3
PRACTICALS						
7.	20152L37	Fundamentals of Data Structures in C Laboratory	0	0	4	2
8.	20152L38	Analog and Digital Circuits Laboratory	0	0	4	2
9.	20152L39	Interpersonal Skills / Listening & Speaking	0	0	2	1
Soft Skills Course						
10.	201AGGS	Introduction to Gender Studies				2
		TOTAL	20	0	10	27

SEMESTER IV

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20148S41B	Probability and Random Processes	4	0	0	4
2.	20152C42	Electronic Circuits II	3	0	0	3
3.	20152C43	Communication Theory	3	0	0	3
4.	20152C44	Electromagnetic Fields	4	0	0	4
5.	20152C45	Linear Integrated Circuits	3	0	0	3
6.	20149S46	Environmental Science and Engineering	3	0	0	3
PRACTICALS						
7.	20152L47	Circuits Design and Simulation Laboratory	0	0	4	2
8.	20152L48	Linear Integrated Circuits Laboratory	0	0	4	2
Research Skill Development (RSD) Course						
9.	20152CRS	Research Led Seminar				1
Soft Skills Course						
10.	201AGCE	Community Engagement				2
11.	201ASGS	Technical, General Aptitude and Skill set Development				2
		TOTAL	20	0	8	29

SEMESTER V

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20152C51	Digital Communication	3	0	0	3
2.	20152C52	Discrete-Time Signal Processing	4	0	0	4
3.	20152S53	Computer Architecture and Organization	3	0	0	3
4.	201	Open Elective – I	3	0	0	3

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	OE54					
5.	20152C55	Communication Networks	3	0	0	3
6.	20152E56	Elective – I	3	0	0	3
PRACTICALS						
7.	20152L57	Digital Signal Processing Laboratory	0	0	4	2
8.	20152L58	Communication Systems Laboratory	0	0	4	2
9.	20152L59	Communication Networks Laboratory	0	0	4	2
Research Skill Development (RSD) Course						
10.	20152CRM	Research Methodology	3	0	0	3
Soft Skills Course						
11.	201AGIE	Innovation and Entrepreneurship				2
		TOTAL	22	0	12	30

SEMESTER VI

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20152C61	Microprocessors and Microcontrollers	3	0	0	3
2.	20152C62	VLSI Design	3	0	0	3
3.	20152C63	Wireless Communication	3	0	0	3
4.	20152S64	Principles of Management	3	0	0	3
5.	20152C65	Transmission Lines and RF Systems	3	0	0	3
6.	20152E66	Elective – II	3	0	0	3
PRACTICALS						
7.	20152L61	Microprocessors and Microcontrollers Laboratory	0	0	4	2
8.	20152L62	VLSI Design Laboratory	0	0	4	2
9.	20152L63	Professional Communication	0	0	2	1
10.	20152L64	Technical Seminar	0	0	2	1
Research Skill Development (RSD) Course						
11.	20152CBR	Participation in Bounded Research				1
Soft Skills Course						
12.	201ASTT	Technical Training				2
		TOTAL	18	0	12	27

SEMESTER VII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20152C71	Antennas and Microwave Engineering	3	0	0	3
2.	20152C72	Optical Communication	3	0	0	3
3.	20152C73	Embedded and Real Time Systems	3	0	0	3
4.	201_ OE74	Open Elective – II	3	0	0	3
5.	20152C75	Adhoc and Wireless Sensor Networks	3	0	0	3

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6.	20152E76	Elective – III	3	0	0	3
PRACTICALS						
7.	20152L77	Embedded Laboratory	0	0	4	2
8.	20152L78	Advanced Communication Laboratory	0	0	4	2
Research Skill Development (RSD) Course						
9.	20152CSR	Design/Socio Technical Project				3
		TOTAL	18	0	8	25

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SEMESTER VIII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20152E81	Elective – IV	3	0	0	3
2.	20152E82	Elective – V	3	0	0	3
PRACTICALS						
3.	20152P83	Project Work	0	0	20	10
4.	20152PEE	Programme Exit Examination	0	0	0	2
Soft Skills Course						
5.	201AGPE	Professional Ethics and Human Values				2
6.	201ASIM	Interview Skills Training and Mock Test				2
		TOTAL	6	0	20	22
		TOTAL NO. OF CREDITS:				216

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LIST OF ELECTIVES

ELECTIVE - I (SEMESTER V)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20152E56A	Object Oriented Programming	3	0	0	3
2.	20152E56B	Medical Electronics	3	0	0	3
3.	20152E56C	Operating Systems	3	0	0	3
4.	20152E56D	Robotics and Automation	3	0	0	3
5.	20152E56E	Nano Technology and Applications	3	0	0	3
6.	20152E56F	Human Rights	3	0	0	3
7.	20152E56G	Total Quality Management	3	0	0	3

ELECTIVE – II (SEMESTER VI)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20152E66A	Cryptography and Network Security	3	0	0	3
2.	20152E66B	Advanced Digital Signal Processing	3	0	0	3
3.	20152E66C	MEMS and NEMS	3	0	0	3
4.	20152E66D	Multimedia Compression and Communication	3	0	0	3
5.	20152E66E	CMOS Analog IC Design	3	0	0	3
6.	20152E66F	Wireless Networks	3	0	0	3
7.	20152E66G	Intellectual Property Rights	3	0	0	3

ELECTIVE – III (SEMESTER VII)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20152E76A	Advanced Wireless Communication	3	0	0	3
2.	20152E76B	Cognitive Radio	3	0	0	3
3.	20152E76C	Foundation Skills in Integrated Product Development	3	0	0	3
4.	20152E76D	Machine Learning Techniques	3	0	0	3
5.	20152E76E	Electronics Packaging and Testing	3	0	0	3
6.	20152E76F	Mixed Signal IC Design	3	0	0	3
7.	20152E76G	Disaster Management	3	0	0	3

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ELECTIVE – IV (SEMESTER VIII)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20152E81A	Electro Magnetic Interference and Compatibility	3	0	0	3
2.	20152E81B	Low Power SoC Design	3	0	0	3
3.	20152E81C	Photonic Networks	3	0	0	3
4.	20152E81D	Compressive Sensing	3	0	0	3
5.	20152E81E	Digital Image Processing	3	0	0	3

ELECTIVE - V (SEMESTER VIII)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	20152E82A	Video Analytics	3	0	0	3
2.	20152E82B	DSP Architecture and Programming	3	0	0	3
3.	20152E82C	Satellite Communication	3	0	0	3
4.	20152E82D	Soft Computing	3	0	0	3
5.	20152E82E	Principles of Speech Processing	3	0	0	3
6.	20152E82F	Fundamentals of Nano Science	3	0	0	3

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LIST OF OPEN ELECTIVES

OPEN ELECTIVE – I (SEMESTER V)

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	CSE	20150OE54A	Database Management Systems	3	0	0	3
2.		20150OE54B	Cloud Computing	3	0	0	3
3.	EEE	20153OE54A	Industrial Nano Technology	3	0	0	3
4.		20153OE54B	Energy Conservation and Management	3	0	0	3
5.	MECH	20154OE54A	Renewable Energy Sources	3	0	0	3
6.		20154OE54B	Automotive Systems	3	0	0	3
7.	CIVIL	20155OE54A	Air Pollution and Control Engineering	3	0	0	3
8.		20155OE54B	Geographic Information System	3	0	0	3

OPEN ELECTIVE – II (SEMESTER VII)

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	CSE	20150OE74A	Introduction to C Programming	3	0	0	3
2.		20150OE74B	Data Structures and Algorithms	3	0	0	3
3.	EEE	20153OE74A	Basic Circuit Theory	3	0	0	3
4.		20153OE74B	Introduction to Renewable Energy Systems	3	0	0	3
5.	MECH	20154OE74A	Industrial Safety	3	0	0	3
6.		20154OE74B	Testing of Materials	3	0	0	3
7.	CIVIL	20155OE74A	Green Building Design	3	0	0	3
8.		20155OE74B	Waste Water Treatment	3	0	0	3

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B.TECH (FULL TIME) – ECE – R-2020

COURSE STRUCTURE AND CREDITS DISTRIBUTION

Sem.	Core Courses						Elective Courses				Foundation Courses		Program Exit Examination		CGPA Credits	Non-CGPA Credits		Total Credits
	Theory Courses		Practical Courses		Courses on *RSD		Dept. Elective		Open Elective									
	Nos.	Credits	Nos.	Credits	Nos.	Credits	Nos.	Credits	Nos.	Credits	Nos.	Credits	Nos.	Credits		Nos.	Credits	
I	02	07	02	04	-	-	-	-	-	-	04	14	-	-	25	01	02	27
II	03	10	02	04	-	-	-	-	-	-	03	11	-	-	25	02	04	29
III	05	16	03	05	-	-	-	-	-	-	01	04	-	-	25	01	02	27
IV	05	16	02	04	01	01	-	-	-	-	01	04	-	-	25	02	04	29
V	04	13	03	06	01	03	01	03	01	03	-	-	-	-	28	01	02	30
VI	05	15	02	04	01	01	01	03	-	-	-	-	-	-	25	01	02	27
VII	04	12	02	04	01	03	01	03	01	03	-	-	-	-	25	-	-	25
VIII	-	-	01	10	-	-	02	06	-	-	-	-	1	2	18	02	04	22
TOTAL CREDITS															196		20	216

*RSD-Research Skill Development

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Student Induction Training

The *Induction Program* is designed to make the newly joined students feel comfortable, sensitize themtowardsexploring their academic interests and activities, reducing competitionandmakingthemworkforexcellence,promote bonding within them,buildrelations betweenteachersandstudents,giveabroaderviewoflife,andbuildingofcharacter.

Induction program	3 weeks duration
Induction program for students to be offered right at the start of the first year.	• Physicalactivity • CreativeArts • Universal HumanValues • Literary • ProficiencyModules • Lectures by EminentPeople • Visits to localAreas • Familiarization to Dept./Branch &Innovations

The activities during the Induction Program would have an Initial Phase, a Regular Phase and a Closing Phase. The Initial and Closing Phases would be two days each.

Course on Indian Constitution

Aim:

- To understandthe salient features of the Indian Constitution

Objectives:

- To make the students understand about the Democratic Rule and Parliamentarian Administration.
- To appreciate the salient features of the Indian Constitution.
- To know the fundamental Rights and Constitutional Remedies.
- To make familiar with powers and positions of the Union Executive, Union Parliament and the Supreme Court.
- To exercise the adult franchise of voting and appreciate the Electoral system of Indian Democracy.

Outcomes

- Democratic values and citizenship Training are gained.
- Awareness on Fundamental Rights are established.
- The functions of union Government and State Governments are learnt.
- The power and functions of the Judiciary learnt thoroughly.
- Appreciation of Democratic Parliamentary Rule is learnt.

UNIT I: The Making Of Indianconstitution

The Constituent Assembly Organization Character – Work – Salient features of the constitution – Written and Detailed Constitution – Socialism – Secularism – Democracy and Republic.

UNIT II: Fundmeatal Rights And Fundumeatal Duties Of The Citizens

Right of Equality – Right of Freedom – Right against Exploitation – Right to Freedom of Religion – Cultural and Educational Rights – Right to Constitutional Remedies – Fundamental Duties.

UNIT III: Directive Principles Of State Policy

Socialism Principles – Gandhian Principles – Liberal and General Principles – Differences between Fundamental Rights and Directive principles.

UNIT IV: The Union Executive, Unionparliament And Supreme Court

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Powers and positions of the President – Qualification Method of Election of President and vice president – Prime Minister Rajya Sabha- Lok Sabha – The Supreme Court – High Court – Functions and position of Supreme court and High Court.

UNIT V: State Council – Election System And Partliamentary Democracy In India

State council of Ministers – Chief Minister – Election system in India- Main features – Election Commission - Features of Indian Democracy.

References:

1. Palekar S.A. Indian Constitution Government and politics, ABD Publications, India.
2. Aiyer Alladi, Krishnaswami, Constitution and fundamental rights 1955.
3. Markandan K.C. Directive Principles in the Indian Constitution 1966.
4. Kashyap Subash C Our Parliament, National Book, Trust New Delhi 1989.

INTRODUCTION TO GENDER STUDIES

COURSE OUTLINE

Unit-I Concepts

Sex vs. Gender, masculinity, femininity, socialization, patriarchy, public/ private, essentialism, binaryism, power, hegemony, hierarchy, stereotype, gender roles, gender relation, deconstruction, resistance, sexual division of labour.

Unit-II

Feminist Theory

Liberal, Marxist, Socialist, Radical, Psychoanalytic, postmodernist, eco-feminist.

Unit-III

Women's Movements: Global, National and Local

Rise of Feminism in Europe and America.

Women's Movement in India.

Unit-IV

Gender and Language

Linguistic Forms and Gender.

Gender and narratives.

Unit-V

Gender and Representation

Advertising and popular visual media.

Gender and Representation in Alternative Media.

Gender and social media.

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Community Engagement

a) **Objectives:**

- To develop an appreciation of rural culture, life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

b) **Learning Outcomes:**

After completing this course, student will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and bonds of mutuality with local community
- Appreciate significant contributions of local communities to Indian society and economy
- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio-economic improvements

c) **Credit**

2 credit, 30 hours, at least 50% in field, compulsory for all students

d) **Contents**

Divided into four Modules, field immersion is part of each Unit

Course Structure: 2 Credits Course (1 Credit for Classroom and Tutorials and 1 Credit for Field Engagement)

S. No.	Module Title	Module Content	Assignment	Teaching/ Learning Methodology	No. of Classes
1	Appreciation of Rural Society	Rural lifestyle, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of 'soul of India lies in villages' (Gandhi), rural infrastructure	Prepare a map (physical, visual or digital) of the village you visited and write an essay about inter-family relations in that village.	- Classroom discussions	2
				- Field visit**	4
				- Assignment Map	2

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2	*Understanding rural economy & livelihood*	Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets	Describe your analysis of rural household economy,its challenges and possible pathways to address them	- Fieldvisit** - Group discussions in class - Assignment	3 4 1
3	*Rural Institutions*	Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration	How effectively are Panchayati raj institutions functioning in the village?What wouldyousuggest to improve their effectiveness? Present a case study (written or audio-visual)	- Classroom - Fieldvisit** - Group presentation ofassignment	2 4 2
4	*Rural Development Programmes*	History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swatchh Bharat, PM AwaasYojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.	Describe the benefits received and challenges faced in the delivery of one of these programmes in the rural community; give suggestions about improving implementation of the programme for the rural poor.	- Classroom - Each student selects one program for field visit** - Written assignment	2 4 2

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INNOVATION AND ENTREPRENEURSHIP

Course Outcomes

After the completion of the course, the students will be able to:

- Comprehend the role of bounded rationality, framing, causation and effectuation in entrepreneurial decisionmaking.
- Demonstrate an ability to design a business modelcanvas.
- Evaluate the various sources of raising finance for startupventures.
- Understand the fundamentals of developing and presenting business pitching to potential investors.

Course Content

Module – I

Introduction to Entrepreneurship: Entrepreneurs; entrepreneurial personality and intentions-characteristics, traits and behavioral; entrepreneurial challenges.

Module-II

Module Entrepreneurial Opportunities: Opportunities. discovery/ creation, Pattern identification and recognition for venture creation: prototype and exemplar model, reverse engineering.

Module –III

Entrepreneurial Process and Decision Making: Entrepreneurial ecosystem, Ideation, development and exploitation of opportunities; Negotiation, decision making process and approaches, Effectuation and Causation.

Module-IV

Crafting business models and Lean Start-ups: Introduction to business models; Creating value propositions-conventional industry logic, value innovation logic; customer focused innovation; building and analyzing business models; Business model canvas, Introduction to lean startups, Business Pitching.

Module – V

Organizing Business and Entrepreneurial Finance: Forms of business organizations; organizational structures; Evolution of Organisation, sources and selection of venture finance options and its managerial implications. Policy Initiatives and focus; role of institutions in promoting entrepreneurship.

Books for References

- *Ries, Eric(2011), The lean Start-up: How constant innovation creates radically successful businesses. Penguin BooksLimited.*
- *Blank, Steve (2013), The Startup Owner's Manual: The Step by Step Guide for Building a Great Company, K&S Ranch.*
- *S. Carter and D. Jones-Evans, Enterprise and small business- Principal Practice and Policy, Pearson Education(2006)*
- *T. H. Byers, R. C. Dorf, A. Nelson, Technology Ventures: From Idea to Enterprise, McGraw Hill(2013)*
- *Osterwalder, Alex and Pigneur, Yves (2010) Business ModelGeneration.*
- *Kachru, Upendra, India Land of a Billion Entrepreneurs,Pearson*
- *Bagchi, Subroto, (2008), Go Kiss the World: Life Lessons for the Young Professional, PortfolioPenguin*
- *Bagchi, Subroto (2012) MBA At 16: a Teenager's Guide to Business, PenguinBooks*

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- *Bansal, Rashmi, Stay Hungry Stay Foolish, CIIE. IIMAhmedabad*
- *Bansal, Rashmi, (2013). Follow Every Rainbow, Westland.*
- *Mitra, Sramana (2008). Entrepreneur Journeys (Volume 1), BooksurgePublishing*
- *Abrams, R. (2006). Six-week Start-up, Prentice-Hall of India.*
- *Verstraete, T. and Laffite, E.J. (2011). a Business Model of Entrepreneurship, Edward ElgarPublishing.*
- *Johnson, Steven (2011). Where Good Ideas comes from, Penguin BooksLimited.*
- *Gabor, Michael E. (2013), Awakening the Entrepreneur Within, Primento.*
- *Guillebeau, Chris (2012). The $100 startup: Fire your Boss, Do what you love and work better to live more, Pan Macmillan*
- *Kelley, Tom (2011). The ten faces of innovation, CurrencyDoubleday*

Prasad, Rohit (2013), Start-up sutra: what the angels won't tell you about business and life, HachetteIndia.

PROFESSIONAL ETHICS AND HUMAN VALUES

OBJECTIVE:

- To enable the students to create an awareness on Engineering Ethics and Human Values, to instill Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT I HUMAN VALUES

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II ENGINEERING ETHICS

Senses of _Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION

Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk - Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR)– Discrimination.

UNIT V GLOBAL ISSUES

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership –Code of Conduct – Corporate Social Responsibility.

OUTCOMES:

- Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.

TEXT BOOKS:

1. Mike W. Martin and Roland Schinzinger, — Ethics in Engineeringl, Tata McGraw Hill, New Delhi, 2003.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, — Engineering Ethicsl, Prentice Hall of India, New Delhi, 2004.

REFERENCES:

1. Charles B. Fleddermann, —Engineering Ethicsl, Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, —Engineering Ethics – Concepts and Casesl, Cengage Learning, 2009.
3. John R Boatright, —Ethics and the Conduct of Businessl, Pearson Education, New Delhi, 2003

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Vallam, Thanjavur

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF

ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAM HANDBOOK

B.TECH – FULL TIME

[REGULATION 2017]

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PROGRAMME EDUCATIONAL OBJECTIVES:

PEO1: To enable graduates to pursue research, or have a successful career in academia or industries associated with Electronics and Communication Engineering, or as entrepreneurs.

PEO2: To provide students with strong foundational concepts and also advanced techniques and tools in order to enable them to build solutions or systems of varying complexity.

PEO3: To prepare students to critically analyze existing literature in an area of specialization and ethically develop innovative and research oriented methodologies to solve the problems identified.

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOMES

A broad relation between the programme objective and the outcomes is given in the following table

PROGRAMME EDUCATIONAL OBJECTIVES	PROGRAMME OUTCOMES												
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	3	3	2	3	2	1	1	2	1	1	3	1	3
2	3	3	3	3	3	1	1	1	1	1	1	2	2
3	3	3	3	3	3	2	2	3	1	2	2	2	2

Contribution 1: Reasonable 2: Significant 3: Strong

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I - VIII SEMESTERS CURRICULUM AND SYLLABI

SEMESTER I

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17147S11	Communicative English	5	1	0	4
2.	17148S12	Engineering Mathematics I	5	1	0	4
3.	17149S13	Engineering Physics	5	1	0	4
4.	17149S14	Engineering Chemistry	5	1	0	4
5.	17154S15	Engineering Graphics	5	1	0	4
6.	17150S16	Problem Solving and Python Programming	5	1	0	4
PRACTICALS						
7.	17150L17	Problem Solving and Python Programming Lab	0	0	3	2
8.	17149L18	Physics and Chemistry Lab	0	0	3	2
9.	171VEA19	Value Education				1
		TOTAL	30	6	6	29

SEMESTER II

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17147S21	Technical English	5	1	0	4
2.	17148S22A	Engineering Mathematics II	5	1	0	4
3.	17149S23B	Physics for Electronics Engineering	5	1	0	4
4.	17152S24B	Circuit Analysis	5	1	0	4
5.	17153S25B	Basic Electrical And Instrumentation Engineering	5	1	0	4
6.	17152S26B	Electronic Devices	5	1	0	4
PRACTICALS						
7.	17154L27	Engineering Practices Lab	0	0	3	2
8.	17152L28B	Circuits and Devices Lab	0	0	3	2
9.	171ICA29	Fundamentals of Indian Constitution and Economy				1
		TOTAL	30	6	6	29

SEMESTER III

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17148S31B	Linear Algebra and Partial Differential Equations	4	0	0	4
2.	17152C32	Control Systems Engineering	3	0	0	3
3.	17152C33	Fundamentals of Data Structures in C	3	0	0	3
4.	17152C34	Digital Electronics	3	0	0	3
5.	17152C35	Signals and Systems	4	0	0	4
6.	17152C36	Electronic Circuits- I	3	0	0	3
PRACTICALS						
7.	17152L37	Fundamentals of Data Structures in C Laboratory	0	0	3	2
8.	17152L38	Analog and Digital Circuits Laboratory	0	0	3	2
9.	17152L39	Interpersonal Skills / Listening & Speaking	0	0	2	1
		TOTAL	20	0	8	25

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SEMESTER IV

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Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17148S41B	Probability and Random Processes	4	0	0	4
2.	17152C42	Electronic Circuits II	3	0	0	3
3.	17152C43	Communication Theory	3	0	0	3
4.	17152C44	Electromagnetic Fields	4	0	0	4
5.	17152C45	Linear Integrated Circuits	3	0	0	3
6.	17149S46	Environmental Science and Engineering	3	0	0	3
PRACTICALS						
7.	17152L47	Circuits Design and Simulation Laboratory	0	0	3	2
8.	17152L48	Linear Integrated Circuits Laboratory	0	0	3	2
Research Skill Development (RSD) Course						
9.	17152CRS	Research Led Seminar				1
		TOTAL	21	0	6	25

SEMESTER V

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17152C51	Digital Communication	3	0	0	3
2.	17152C52	Discrete-Time Signal Processing	4	0	0	4
3.	17152C53	Computer Architecture and Organization	3	0	0	3
4.	171 FE54	Free Elective - I	3	0	0	3
5.	17152C55	Communication Networks	3	0	0	3
6.	17152E56	Elective - I	3	0	0	3
PRACTICALS						
7.	17152L57	Digital Signal Processing Laboratory	0	0	3	2
8.	17152L58	Communication Systems Laboratory	0	0	3	2
9.	17152L59	Communication Networks Laboratory	0	0	3	2
Research Skill Development (RSD) Course						
10.	17152CRM	Research Methodology	3	0	0	3
		TOTAL	22	0	9	28

SEMESTER VI

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17152C61	Microprocessors and Microcontrollers	3	0	0	3
2.	17152C62	VLSI Design	3	0	0	3
3.	17152C63	Wireless Communication	3	0	0	3
4.	17152C64	Principles of Management	3	0	0	3
5.	17152C65	Transmission Lines and RF Systems	3	0	0	3
6.	17152E66	Elective - II	3	0	0	3
PRACTICALS						
7.	17152L61	Microprocessors and Microcontrollers Laboratory	0	0	3	2
8.	17152L62	VLSI Design Laboratory	0	0	3	2
9.	17152L63	Professional Communication	0	0	3	2
10.	17152L64	Technical Seminar	0	0	3	2
Research Skill Development (RSD) Course						
11.	17152CBR	Participation in Bounded Research				1

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Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
		TOTAL	20	0	10	26

SEMESTER VII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17152C71	Antennas and Microwave Engineering	3	0	0	3
2.	17152C72	Optical Communication	3	0	0	3
3.	17152C73	Embedded and Real Time Systems	3	0	0	3
4.	171 FE74	Free Elective - II	3	0	0	3
5.	17152C75	Adhoc and Wireless Sensor Networks	3	0	0	3
6.	17152E76	Elective - III	3	0	0	3
PRACTICALS						
7.	17152L77	Embedded Laboratory	0	0	3	2
8.	17152L78	Advanced Communication Laboratory	0	0	3	2
Research Skill Development (RSD) Course						
9.	17152CSR	Design/Socio-Technical Project				4
		TOTAL	18	0	10	26

SEMESTER VIII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	17152E81	Elective – IV	3	0	0	3
2.	17152E82	Elective – V	3	0	0	3
PRACTICALS						
3.	17152P83	Project Work	0	0	20	10
4.	17152CEC	Comprehensive Exit Course	0	0	0	2
		TOTAL	6	0	20	18
		TOTAL NO. OF CREDITS				206

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LIST OF ELECTIVES

ELECTIVE - I (SEMESTER V)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17152E56A	Object Oriented Programming	3	0	0	3
2.	17152E56B	Medical Electronics	3	0	0	3
3.	17152E56C	Operating Systems	3	0	0	3
4.	17152E56D	Robotics and Automation	3	0	0	3
5.	17152E56E	Nano Technology and Applications	3	0	0	3
6.	17152E56F	Human Rights	3	0	0	3
7.	17152E56G	Total Quality Management	3	0	0	3
8.	17152E56H	RF Microelectronics	3	0	0	3

ELECTIVE – II (SEMESTER VI)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17152E66A	Cryptography and Network Security	3	0	0	3
2.	17152E66B	Advanced Digital Signal Processing	3	0	0	3
3.	17152E66C	MEMS and NEMS	3	0	0	3
4.	17152E66D	Multimedia Compression and Communication	3	0	0	3
5.	17152E66E	CMOS Analog IC Design	3	0	0	3
6.	17152E66F	Wireless Networks	3	0	0	3
7.	17152E66G	Intellectual Property Rights	3	0	0	3
8.	17152E66H	Digital Switching And Transmission	3	0	0	3

ELECTIVE – III (SEMESTER VII)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17152E76A	Advanced Wireless Communication	3	0	0	3
2.	17152E76B	Cognitive Radio	3	0	0	3
3.	17152E76C	Foundation Skills in Integrated Product Development	3	0	0	3
4.	17152E76D	Machine Learning Techniques	3	0	0	3
5.	17152E76E	Electronics Packaging and Testing	3	0	0	3
6.	17152E76F	Mixed Signal IC Design	3	0	0	3
7.	17152E76G	Disaster Management	3	0	0	3
8.	[illegible]	[illegible]	[illegible]			

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ELECTIVE – IV (SEMESTER VIII)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17152E81A	Electro Magnetic Interference and Compatibility	3	0	0	3
2.	17152E81B	Low Power SoC Design	3	0	0	3
3.	17152E81C	Photonic Networks	3	0	0	3
4.	17152E81D	Compressive Sensing	3	0	0	3
5.	17152E81E	Digital Image Processing	3	0	0	3
6.	17152E81F	Professional Ethics in Engineering	3	0	0	3

ELECTIVE - V (SEMESTER VIII)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
1.	17152E82A	Video Analytics	3	0	0	3
2.	17152E82B	DSP Architecture and Programming	3	0	0	3
3.	17152E82C	Satellite Communication	3	0	0	3
4.	17152E82D	Soft Computing	3	0	0	3
5.	17152E82E	Principles of Speech Processing	3	0	0	3
6.	17152E82F	Fundamentals of Nano Science	3	0	0	3
7.	17152E82G	Digital Electronics	3	0	0	3

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LIST OF FREE ELECTIVES

FREE ELECTIVE – I (SEMESTER V)

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	CSE	17150FE54A	Database Management Systems	3	0	0	3
2.		17150FE54B	Cloud Computing	3	0	0	3
3.	EEE	17153FE54A	Industrial Nano Technology	3	0	0	3
4.		17153FE54B	Energy Conservation and Management	3	0	0	3
5.	MECH	17154FE54A	Renewable Energy Sources	3	0	0	3
6.		17154FE54B	Automotive Systems	3	0	0	3
7.	CIVIL	17155FE54A	Air Pollution and Control Engineering	3	0	0	3
8.		17155FE54B	Geographic Information System	3	0	0	3

FREE ELECTIVE – II (SEMESTER VII)

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	CSE	17150FE74A	Introduction to C Programming	3	0	0	3
2.		17150FE74B	Data Structures and Algorithms	3	0	0	3
3.	EEE	17153FE74A	Basic Circuit Theory	3	0	0	3
4.		17153FE74B	Introduction to Renewable Energy Systems	3	0	0	3
5.	MECH	17154FE74A	Industrial Safety	3	0	0	3
6.		17154FE74B	Testing of Materials	3	0	0	3
7.	CIVIL	17155FE74A	Green Building Design	3	0	0	3
8.		17155FE74B	Waste Water Treatment	3	0	0	3

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B.TECH (FULL TIME) - ECE

COURSE STRUCTURE AND CREDITS DISTRIBUTION

Semester	Core	Elective	Practical	Others	CEC	Project	RSD Course	Total
I	24	-	04	01	-	-	-	29
II	24	-	04	01	-	-	-	29
III	20	-	05	-	-	-	-	25
IV	20	-	04	-	-	-	01	25
V	13	06	06	-	-	-	03	28
VI	15	03	05	01	-	-	02	26
VII	12	06	04	-	-	-	04	26
VIII	-	06	-	-	2	10	-	18
TOTAL CGPA CREDITS								206

NON-CGPA CREDITS

Semester	Add on course	Total
I	01	01
II	01	01
III	-	-
IV	-	-
V	-	-
VI	-	-
VII	-	-
VIII	-	-
Co curricular Activities	In-plant Training , Industrial Visit , Seminars & Conferences	03
TOTAL NON-CGPA CREDITS		05

TOTAL CREDITS	
CGPA CREDITS	206
NON-CGPA CREDITS	05
TOTAL	211

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17152E76H

DISPLAY TECHNOLOGIES

L T P C
3 0 0 3

OBJECTIVES:

- To introduce the different display technologies available for the Electronics Technology
- To understand the different 3D display techniques available
- To explore the applications of Display Technologies in daily life.

UNIT I INTRODUCTION TO OPTICS 9

Properties of Light, Geometric Optics, Optical Modulation; Vision and Perception: Anatomy of Eye, Light Detection and Sensitivity, Spatial Vision and Pattern Perception, Binocular Vision and Depth Perception; Driving Displays: Direct Drive, Multiplex and Passive Matrix, Active Matrix Driving, Panel Interfaces, Graphic Controllers.

UNIT II DISPLAY GLASSES 9

Display Glasses, Inorganic Semiconductor TFT Technology, Organic TFT Technology; Transparent Conductors, Patterning Processes: Photolithography for Thin Film LCD, Wet Etching Dry Etching; Flexible Displays: Attributes, Technologies Compatible with Flexible Substrate and Applications, Touch Screen Technologies.

UNIT III DISPLAY DEVICES 9

Inorganic Phosphors, Cathode Ray Tubes, Vacuum Florescent Displays, Filed Emission Displays; Plasma Display Panels, LED Display Panels; Inorganic Electroluminescent Displays: Thin Film Electroluminescent Displays, AC Powder Electroluminescent Displays; Organic Electroluminescent Displays: OLEDs, Active Matrix for OLED Displays; Liquid Crystal Displays: Fundamentals and Materials, Properties of Liquid Crystals, Optics and Modeling of Liquid Crystals; LCD Device Technology: Twisted Numeric and Super twisted Numeric Displays.

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UNIT IV 3-D DISPLAY TECHNOLOGY. 9

Paper like and Low Power Displays: Colorant Transposition Displays, MEMs Based Displays, -D Displays, 3-D Cinema Technology, Autostereoscopic 3-D Technology, Volumetric and 3-DVolumetric Display Technology, Holographic 3-D Technology; Mobile Displays: Trans-reflective Displays for Mobile Devices, Liquid Crystal Optics for Mobile Displays, Energy Aspects of Mobile Display Technology.

UNIT V MICRO DISPLAY TECHNOLOGY 9

Micro display Technologies: Liquid Crystals on Silicon Reflective Micro display, Transmissive Liquid Crystal Micro display, MEMs Microdisplay, DLP Projection Technology; Micro display Applications: Projection Systems, Head Worn Displays; Electronic View Finders, Multi focal Displays, Occlusion Displays, Cognitive Engineering and Information Displays; Display Metrology, Standard Measurement Procedures,

TOTAL: 45 PERIODS

COURSE OUTCOMES:

On completion of the course, students will be able to:

CO1 Understand the material properties of display devices

CO2 Understand the projection technology of 3D display devices

TEXT BOOK:

1 Jianglin Chen, Wayne Cranton, Mark Fihn , "Handbook of Visual Display Technology", Springer Publication.

REFERENCES:

1. Joseph A Castellano,"Hand book of Display Technology" , Elsevier, 1992.
2. Achintya K. Bhowmik, "Interactive Displays: Natural Human–Interface Technologies", WileySID Series, 2014.

17[illegible]82G DIGITAL CONTROL ENGINEERING L T P C
3 0 0 3

OBJECTIVES:

- To introduce the relevance of this course to the existing technology through demonstrations, case studies, simulations, contributions of scientist, national/international policies with a futuristic vision along with socio-economic impactand issues
- This course is extended to deliver the concepts of continuous-time control systems todigital domain where the design and stability aspects are introduced.

UNIT I CONTINUOUS TIME SYSTEMS 6

Review of frecuency and time response analysis and specifications of control systems, need for controllers, continuous time compensations, continuous time PI, PD, PID controllers.

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UNIT II SIGNAL PROCESSING IN DIGITAL CONTROL **12**

Sampling in time and frequency domain descriptions, aliasing, hold operations, mathematical model of sample and hold, zero and first order hold, factors limiting the choice of sample rate, reconstruction. Difference equation description, Z-transform method of description, pulse transfer function, time and frequency response of discrete time control systems.

UNIT III DESIGN OF DIGITAL CONTROL ALGORITHMS **9**

Review of principle of compensator design, Z-plane specifications, digital compensator design using frequency response plots, discrete integrator, discrete differentiator, development of digital PID controller, transfer function, design in Z-plane.

UNIT IV STATE VARIABLE TECHNIQUES **9**

Discrete State Variable concepts, Characteristic equation, Eigen values and Eigenvectors, Jordan canonical models, Phase Variable companion forms.

UNIT V CONTROLLABILITY, OBSERVABILITY AND STABILITY **9**

Definitions and Theorems of Controllability and Observability, Relationships between Controllability, Observability and Transfer Functions, Jury, Routh, Lyapunov stability analysis, Principles of state and output feedback.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

CO1 : Able to comprehend and appreciate the significance and role of this course in the present contemporary world

CO2 : Have working knowledge of discrete system science related mathematics.

CO3 : Design a discrete system, component or process to meet desired needs.

CO4 : Identify, formulate and solve discrete control engineering problems.

CO5 : Use techniques, tools and skills related to discrete signals, computer science andmodern discrete control engineering in modern engineering practice.

CO6 : Communicate system related concepts effectively.

TEXT BOOK:

1. Benjamin C Kuo, Digital Control Systems, OXFORD University Press, 2nd Edition, 2007.

REFERENCES:

1. M.Gopal, "Digital Control and State Variable Methods", Tata McGraw Hill, 2nd Edition, 2007.
2. K.Ogata,"Discrete-Time Control Systems", PHI, 2nd Edition,2007.
3. Franklin, J.D.Powell, M.Workman, "Digital Control of Dynamic Systems", AddisonWesley,

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MODULE NO / UNIT	COURSE SYLLABUS-EMBEDDED SYSTEM INTERFACING WITH ROBOTICS USING ARDUINO AND ARMLPC2148
1	**Introduction to RISC microcontrollers:** Von- Neumann and Harvard architectures, Introduction to 8051 family microcontrollers, 8051 architecture, Register banks and Special Function Registers, Block Diagram, Addressing Modes, Instruction Set, Timers, Counters, Stack Operation, Programming using PIC microcontroller.
2	**Introduction to Embedded Systems:** Overview of Embedded Systems, Features, Requirements and Applications of Embedded Systems, Recent Trends in the Embedded System Design, Common architectures for the ES design, Embedded Software design issues, Communication Software, Introduction to Development and Testing Tools
3	**8051 Interfacing:** 8051 interfacing with Keyboard, display Units (LED, 7-segment display, LCD), ADC, DAC, Stepper motor, Introduction to AVR family and its architecture. Interfacing and Communication Links Serial Interfacing: SPI / Micro wire Bus, I2C Bus, CAN Bus
4	**Robotics:** Overview of Robotics, Pattern recognition and robots, Use of Embedded Systems in Robotics, Robots and Computer Vision.

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Add on : Network Design

COURSE OBJECTIVES

- To recognize the principles of the big picture of computer networks.
- To understand the networking environment.
- To know the importance of VPNs.
- To convey the availability of tools and techniques for networking.
- To discuss about evolving technologies in networks.

UNIT 1 FUNDAMENTALS OF NETWORK DESIGN **9 Hrs**

Design Principles - Determining Requirements - Analyzing the Existing Network - Preparing the Preliminary Design - Completing the Final Design Development - Deploying the Network - Monitoring and Redesigning – Maintaining - Design Documentation - Modular Network Design - Hierarchical Network Design.

UNIT 2 UNDERLYING LAN CONCEPTS **9 Hrs**

LAN connectivity for small businesses – Integration – Token-Ring – Ethernet – ATM LAN emulation – InterLAN Switching – LAN to Mainframe – Building networks.

UNIT 3 VPNS, INTRANETS AND EXTRANETS **9 Hrs**

Virtual Network management and planning – VPNs for small businesses – Secure remote access in VPNs – IPSec VPNs – Integrating data centers with Intranets – Implementing and supporting Extranets.

UNIT 4 NETWORKING TOOLS AND TECHNIQUES **9 Hrs**

Simulation method for designing multimedia networks – Determining remote bridge and router delays – Network baselining as a planning tool.

UNIT 5 EVOLVING TECHNOLOGIES **9 Hrs**

Trends in data communications – Merits of xDSL technology – Preparing for cable modems - Voice and video on the LAN – Internet voice applications – Building IP PBX telephony network – Fax over IP – Videoconferencing over IP networks.

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Max.45 Hrs.

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COURSE CONTENT –DESIGN OF EMBEDDED REAL TIME SYSTEMS

Module 1 – INTRODUCTION TO EMBEDDED SYSTEM, ASICS AND ASIPS

An embedded system is a combination of computer hardware and software designed for a specific function. Embedded systems may also function within a larger system. The systems can be programmable or have a fixed functionality.

Module 2 – EMBEDDED SYSTEM DESIGN USING ARDUINO

Embedded system basically is a computer system that is designed to pull off a few or one specific function, more often than not in real-time computing constraints. "ARDUNIO" most widely used technique of embedded systems. An Arduino is an assembled board of Atmel 8-bit AVR microcontroller with additional components to facilitate programming. An important aspect of the Arduino is the standardized way in which the connectors are exposed, providing a facility to the CPU board to get connected to a variety of interchangeable add-on modules known as shields. The hardware consists of an open-source hardware board designed around an 8-bit Atmel AVR microcontroller. The software consists of a standard programming language compiler and a boot loader that executes on the microcontroller

Module 3 – EMBEDDED SYSTEM DESIGN USING RASPBERRY PI

The Raspberry Pi has received a lot of attention since its release in early 2012. It was designed to be a simple, low-cost device for use in schools to encourage interest in computers and computing. Whether that goal has been

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achieved is perhaps still open to debat , but what is clear is that the device has gained a significant following in the hobbyist and DIY world.

There is a strong, active community a d support from the Raspberry Pi foundation focused on their Raspian Linux distribution, which is a Debian deriva ive with support and optimisation for the Raspberry Pi hardware.

Module 4 – EMBEDDED SYSTE I DESIGN USING

An embedded real-time operating sys m is the software kernel of high performance smart phone. This paper presents an embedded real-time opera ing system named SPOS (smart phone operating system) whose purpose is to hold key technique of smart phone nd enhance the Competence of production. Cluing in particularities of smart phone operating system, the paper int rprets detailed the designing ideas of system architecture, multitasking kernel, wireless application interface nd application framework of SPOS.

Module 5 –applications of embedde Systems

Embedded systems are common found in consumer, industrial, automotive, home appliances, medical, telecommunication, commercial, aero pace and military applications. ...

Consumer electronics include M 3 players, television sets, mobile phones, video game consoles, digital cameras, GPS receivers, and printers.

Key concepts include:

- Sophisticated Functionali ...
- Real-Time Operation. ...
- Low Manufacturing Cost. ..
- Processor and Memory. ...
- Tight Design Constraint.
- Based on Performance an Functional Requirements. ...
- Based on the Performance of the Microcontroller.

ELIGIBILITY

B Tech –E & EEE students shall be eligible for the admission to the course.

COURSE DURATION: 45 Ho rs

Monday:	4.00-5.30 P.M
Wednesday	4.00-5.30 P.M
Friday:	4.00-5.30 P.M

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

BOARD OF STUDIES

CIRCULAR & MINUTES OF MEETING

2020-2021

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

BOARD OF STUDIES MEETING

CIRCULAR

25.06.2020

The BOS Meeting is scheduled on 29.06.2020 at 12.00 am through online mode under the Chairmanship of Prof. Dr. J.Sanjeevikumar .All are requested to attend the meeting without fail.

AGENDA OF THE MEETING:

1. To confirm the minutes of the previous meetings.
2. To discuss the action taken on the previous meeting minutes.
3. To scrutinize the stakeholders feedback on B.Tech (FT).
4. Introduce the syllabus contents of two newly added Elective courses.
5. Introduce the syllabus contents of newly added Value added courses.
6. To discuss upon the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) of B.Tech(FT) To recommend the panel of Examiners for B.Tech (FT).
7. To recommend the panel of Examiners for B.Tech(FT).

HOD/ EEE

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

MINUTES OF THE MEETING OF THE BOARD OF STUDIES (BOS)

Board: EEE

The Meeting of Board of Studies (BOS) was held as given below:

Name of the Body	Board of Studies(BOS)
Department	Electrical and Electronics Engineering
Meeting No	10
Date and Time	29.06.2020 @ 12.00 am
Members Attended	The details are given in the ANNEXURE-I

AGENDA	
1.	To confirm the minutes of the previous meetings.
2.	To discuss the action taken on the previous meeting minutes.
3.	To scrutinize the stakeholders feedback on B.Tech (FT).
4.	To introduce the syllabus contents of newly added Elective courses.
5.	To introduce the syllabus contents of newly added Value added courses.
6.	To discuss upon the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) of B.Tech (FT).
7.	To recommend the panel of Examiners for B.Tech (FT).
8.	Any other matter

P. Anuj

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MINUTES OF THE BOARD OF STUDIES MEETING

Board: EEE

The Chairman of BOS welcomed all the panel members for the meeting. The item listed in the agenda were taken for discussion.

The following are the minutes of the meeting.

Agendum 1: Confirmation of the previous Meeting Minutes and Action taken on the previous Meeting Minutes
Discussion: To confirm the previous BOS Meeting Minutes and to discuss the action taken on the previous BoS Meeting Minutes
Resolution: The chairman confirmed the previous meeting minutes of BOS and discussed the action taken on the previous BOS Meeting Minutes.
Agendum 2: Scrutiny of stakeholders feedback on existing curriculum and syllabi
Discussion: To scrutinize the abstract of stakeholders feedback on existing curriculum and syllabi for B.Tech-EEE (Full Time).
Resolution: The members of the Board thoroughly scrutinized the existing curriculum and syllabi and the abstract of stakeholders feedback on B.Tech.-EEE (Full Time) and resolved to continue with the existing syllabus.
Agendum 3: Introduction newly added Elective courses.
Discussion: To introduce the syllabus content for the following newly added Elective courses. 1. Computer Architecture. 2. Communication Engineering.
Resolution: The members of the Board scrutinized the syllabus contents of newly added Elective courses and resolved to introduce the same.
Agendum 4: Introduction newly added Value added courses.
Discussion: To introduce the syllabus content for the following newly added value added courses. 1. 205153ELE - Electrical Load Estimation And Designing Course. 2. 205153ED - Electrical Design And Drawings. 3. 185153RTO - Matlab For Electrical Engineers. 4. 195153IOT - Design Of Project Using Iot. 5. 185153ESR- Enterprenuership And Social Responsibility. 6. 185153ICE - Industrial Control Electronics. 7. 185153FAR- Factory Automation And Robotics. 8. 185153WIM- Winding Of Induction Motor.
Resolution: The members of the Board scrutinized the syllabus contents of new added value-added courses and resolved to introduce the same.

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Agendum 5: Discuss the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) of B.Tech (FT).
Discussion: To discuss upon the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) of B.Tech (FT).
Resolution: The members of the Board scrutinized the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) and resolved to continue with the same for B.Tech (FT).
Agendum 6:Recommend the panel of Examiners for B.Tech(FT).
Discussion:To recommend the panel of Examiners for B.Tech(FT).
Resolution: The members of the board also scrutinized the panel of examiners and recommended to continue with the same panel of examiners for the B.Tech–EEE (FT).

The chairman of Board of Studies (BOS) thanked all the members for their active participation and cordially invited them for the next meeting.

Inclusion of Additional elective Courses in B.TECH (FT) -(R-2019)

1. 17153E65E- Computer Architecture.
2. 17153E65E-Communication Engineering.

Inclusion of Additional value added Courses in B.TECH (FT)

1. 205153ELE - Electrical Load Estimation And Designing Course.
2. 205153ED - Electrical Design And Drawings.
3. 185153R1O - Matlab For Electrical Engineers.
4. 195153IO1 - Design Of Project Using Iot.
5. 185153ESR- Enterprenuership And Social Responsibility.
6. 185153ICE - Industrial Control Electronics.
7. 185153FAR- Factory Automation And Robotics.
8. 185153WIM- Winding Of Induction Motor.

Dept: EEE

School: Engineering and Technology

BOS Chairman Name:

Date:

Signature of Chairman

Signature of Dean

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ATTENDANCE OF THE [-------- (tenth)] BOARD OF STUDIES MEETING
Board:EEE

Date: 29.06.2020

Time: 12.00 am

Through Online Meeting:

The following members were present for the Board of Studies meeting

S.No.	Name/Degree/Designation	Institute/Organization/ Full address	Online/ Physical
1.	Prof. Dr.J.Sanjeevikumar - Chairman	Dept of EEE, PRIST DU	Online
2.	Dr.T.S.Anandhi, Associate Professor, Electronics & Instrumentation Department, **Academic Experts**	Annamalai University. Tiruchirappalli.	Online
3.	Dr.C.Sambath.Assistant Executive Engineer,TNEB, Mannargudi. **Industrial Experts:**	AEE / TNEB, 230KV SS, Thirukanurpatti, Vallam, Thanjavur.	Online
4.	Mr. S. Govindaswamy Assistant Professor	Dept of EEE, PRIST DU	Online
5.	Mr.B.Kunjithapatham Associate Professor	Dept of EEE, PRIST DU	Online
6.	Mr.R Elangovan, Assistant Professor	Dept of EEE, PRIST DU	Online
7.	Mrs. R. Prasannadevi, Assistant Professor	Dept of EEE, PRIST DU	Online
8.	Mr. D. Hariharan, Assistant Professor	Dept of EEE, PRIST DU	Online
9.	Ms.G.Krithiga Assistant Professor	Dept of EEE, PRIST DU	Online

Date:

BOS Chairman/HOD Seal

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

PROGRAM HANDBOOK

B.TECH FULL TIME

[REGULATION 2017]

[for candidates admitted to B.Tech EEE program from June 2017 onwards]

SEMESTER I

S.No	Course Code	Course Title	L	T	P	C
1	17147S11	Communicative English	5	1	0	4
2	17148S12	Engineering Mathematics - I	5	1	0	4
3	17149S13	Engineering Physics	5	1	0	4
4	17149S14	Engineering Chemistry	5	1	0	4
5	17154S15	Engineering Graphics	5	1	0	4
6	17150S16	Problem Solving and Python programming	5	1	0	4
7	171501.17	Problem Solving and Python Programming Laboratory	0	0	3	2
8	171491.18	Physics and Chemistry Laboratory	0	0	3	2
9	171VEA19	Value Education				1
					TOTAL CREDITS	29

SEMESTER – II

S.No	Course Code	Course Name	L	T	P	C
1	17147S21	Technical English	5	1	0	4
2	17148S22A	Engineering Mathematics - II	5	1	0	4
3	17149S23B	Physics for Electronics Engineering	5	1	0	4
4	17149S24A	Environmental Science and Engineering	5	1	0	4
5	17153S25C	Circuit Theory	5	1	0	4
6	17154S26C	Basic Civil and Mechanical Engineering	5	1	0	4
7	171541.27	Engineering Practices Laboratory	0	0	3	2
8	17153L28C	Electric Circuits Laboratory	0	0	3	2
9	1711CA29	Fundamentals of Indian Constitution and Economy				1
					TOTAL CREDITS	29

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SEMESTER III

S.No	Course Code	Course Name	L	T	P	C
1	17149S31C	Transforms and Partial Differential Equations	3	1	0	4
2	17153C32	Digital Logic Circuits	3	1	0	3
3	17153C33	Electromagnetic Theory	2	2	0	3
4	17153C34	Electrical Machines - I	2	2	0	3
5	17153C35	Electron Devices and Circuits	3	0	0	3
6	17153C36	Power Plant Engineering	3	0	0	3
7	17153L37	Electronics Laboratory	0	0	3	2
8	17153L38	Electrical Machines Laboratory - I	0	0	3	2
					TOTAL CREDITS	23

SEMESTER IV

S.No	Course Code	Course Name	L	T	P	C
1	17149C41C	Numerical Methods	4	0	0	4
2	17153C42	Electrical Machines - II	2	2	0	3
3	17153C43	Transmission and Distribution	3	0	0	3
4	17153C44	Measurements and Instrumentation	3	0	0	3
5	17153C45	Linear Integrated Circuits and Applications	3	0	0	3
6	17153C46	Control Systems	3	2	0	4
7	17153L47	Electrical Machines Laboratory - II	0	0	3	2
8	17153L48	Linear and Digital Integrated Circuits Laboratory	0	0	4	2
9	17153L49	Technical Seminar	0	0	2	1
10	17153CRS	Research Led Seminar	0	0	0	1
					TOTAL CREDITS	26

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SEMESTER – V

S.No	Course Code	Course Name	L	T	P	C
1	17153C51	Power System Analysis	3	0	0	3
2	17153C52	Microprocessors and Microcontrollers	3	0	0	3
3	17153C53	Power Electronics	3	0	0	3
4	17153FE54_	Free Elective - I*	3	0	0	3
5	17153C55	Digital Signal Processing	2	2	0	3
6	17153C56	Object Oriented Programming	3	0	0	3
7	17153L57	Control and Instrumentation Laboratory	0	0	3	2
8	17153L58	Object Oriented Programming Laboratory	0	0	3	2
9	17153L59	Professional Communication	0	0	2	1
10	17153CRM	Research Methodology	3	0	0	3
					TOTAL CREDITS	26

SEMESTER – VI

S.No	Course Code	Course Name	L	T	P	C
1	17153C61	Solid State Drives	3	0	0	3
2	17153C62	Protection and Switchgear	3	0	0	3
3	17153C63	Embedded Systems	3	0	0	3
4	17153E64_	Elective - I	3	0	0	3
5	17153E65__	Elective - II	3	0	0	3
6	17153L66	Power Electronics and Drives Laboratory	0	0	3	2
7	17153L67	Microprocessors and Microcontrollers Laboratory	0	0	3	2
8	17153MP68	Mini Project	0	0	4	2
9	17153CBR	Participation in Bounded Research	0	0	0	2
					TOTAL CREDITS	23

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SEMESTER – VII

S.No	Course Code	Course Name	L	T	P	C
1	17153C71	High Voltage Engineering	3	0	0	3
2	17153C72	Power System Operation and Control	3	0	0	3
3	17153C73	Renewable Energy Systems	3	0	0	3
4	17153FE74_	Free Elective -II	3	0	0	3
5	17153E75_	Elective - III	3	0	0	3
6	17153E76_	Elective - IV	3	0	0	3
7	17153L77	Power System Simulation Laboratory	0	0	3	2
8	17153L78	Renewable Energy Systems Laboratory	0	0	3	2
9	17153CSR	Participation in Scaffolded Research (Design / Socio Technical Project)	0	0	0	4
					TOTAL CREDITS	26

SEMESTER – VIII

S.No	Course Code	Course Name	L	T	P	C
1.	17153E81_	Elective - V	3	0	0	3
2.	17153E82_	Elective - VI	3	0	0	3
3.	17153P81	Project Work	-	-	-	12
4.	17153CEC	Comprehensive Exit Course				2
					TOTAL CREDITS	20

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LIST OF ELECTIVES

ELECTIVE –I (VI SEMESTER)

S.No	Course Code	Course Name	L	T	P	C
1.	17153E64A	Advanced Control System	2	2	0	3
2.	17153E64B	Visual Languages and Applications	3	0	0	3
3.	17153E64C	Design of Electrical Apparatus	3	0	0	3
4.	17153E64D	Power Systems Stability	3	0	0	3
5.	17153E64E	Modern Power Converters	3	0	0	3
6.	17153E64F	Intellectual Property Rights	3	0	0	3

ELECTIVE – II (VI SEMESTER)

S.No	Course Code	Course Name	L	T	P	C
1.	17153E65A	Principles of Robotics	3	0	0	3
2.	17153E65B	Special Electrical Machines	3	0	0	3
3.	17153E65C	Power Quality	3	0	0	3
4.	17153E65D	EHVAC Transmission	3	0	0	3
5.	17153E65E	Communication Engineering	3	0	0	3

ELECTIVE – III (VII SEMESTER)

S.No	Course Code	Course Name	L	T	P	C
1	17153E75A	Disaster Management	3	0	0	3
2	17153E75B	Human Rights	3	0	0	3
3	17153E75C	Operations Research	3	0	0	3
4	17153E75D	Probability and Statistics	3	0	0	3
5	17153E75E	Fiber Optics and Laser Instrumentation	3	0	0	3

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ELECTIVE – IV (VII SEMESTER)

S.No	Course Code	Course Name	L	T	P	C
1	17153E76A	System Identification and Adaptive Control	3	0	0	3
2	17153E76B	Computer Architecture	3	0	0	3
3	17153E76C	Control of Electrical Drives	3	0	0	3
4	17153E76D	VLSI Design	3	0	0	3
5	17153E76E	Power Systems Transients	3	0	0	3
6	17153E76F	Total Quality Management	3	0	0	3

ELECTIVE – V (VIII SEMESTER)

S.No	Course Code	Course Name	L	T	P	C
1	17153E81A	Flexible AC Transmission Systems	3	0	0	3
2	17153E81B	Soft Computing Techniques	3	0	0	3
3	17153E81C	Power Systems Dynamics	3	0	0	3
4	17153E81D	SMPS and UPS	3	0	0	3
5	17153E81E	Electric Energy Generation, Utilization and Conservation	3	0	0	3
6	17153E81F	Professional Ethics in Engineering	3	0	0	3
7	17153E81G	Principles of Management	3	0	0	3

ELECTIVE – VI (VIII SEMESTER)

S.No	Course Code	Course Name	L	T	P	C
1	17153E82A	Energy Management and Auditing	3	0	0	3
2	17153E82B	Data Structures	3	0	0	3
3	17153E82C	High Voltage Direct Current Transmission	3	0	0	3
4	17153E82D	Microcontroller Based System Design	3	0	0	3
5	17153E82E	Smart Grid	3	0	0	3
6	17153E82F	Biomedical Instrumentation	3	0	0	3
7	17153E82G	Fundamentals of Nano Science	3	0	0	3

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FREE ELECTIVE (V SEM)

S.No	Course Code	Course Name	L	T	P	C
1	17150FE54A	Database Management System	3	0	0	3
2	17152FE54A	Basics of Biomedical Instrumentation	3	0	0	3
3	17154FE54A	Renewable Energy Sources	3	0	0	3
4	17155FE54A	Air Pollution and Control Engineering	3	0	0	3
5	17150FE54B	Cloud computing	3	0	0	3
6	17152FE54B	Sensors and Transducers	3	0	0	3
7	17154FE54B	Automatic System	3	0	0	3
8	17155FE54B	Geographic Information System	3	0	0	3

FREE ELECTIVE (VII SEM)

S.No	Course Code	Course Name	L	T	P	C
1	17150FE74A	Introduction to C Programming	3	0	0	3
2	17152FE74A	Robotics	3	0	0	3
3	17154FE74A	Industrial safety	3	0	0	3
4	17155FE74A	Green Building Design	3	0	0	3
5	17150FE74B	Datastructures and Algorithms	3	0	0	3
6	17152FE74B	Electronic Devices	3	0	0	3
7	17154FE74B	Testing of Materials	3	0	0	3
8	17155FE74B	Waste water Treatment	3	0	0	3

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CREDITS DISTRIBUTION

CGPA CREDITS

Semester	Core	Elective	Free Elective	Comprehensive Exit Course	RSD Course	Others	Total
I	28	-	-	-	-	-	28
II	28	-	-	-	-	-	28
III	23	-	-	-	-	-	23
IV	25	-	-	-	01	-	26
V	20	-	03	-	03	-	26
VI	15	06	-	-	02	-	23
VII	13	06	03	-	04	-	26
VIII	12	06	-	02	-	-	20
Over ALL Credits							200

NON CGPA CREDITS

Semester	Add on course	Total
I	01	01
II	01	01
III	-	-
IV	-	-
V	-	-
VI	-	-
VII	-	-
VIII	-	-
Co curricular Activities	In-plant Training , Industrial Visit , Seminars & Conferences	03
TOTAL NON-CGPA CREDITS		05

TOTAL CREDITS	
CGPA CREDITS	200
NON-CGPA CREDITS	05
TOTAL	205

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NEWLY ADDED ELECTIVE COURSE SYLLABUS

17153E65E - COMMUNICATION ENGINEERING

OBJECTIVES:

- To introduce the relevance of this course to the existing technology through demonstrations, case studies, simulations, contributions of scientist, national/international policies with a futuristic vision along with socio-economic impact and issues
- To study the various analog and digital modulation techniques
- To study the principles behind information theory and coding
- To study the various digital communication techniques

LEVEL I ANALOG MODULATION

Amplitude Modulation – AM, DSBSC, SSBSC, VSB – PSD, modulators and demodulators – Angle modulation – PM and FM – PSD, modulators and demodulators – Superheterodyne receivers

LEVEL II PULSE MODULATION

Low pass sampling theorem – Quantization – PAM – Line coding – PCM, DPCM, DM, and ADPCM And
ADM, Channel Vocoder - Time Division Multiplexing, Frequency Division Multiplexing

LEVEL III DIGITAL MODULATION AND TRANSMISSION

Phase shift keying – BPSK, DPSK, QPSK – Principles of M-ary signaling M-ary PSK & QAM – Comparison, ISI – Pulse shaping – Duo binary encoding – Cosine filters – Eye patterns, equalizers

LEVEL IV INFORMATION THEORY AND CODING

Measure of information – Entropy – Source coding theorem – Shannon–Fano coding, Huffman Coding, LZ Coding – Channel capacity – Shannon-Hartley law – Shannon's limit – Error control codes – Cyclic codes, Syndrome calculation – Convolution Coding, Sequential and Viterbi decoding

LEVEL V SPREAD SPECTRUM AND MULTIPLE ACCESS

PN sequences – properties – m-sequence – DSSS – Processing gain, Jamming – FHSS – Synchronisation and tracking – Multiple Access – FDMA, TDMA, CDMA.

OUTCOMES:

At the end of the course, the student should be able to:

- Ability to comprehend and appreciate the significance and role of this course in the present contemporary world
- Apply analog and digital communication techniques.
- Use data and pulse communication techniques.
- Analyze Source and Error control coding.

TOTAL -45 PERIODS

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17153E76B-COMPUTER ARCHITECTURE

OBJECTIVES:

- Demonstrate concepts of parallelism in hardware/software.
- Discuss memory organization and mapping techniques.
- Describe architectural features of advanced processors.
- Interpret performance of different pipelined processors.

LEVEL I BASIC STRUCTURE OF A COMPUTER SYSTEM

Functional Units — Basic Operational Concepts — Performance — Instructions: Language of the Computer — Operations, Operands — Instruction representation — Logical operations — decision making — MIPS Addressing

LEVEL II ARITHMETIC FOR COMPUTERS

Addition and Subtraction — Multiplication — Division — Floating Point Representation — Floating Point Operations — Subword Parallelism

LEVEL III PROCESSOR AND CONTROL UNIT

A Basic MIPS implementation — Building a Datapath — Control Implementation Scheme — Pipelining — Pipelined datapath and control — Handling Data Hazards & Control Hazards — Exceptions.

LEVEL IV PARALLELISIM

Parallel processing challenges — Flynn's classification — SISD, MIMD, SIMD, SPMD, and Vector Architectures — Hardware multithreading — Multi-core processors and other Shared Memory Multiprocessors — Introduction to Gmphics Processing Units, Clusters, Warehouse Scale Computers and other Message-Passing Multiprocessors.

LEVEL V MEMORY & I/O SYSTEMS

Memory Hierarchy — memory technologies — cache memory — measuring and improving cache performance — virtual memory, TLB's — Accessing I/O Devices — Interrupts — Direct Memory Access — Bus structure — Bus operation — Arbitration — Interface circuits — USB.

OUTCOMES:

At the end of the course, the student should be able to:

To conceptualize the basics of organizational and architectural issues of a digital computer. To analyze performance issues in processor and memory design of a digital computer. To understand various data transfer techniques in digital computer.

TOTAL -45 PERIODS

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VALUE ADDED COURSE SYSLLABUS

205153ELE - ELECTRICAL LOAD ESTIMATION AND DESIGNING COURSE

Course objective:

- Electrical Drawings and Documentations
- Fundamentals of Electrical Design & Engineering
- Developments of Single Line Diagrams and Control Schematics
- Load Estimation of Plants
- Selection, Sizing and Protections of Electrical Equipments
- Cables Selection, Sizing and Cable Routing

SYSTEM PLANNING

- Basic design considerations
- Planning guide for the supply and distribution system
- Power system modernization and evaluation studies/programs
- Voltage considerations
- Voltage control in electric power systems
- Voltage selection
- Voltage ratings for low-voltage utilization equipment
- Voltage drop considerations in locating the low-voltage/ high-voltage
- Calculation of voltage drops

COST ESTIMATING OF INDUSTRIAL POWER SYSTEMS

- Preparing the cost estimate
- Classes of estimates
- Equipment and material costs
- Installation costs
- Other costs

LIGHTING DESIGN

- Different entities of illuminating systems
- Light sources: daylight, incandescent, electric discharge, fluorescent, arc lamp and Lasers
- Luminaries, wiring, switching & control circuits
- Laws of illumination; illumination from point, line and surface sources Photometry and spectrophotometry.
- Interior lighting – industrial, residential, office departmental stores, indoor stadium, theater and hospitals.
- Exterior lighting- flood, street, aviation and transport lighting, lighting for displays and signaling- neon signs, LED-LCD displays beacons and lighting for surveillance.

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CABLE SIZING AND SELECTION OF SINGLE PHASE AND THREE PHASE

- Load Details Calculation
- Cable type and Construction features
- Site Installation Conditions
- Cable Selection Based on Current Rating of feeder
- Base Current Ratings of feeder
- Installed Current Ratings of Cable
- Cable Selection and Coordination with Protective Devices

INTERNAL ELECTRIFICATION DESIGN

- Electrical Layout in residential building using Auto CAD
- Selection of house wiring
- Sizing and Selection of Conduit
- Sizing and selection of Switch Socket
- Calculation of load on circuit
- Design of sub circuit (Lighting Circuit and Power Circuit)
- Distribution of Power Circuit

COURSE DURATION : 45 HRS

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20515ED -ELECTRICAL DESIGN AND DRAWINGS

Course objective

This course is designed to help students to understand the fundamentals of electrical drawings including logic diagrams, wiring layout and CAD. After completing this course, the trainees will possess a professional knowledge of different types of drawings and diagrams and understand their purpose and flow.

MODULE 1

ELECTRICAL DRAWINGS

- Drawings – relevance to engineering
- Standards & their necessity
- CAD & drawing standards
- Drawings in plant engineering
- Manufacturing organization
- Typical engineering drawing & its parts

MODULE 2

TWO DIMENSIONAL DRAWINGS

- Different types of drawing
- Electrical layout drawing & types
- Wiring diagram, Drawing scales, block
- Symbology for various types of drawings

MODULE 3

LINE DIAGRAMS

- Power & control circuit diagrams
- Commonly used symbols
- Applications of schematic diagrams
- Single line diagram – advantages & example
- Terms associated with single line diagram

MODULE 4

CABLING, WIRING LAYOUT AND CABLE SCHEDULE

- Different types of cabling drawings
- Wiring diagrams
- Cable system drawings
- Different types of wiring drawings
- Difference between cabling & wiring drawings

COURSE DURATION: 45 Hours

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185153MEE-MATLAB FOR ELECTRICAL ENGINEERS

Outcomes:

The course focuses on how to implement complex decision flows and finite-state machines using State flow and provides a general understanding of how to accelerate the design process for closed-loop control systems using MATLAB

- MATLAB built-in functions
- 2D and 3D plots
- Simulink modelling
- Model Based Designing
- Masks and Subsystems.
- Lookup table editor and breakpoints
- Stateflow modelling
- Hierarchical state machines
- Parallel state machines
- Events in state machines
- Functions in state machines
- Truth tables and State transition tables
- Control systems stability analysis
- Controller implementation – P, PI, PID
- Frequency response estimation
- Simscape modelling
- Selecting solver methods
- Connecting physical signals and simulink signals

COURSE DURATION: 45 Hours

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19515310T DESIGN OF PROJECT USING IOT

Objective of the Course:

This Course focuses on hands-on IoT concepts such as sensing, actuation and communications. It covers the development of Internet of Things (IoT) prototypes — including devices for sensing, actuation, processing, and communication — to help you develop skills and experiences. The Internet of Things (IOT) is the next wave, as world is going to witness. Today we live in an era of connected devices the future is of connected things.

Learning Outcome:

After the completion of the course, the students will be able design some IOT based prototypes.

Detailed Course Syllabus:

1. **Introduction to IOT**
   - Understanding IoT fundamentals
   - IOT Architecture and protocols
   - Various Platforms for IoT
   - Realtime Examples of IoT
   - Overview of IoT components and IoT Communication Technologies
   - Challenges in IOT

2. **Arduino Simulation Environment**
   - Arduino Uno Architecture
   - Set up the IDE, Writing Arduino Software
   - Arduino Libraries
   - Basics of Embedded C programming for Arduino
   - Interfacing LED,push button and buzzer with Arduino
   - Interfacing Arduino with LCD

3. **Sensor & Actuators with Arduino**
   - Overview of Sensors working
   - Analog and Digital Sensors
   - Interfacing of Temperature, Humidity, Motion, Light and Gas Sensor with Arduino
   - Interfacing of Actuators with Arduino.
   - Interfacing of Relay Switch and Servo Motor with Arduino

P. Anj

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4. Basic Networking with ESP8266 WIFI module

- Bases of Wireless Networking
- Introduction to ESP8266 Wi-Fi Module
- Various Wi-Fi library
- Web server - introduction, installation, configuration
- Posting sensor(s) data to web server

COURSE DURATION: 45 Hours

165153ESR - ENTERPRENUERSHIP AND SOCIAL RESPONSIBILITY

OBJECTIVES:

- To provide knowledge about The Social Entrepreneurship
- Help students to develop "a Social entrepreneurial imagination and to bring out the Practice of Social Entrepreneurship in India.

UNIT-I: ENTREPRENEUR AND ENTREPRENEURSHIP

Meaning, definition: Entrepreneur, Entrepreneurship. Types of Entrepreneurs –Social entrepreneur, Serial entrepreneur, Life style entrepreneur. Types of Entrepreneurship –creative entrepreneurship, inclusive entrepreneurship, knowledge entrepreneurship. Entrepreneurial characteristics: Inspiration, creativity, direct action, courage and fortitude. Characteristics ofentrepreneur: innovate, introduces new technologies, catalyst, creative, generating opportunity for profit or reward. Entrepreneurship development in India. Scope of entrepreneur development. Concepts of Value Creation.

UNIT-II :SOCIAL ENTREPENEUR, SOCIAL ENTREPRENEURSHIP AND SOCIAL ENTER PRISES

Meaning, definition: Social entrepreneur, social entrepreneurship, social enterprises. Characteristics of Social Entrepreneurship - Explicitly formulated mission to create and sustain social value and to benefit the communities, high degree of economic risk and autonomy in activities related to producing goods and/or selling services, pursuit of new opportunities and exploration of hidden resources to serve that missions, quest for sustainable models, based on well elaborated feasibility study, ongoing engagement in innovation, adaption and learning, decision- making power not based on capital ownership, participatory and collaborative nature involving various stake holders, limited distribution of profit and minimum amount of paid,change opportunities lying in the hands of every individual.Characteristics of Social Entrepreneur- social catalysts, socially aware, opportunity seeking,innovative, resourceful, accountable. Differences between Business and Social entrepreneur,Entrepreneurship and Social Entrepreneur ship. Social Entrepreneurship in developing countriesand in India.

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UNIT-III : THE SOCIAL ENTREPRENEURSHIP PROCESS

The Timmons Model of the Entrepreneurship Process, The PCDO (The People, Context, Deal, and opportunity)frame work, The Case Model, The Social Entrepreneurship Frame work.

Sources of Social Entrepreneurship -Public Sector, Private Sector, Voluntary Sector Qualities and Skills of Social Entrepreneur - Entrepreneurial, innovative, transformatory,leadership, storytelling, people, visionary opportunities, alliance building, questions and doubts,accountability, missing skills, succession, scale

UNIT-IV :SOCIAL ENTREPRENEURSHIP IN PRACTICE

Bangladesh Rural Advancement Committee (BRAC), The Grameen Bank (GB), The Self Employment Women's Association (SEWA), Aravind Eye Hospital,Barefoot College, Bhartia Samruddhi Investment& Consulting Services (BASIX), Narayana Hrudayalaya Institute of Medical Sciences, Technology Informatics Design Endeavour (TIDE),Boundaries of Social Entrepreneurship – Social service provision, Social activism

UNIT-V :ETHICAL ENTREPRENEURSHIP AND CHALLENGES IN SOCIAL ENTREPRENEURSHIP

Ethical entrepreneurship, Meaning, Empirical ethics, eternal ethics, Entrepreneur and customer, Entrepreneur and employee, Entrepreneur and Government, Challenges in Socia Entrepreneurship

COURSE DURATION: 45 Hours

1852531CE- INDUSTRIAL CONTROL ELECTRONICS

Lesson Objectives :

- To define Automation and Control and explain the differences in the sense of the terms
- To explain the relation between Automation and Information Technology
- To underline the basic objectives of a manufacturing industry and explain how automation and control technologies relate to these .

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DETAILED CONTENTS

UNIT 1. INTRODUCTION TO SCR

1.1 Power diode characteristics, application of general purpose diode, fast recovery diode and Schottkey diode, use in R, RL series circuit

1.2 Construction and working principles of an SCR, two transistor analogy and characteristics of SCR

1.3 SCR specifications and rating

1.4 Construction, working principles and V-I characteristics of DIAC, TRIAC and Quadriac

1.5 Basic idea about the selection of heat sinks for SCR and TRIACS

1.6 Methods of triggering a Thyristor. Study of triggering circuits

1.7 UJT, its Construction, working principles and V-I characteristics, UJT relaxation oscillator

1.8 Commutation of Thyristors 1.9 Series and parallel operation of Thyristors 1.10 Applications of SCR, TRIACS and Quadriac such as Light intensity control, speed control of DC and universal motor, fan regulator, battery charger etc. 1.11 dv/dt and di/dt protection of SCR.

UNIT 2. CONTROLLED RECTIFIERS

2.1 Single phase half wave controlled rectifier with resistive load and inductive load, concept of freewheeling diode

2.2 Single phase half controlled full wave rectifier

2.3 Single phase fully controlled full wave rectifier

2.4 Single phase full wave centre tapped rectifier

2.5 Three phase full wave half controlled bridge rectifier

2.6 Three phase full wave fully controlled bridge rectifier

UNIT 3. INVERTERS, CHOPPERS, DUAL CONVERTERS AND CYCLO CONVERTORS

3.1 Inverter-introduction, working principles, voltage and current driven series and parallel inverters and applications

3.2 Choppers-introduction, types of choppers and their working principles and applications

3.3 Dual converters-introduction, working principles and applications

3.4 Cyclo-converters- introduction, types, working principles and applications

UNIT 4. THYRISTOR CONTROL OF ELECTRIC DRIVES

4.1 DC drives control (Basic Concept)

4.2 Half wave drives

4.3 Full wave drives

4.4 Chopper drives

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4.5 AC drives control

4.6 Phase control

4.7 Variable frequency a.c drives

4.8 Constant V/F application

4.9 Voltage controlled inverter drives

4.10 Constant current inverter drives

4.11 Cyclo converters controlled AC drives

4.12 Slip control AC drives

UNIT 5 UNINTERRUPTED POWER SUPPLIES

5.1 UPS online, off line

5.2 Storage devices (batteries)

5.3 SMPS, CVT LIST OF PRACTICALS 1. To draw V-I characteristic.

COURSE DURATION: 45 Hours

185153FAR- FACTORY AUTOMATION AND ROBOTICS

UNIT 1 :Programmer, Engineering and Scientific; converts scientific, engineering, and other technical problem formulations; Resolves symbolic formulations, prepares flow charts and block diagrams, and encodes resultant equations for processing by applying extensive knowledge of branch of science, engineering.

UNIT 2: Metal Inert Gas/Metal Active Gas/Gas Metal Arc Welder (MIG/MAG/GMAW): perform manual (semi-automatic) MIG/MAG (GMAW) welding for a range of standard welding job requirements and weld different materials (carbon steel, aluminium and stainless steel) in various positions. The welder can prepare various joints including corner, butt, fillet and tee. Set-up and prepare for operations interpreting the right information from the WPS.

UNIT 3:Pick and Place Operator: operates the automated pick-and-place machine for assembling components on the printed circuit board (PCB), maintains the automated pick-and-place machine for placing different types of components on the surface of PCBs for soldering.

UNIT 4: Modeller: responsible for visualization of the final product; develop clay model from the design, transforming the sketch into digital data ; three-dimensional shape and building mock-up. A modeller's working characteristics.

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UNIT 5:Application Maintenance Engineer; responsible for ensuring the availability of an application or product for end users. Such roles provide on-going/ad-hoc support for software products or customized applications aimed towards correction of faults/bugs or improvement of performance.

COURSE DURATION: 45 Hours

185153WIM- WINDING OF INDUCTION MOTOR

Course objectives:

Induction motors are electric motors that use alternating current (AC), propelled by a magnetic field that rotates. They are made up of a rotor, a stator and coils that convert electrical energy into mechanical energy using electromagnetic induction.

Unit 1: Stator winding

The stator winding is fed with a 3-phase supply and has a definite number of poles. The number of poles is determined by the desired speed of the motor. The stator winding can be connected in either a star or delta configuration.

Unit 2: Rotor winding

The rotor winding can be a polyphase secondary winding or a squirrel-cage secondary winding.

Unit 3: Working principle

The stator winding produces a rotating magnetic flux (RMF) when supplied with a 3-phase current. This RMF induces an emf in the rotor conductors, which causes the rotor to rotate in the same direction as the stator flux. The difference between the synchronous speed of the motor and its actual speed is known as the slip.

Unit 4: Starting methods

The three phases of the winding are connected in either a star or delta configuration depending on the starting method used. For example, squirrel cage motors are usually started with a star-delta stator.

Unit 5: Advantages

Induction motors have several advantages, including low cost, high efficiency, and simple construction.

COURSE DURATION: 45 Hours

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Dr. B.Chandrasekaran, M.Sc(Ag), Ph.D.,
F.(ISA), F.ISR(FOA, Rome), C.SRINM (IRRI), Prod. Advocate (APO, Japan)
Dean (Academic),
School of Agriculture

Date:11.05.2020

CIRCULAR

All the staff members are requested to attend the Board of Study Meeting scheduled on 20.05.2020(Wednesday) between 10.00 AM to 12.30 PM at Dean cabin, School of Agriculture under the chairmanship of Dr. B.Chandrasekaran. all are requested to attend without fail.

Dean
School of Agriculture

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SCHOOL OF AGRICULUTRE

DEPARTMENT ACADEMIC COMMITTEE MEETING 2020-2021

AGENDA

Date: 20.05.2020 (10.00AM) **Venue: School of Agriculture**

1.	**Welcome address** Welcome address by council chairperson
2.	**Confirmation minutes** To confirm the minutes of the pre board of study meeting
3.	**Items reporting the board of study meeting** Value added course Syllabus regulation

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SCHOOL OF AGRICULTURE

MINUTES OF MEETING

The meeting board of studies in School of Agriculture was held on 20th May 2020 Wednesday at 10.00 am. Under the chairmanship of Dr. A. Sathiyavelu

The following members were present for the meeting

Name and Designation

1. Dr. A. Sathiyavelu
   Professor, Chairman
2. Dr. B. Chandrasekaran
   Dean
3. Prof. N. Ilanchezhian
   Professor, Member
4. Dr. P. Selvaraj
   Professor, Member
5. Dr.V.Shanthi
   Associate professor, Member
6. Dr. K. Kumarakuru
   Associatel Professor, Member
7. Dr.V.A.Thiruppathi
   Assistant professor , member
8. Ms. J.Janusia
   Assistant Professor, Member
9. Dr. C. Rathinasabapathy,
   Professor (Pathology), PAJANCOA, Karaikal Puducherry
   Academic Expert – External Member

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9. Mr. S. Saravann

Seed Production and seed processing Unit,

Kumbakonam - Industrial Expert –ExternalMember

The Chairman, Board of Studies in the School of Agriculture welcomed the members and briefed about the existing curriculum and syllabus for B.Sc (Hons.) Agri programme.

The minutes of the meeting are as follows,

1. The board of study meeting discuss about DAC meeting and confirmation the minutes of DAC meeting
2. The board of study meeting decide to follow the previous regulation for forthcoming batch
3. The board of study meeting discuss about value added course. In the BOS meeting decide to add new value -added course based on skill, Employability and entrepreneurship development.

THE LIST OF NEW VALUE ADDED COURSE:

Certificate course on Agricultural Technology

Certificate course on tissue culture

Certificate course on Azolla cultivation

Certificate course on Vermi compost Technology

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VALUE ADDED COURSE SYLLABUS

SUSTAINABLE SUGARCANE INITIATIVE

Unit I: Botany, Climate, Season and Varieties of Sugarcane

Unit II: nursery management and cultivation practice in soil

Unit III: irrigation and nutrient management in SSI

Unit IV : crop protection (weed management, disease, pest management)

Unit V: harvest and post- harvest technology

TISSUE CULTURE

Unit 1- Introduction - History, Scope and Concepts of basic techniques in plant tissue culture. Laboratory requirements and organization. Sterilization - filter, heat, wet and chemical. Media preparation - inorganic nutrients, organic supplements, carbon source, vitamins, gelling agents, phytohormones and growth regulators; composition of commonly used culture media (MS and Gamborg's)

Unit 2-Cell, tissue and organ culture Isolation of single cells, selection and types of cells. Tissue explants and organs for culture - Cell suspension cultures - batch, continuous. Synchronization of suspension culture, cellular totipotency, Cytological, cytochemical and vascular differentiations

Unit 3 Elite and ornamental Plants for propagation in vitro, Selection of superior biotypes of orchids, roses, jasmine, Hibiscus and crotons; Clonal propagation of elite germplasms, clonal propagation strategies for commercial exploitations

Unit 4 - Micro propagation - Factors affecting morphogenesis and proliferation rate; technical problems in micro propagation. Organogenesis - formation of shoots and roots, production of virus free plants by meristem and shoot-tip culture

Unit 5 Somatic embryogenesis - Process of somatic embryogenesis, structure, stages of embryo development factors affecting embryogenesis; production of artificial seeds;

AZOLLA CULTIVATION

Unit-I Azolla-Definition - types, importance of azolla in agriculture

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Unit 2-Azolla Cultivation pratices

Unit 3-Poultry and livestock - benefits of Azolla, IFS Model for wetland cultivation

Unit 4-Production technology of Azolla

Unit 5-Marketing and monitoring field performance-Economics of microbial inoculants

VERMIC OMPOST TECHNOLOGY

Unit-1 Introduction to vermiculture, definition, meaning, history, economic important, their value in maintenance of soil structure, role as four's of recycling reduce, reuse, recycle, restore.

Unit 2-Biology of Eisenia fetida. a) Taxonomy Anatomy, physiology and reproduction of Lumbricidae. b) Vital cycle of Eiseaia fetida: allmentation, fecundity, annual reproducer potential and limit factors (gases, diet, humidity, temperature, PH, light, and climatic factors). Complementary activities of auto evaluation.

Unit 3-Agriculture Product Marketing. Co-operative Credit Societies- Functions, Structure Importance and Problems, District Central Co-operative Banks - Functions

Unit 4-Production technology of Vermicompost

Unit 5-Marketing and monitoring field performance -Economics of vermicompost.

ORGANIC FARMING

Unit 1: Introduction (Definition of organic farming and an Overview of organic farming) Systems Concept/Theory (Components, interactions, structures, hierarchies)

Unit II: Initiatives taken by the central and state governments, NGOs and other organizations for promotion of organic agriculture in India. Organic nutrient sources and their fortification organic manures-methods of composting

Unit III: Nutrient use in organic farming-scope and limitations. Nutrient management inorganic farming. Organic ecosystem and their concepts

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Unit IV: Fundamentals of insect, disease and weed management under organic mode of production-cultural-biological methods-non chemical pest & disease management. Botanicals pyrethrum, neem seed kernel extract, neem seed powder, soluble neem formulations, neem oil

Unit V: Inspection certification labelling and accreditation procedures for organic products. Processing economic consideration and viability. Marketing and export potential of organic products-national economy.

FISH FARMING

Unit-1 Classification and characteristic features of common species of fishes, brackish water and marine ornamental fishes.

Unit 2- Construction and setting up freshwater aquarium and its maintenance; aquarium plants.

Unit 3 - Mass production of ornamental fishes-food and feeding habits, water quality maintenance, breeding and rearing.

Unit 4-Bacterial and viral diseases of aquarium fishes-causes, symptoms and control.

Unit 5-Fungal, parasitic and nutritional deficiency diseases-causes, symptoms and control

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SCHOOL OF COMMERCE AND MANAGEMENT

DEPARTMENT OF BUSINESS MANAGEMENT

Minutes of Board of Studies Meeting

There will be a Board of Studies Meeting on 28.07.2020at 10.00 am Video Conference Media: ZOOM, PRIST University, Thanjavur. All the staff members are requested to attend the meeting link

https://teams.microsoft.com/l/meetup-join/19%3ameeting_Mzd8OTg1MDMtZDllOC00ZWJmLWE2YmMtOTg0Y2O2YWEwNTAx%40thread.v2/0?context=%7b%22Tid%22%3a%2219b1214-bb5e-4b19-bedf-623e63a52705%22%2c%22Oid%22%3a%22ee3132 18-cadb-4b78-81eb-c8b587a720e9%22%7d

The following members were present:

Dr K G Selvan (Chairperson/HoD)

Prof. V. C. Mallarmannan (External Expert-Academic)

Mr. P. Mukesh Kumar (External Expert- Industry)

Dr. S. Venkatesh / Prof & Member of BOS

Dr. P. Balasubramanian/ Prof & Member of BOS

Dr. K Rajalakshmi / Prof & Member of BOS

Dr. R. Prema / Prof & Member of BOS

P. Uma Eswari V / Prof & Member of BOS

K. Sasikumar / Prof & Member of BOS

Dr T J Jayasholan (Invited Dean)

A. Sirajudeen (Alumini)

S. Thiyaga (Current student)

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The Chairman (BOS) welcomed all the members and presented the feedbacks about existing curriculum received from various Stack holders and also from the department academic advisory committee.

The members of the Board have unanimously discussed and carefully reviewedthe existing syllabus for (BBA, MBA and M.Phil) in detail and made the necessary changes in upcoming (BBA, MBA, and M.Phil) as mentioned below.

REVIEW OF CURRICULUM & SYLLABUS IN BBA-REGULATION 2020

Resolved to introduce the following Audit Courses in the BBA. (Business Administration) programme curriculum with effect from 2020-21
Semester I: Universal Human Values - 2 credits

Semester II : Communication Skills- 2 credits

Semester III: Office automation- 2 credits

Semester IV: Leadership and Management

Skills- 2 credits Semester V: Professional

Skills- 2 credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in

Annexure-I

Resolved to introduce the following Audit Courses on Soft Skills in the BBA.(Business Administration) programme curriculum with effect from 2020-21

Year I: Basic Behavioral Etiquette: 2 Credits

Year II : General Aptitude and

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Quantitative Ability: 2 CreditsYear III:

Interview Skills Training and Mock

Test: 2 Credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses on Soft Skills as given in **Annexure-II**

Resolved to introduce Audit Course on —Community Engagement with one credit in the 3rd year of BBA programme curriculum with effect from 2020-21

Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of BBA programme with effect from 2020-21.

REVIEW OF CURRICULUM & SYLLABUS in MBA – MANAGEMENT STUDIES –

REGULATION 2020

Resolved to introduce the following Audit Courses on Soft Skills in MBA curriculum with effect from 2020-21 Year I: Technical, General Aptitude and Skill set Development – 2 Credits Year II: Interview Skills Training and Mock Test: 2 Credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses on soft skills asgiven in **Annexure-III Resolve to approve the syllabus for the newly introduced Post Graduate Programme introduce MBA with specialization in Business Analytics in collaboration with IBM-ICE(with effect from 2020-21) as given as Annexure –I**

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REVIEW OF CURRICULUM & SYLLABUS in M.Phil.MANAGEMENT-REGULATION 2020

Resolved to introduce a course on —Research and Publication Ethicsl with 2 credits in the M.Phil.(Management) programme curriculum with effect from 2020-21. Further resolved to approve the syllabus for the same as given in Annexure-III

Members of the Board updated the panel of examiners and submitted the same to the Academic Counsel for its approval.

Annexure 1	- Revised Curriculum structure Credits
Annexure 2	- Revised Curriculum structure and Syllabus of UG
Annexure 3	- Revised Curriculum structure and Syllabus of MBA
Annexure 4	- Revised Curriculum structure and syllabus of M.Phil
Annexure 5	- List of Examiners

Note: Annexure 1,2,3,4 and 5 are Signed by the Chairman of BOS

The Meeting concluded with thanks from Board of Studies

Chairman Signature of the Chairman & Members

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The following New Course Introduced in (2020– 2021)

Name of the Programme	Name of the Course	Course code	Year of Introduction
BBA	Indian Constitution	201LSCIC	2020
BBA	Universal Human Values	201LSCUV	2020
BBA	Communication Skills	201LSCCS	2020
BBA	Basic Behavioral Etiquette	201SSCBE	2020
BBA	Office automation	201LSCOA	2020
BBA	Leadership and Management Skills	201LSCLS	2020
BBA	General Aptitude and Quantitative Ability	20135CAQ	2020
BBA	Professional Skills	201ACLSPSL	2020
BBA	Interview Skills Training and Mock Test	201SSCIM	2020
BBA	Community Engagement	201LSCCE	2020
BBA	Tally ERP 9	201TERP9	2020
BBA	Principles of Banking System	20160DSC55B	2020
BBA	Office Management	20160DSC55C	2020
BBA	Tourism Management	20160DSC55D	2020
BBA	Taxation	20160DSC55E	2020
BBA	Project Management	20160DSC64A	2020

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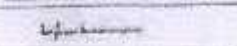
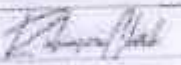
BBA	Hotel Management	20160DSC64C	2020
BBA	Research Management	20160DSC64D	2020
BBA	Change Management	20160DSC64E	2020
MBA	Technical, General Aptitude and Skill Set Development	202SSCAS	2020
MBA	Interview Skills Training and Mock Test	202SSCIM	2020
MBA	Marketing Research	20260EA34	2020
MBA	Global Marketing	20260EA39	2020
MBA	Human Resource Information System	20260EB33	2020
MBA	Global HR Practice	20260EB37	2020
MBA	Human Resource Accounting	20260EB38	2020
MBA	Banking and Indian Financial System	20260EC34	2020
MBA	Global Financial Management	20260EC38	2020
MBA	Project Management	20260EC39	2020
M.PHIL	Research and Publication Ethics	CPE RPE	2020
MBA	Interview Skills Training and Mock Test	202SSCIM	2020

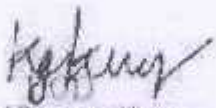
The Board of Studies Discussion on Introduced Value Added Course (2020-2021)

S.NO	COURSE TITLE	COURSE CODE
1	Digital Marketing	2060DM

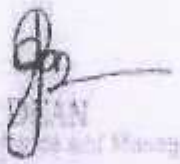
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SIGNATURE

Dr K G Selvan (Chairperson/HoD)	
Prof. V. C. Malarmannan (External Expert-Academic)	
Mr. P. Mukesh kumar (External Expert- Industry)	
Dr. S. Venkatesh / Prof & Member of BOS	
Dr. P. Balasubramanian/ Prof & Member of BOS	
Dr. K Rajalakshmi / Prof & Member of BOS	
Dr. R. Prema / Prof & Member of BOS	
P. Uma Eswari V / Prof & Member of BOS	
K.Sasikumar / Prof & Member of BOS	
Dr T J Jayasholan (Invited Dean)	
A. Sirajudeen (Alumini)	
S. Thyagu (Current student)	



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DEAN
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BACHELOR OF BUSINESS ADMINISTRATION

Course Structure-2020

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami – I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English I	4	0	0	2
20160SEC13	Principles of Management	5	0	0	3
20160SEC14	Managerial Economics	5	0	0	3
20160AEC15	Business Communication	5	0	0	4
20160AEC16	Business Mathematics and Statistics	4	0	0	3
20LCC17	Value Creation	-	-	-	2
	Total	27	0	0	19
	AUDIT COURSE				
20LCC18	Universal Human Values	-	-	-	2

	SEMESTER II				
20110AEC21/ 20131AEC21/ 20111AEC21	Tamil II / Hindi II/ Advanced English II	4	0	0	2
20111AEC22	English II	4	0	0	2
20150SEC23	Financial Accounting	5	0	0	3
20160SEC24	Organizational Behavior	5	0	0	3
20160AEC25	Business Environment	5	0	0	4
20160AEC26	Management Information System	4	0	0	3
	RESEARCH SKILL BASED COURSE				
20160RLC27	Research Led Seminar	0	0	0	1
	Total	**27**	**0**	**0**	**18**

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	AUDIT COURSES				
20ELSCCS	Communication Skills	0	0	0	2
20ESSCBE	Basic Behavioral Etiquette	0	0	0	2

	SEMESTER III				
20110AEC31/ 20131AEC31/ 20111AEC31	Tamil III / Hindi III/ Advanced English III	4	0	0	2
20111AEC32	English III	4	0	0	2
20160SEC33	Management Accounting	4	0	0	3
20160SEC34	Marketing Management	4	0	0	3
20160AEC35	Business Law	5	0	0	4
20160AEC36	Human Resource Management	4	0	0	3
	RESEARCH SKILL BASED COURSE				
20160RMC37	Research Methodology	2	0	0	2
	Total	27	0	0	20
	AUDIT COURSES				
20ELSCOA	Office automation	0	0	0	2

	SEMESTER IV				
20110AEC41 20131AEC41 20111AEC41	Tamil IV / Hindi IV/ Advanced English IV	4	0	0	2
20111AEC42	English IV	4	0	0	2
20160SEC43	Total Quality Management	5	0	0	3
20160SEC44	Cost Accounting	4	0	0	3
20160AEC45	Retail Management	4	0	0	4
20160AEC46	Industrial Relations and Labour Law	4	0	0	3
20ENSTU45	Environmental Studies	2	0	0	2
	Total	27	0	0	20
	AUDIT COURSE				
20ELSCLS	Leadership and Management Skills	0	0	0	2
20ESSCAQ	General Aptitude and Quantitative Ability	0	0	0	2

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SEMESTER V					
20160SEC51	Financial Management	6	0	0	5
20160SEC52	Services Marketing	5	0	0	3
20160SEC53	Production and Operations Management	5	0	0	3
20160SEC54	Global Business Management	6	0	0	4
20160DSC55B	Principles of Banking System	5	0	0	3
RESEARCH SKILL BASED COURSE					
20160BRC55	Participation Bounded Research	0	0	0	1
	Total	27	0	0	20
	AUDIT COURSE				
20IACLSOSL	Professional Skills	0	0	0	2
SEMESTER VI					
20160SEC61	Business Policy and Strategic Management	5	0	0	4
20160SEC62	Entrepreneurial Development	6	0	0	5
20160SEC63	Logistics and Supply Chain Management	5	0	0	4
20160DSC64	Discipline Specific Elective – II	5	0	0	3
201__OEC62 Digit Course Name)	Open Elective	4	0	0	2
20160PRW66	Project Work	0	0	0	4
20160PEE	Programme Exit Exam	0	0	0	2
	Total	25	0	0	24
	AUDIT COURSE				
20ISSCIM	Interview Skills Training and Mock Test	0	0	0	2
20ISSCIM/ 20160DSC55L	Community Engagement Training	0	0	0	1
20ITERD9	Tally ERP 9	0	0	0	2
Total Credits -Programme					116
Total Credits - Audit Courses					21

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Discipline Specific Elective Courses

Semester	Elective No	Course Code	Course Title
V	I	20160DSC54A	Advertising and salesmanship
		20160DSC54B	Investment Management
VI	II	20160DSC64A	Customer Relationship Management
		20160DSC64B	Financial Services

Open Elective Courses

Semester	Course Code	Course Title	Department
VI	20111OEC	Journalism	English
	20114OEC	Food and Adulteration	Chemistry
	20116OEC	Wild life conservation	Microbiology
	20120OEC	E-Learning	Computer science
	20161OEC	Banking Services	Commerce

Audit Courses Audit Courses on Soft Skills

Semester	Elective No	Course Code	Course Title
I	I	201ACLSICN	Indian Constitution
	II	201ACLSUHV	Universal Human Values
II	I	201ACLSCOS	Communicative Skills
	II	201ACSSBBE	Basic Behavioral Etiquette
III	I	2020160DSC53 D1ACLSOAN	Office Automation Finance Management
IV	I	201ACLSLMS	Leadership and Management Skills
	II	201ACSSAQA	General Aptitude and Quantitative Ability
V	I	201ACLSPSL	Professional Skills
VI	I	201ACSSIST	Interview Skills Training and Mock Test
	II	201ACLSCET	Community Engagement

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MASTER OF BUSINESS ADMINISTRATIONCURRICULUM (2020 ONWARDS)

PRIST SCHOOL OF BUSINESS - PG MBA - REGULATION 2020

Sem no	Paper No	Subject Code	Subject Title	L	T	P	C
I	1	20260SEC11	Management Concepts	5	0	0	3
I	2	20260SEC12	Organizational Behaviour	5	0	0	3
I	3	20260SEC13	Accounting for Managers	5	0	0	4
I	4	20260SEC14	Economics for Managers	5	0	0	3
I	5	20260SEC15	Legal Aspects of Business	5	0	0	3
I	6	20260SEC16	Statistics for Managers	5	0	0	4
I	7	20220SEC01	Managerial Skill Development - Lab	0	0	1	1
I	8	20260RLC18	Research Led Seminar	0	0	0	1
			Total	**30**	**0**	**1**	**22**
II	1	20260SEC21	Financial Management	5	0	0	4
II	2	20260SEC22	Human Resources Management	5	0	0	3
II	3	20260SEC23	Marketing Management	5	0	0	3
II	4	20260SEC24	Production & Operations Management	5	0	0	3
II	5	20260RMC25	Research Methodology	5	0	0	3
II	6	20260SEC26	Strategic Management	5	0	0	3
II	7	202SSCAS	Technical, General Aptitude and Skill set Development	0	0	2	2
II	8	20260IRC28	Participation in Rounded Research	0	0	0	2
			Total	**30**	**0**	**1**	**23**
III	1	20260SEC31	International Business Environment	6	0	0	3
III	2	20260SEC32	Operations Research	6	0	0	4
III	3	20260SRC33	Design/Socio-Technical Project	0	0	0	2
III	4	20260E-3-	Elective 1	4	0	0	3
III	5	20260E-3-	Elective 2	4	0	0	3
III	6	20260E-3-	Elective 3	4	0	0	3
III	7	20260E-3-	Elective 4	4	0	0	3
III	8	20260E-3-	Elective 5	4	0	0	3
			Total	**30**	**0**	**0**	**24**
IV	1	20260SEC41	Entrepreneurial Development	5	0	0	4
IV	2	20260E-4-	Elective 6	5	0	0	3
IV	3	20260E-4-	Elective 7	5	0	0	3
IV	4	20260PRW44	Project Work	0	0	0	10
IV	5	202SSCIM	Interview Skills Training and Mock Test	0	0	0	2
IV	6	20260PEE	Programme Exit Exam	0	0	0	2
				15	**0**	**0**	**24**
Total credits							**93**

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Sem	Paper no	Subject code	Sub title	Credit
III	1	20260EA33	Consumer Behavior	3
III	2	20260EA34	Integrated Marketing Communication	3
III	3	20260EA35	Brand Management	3
III	4	20260EA36	Retail Management	3
III	5	20260EA37	Sales Management	3
III	6	20260EA38	Services Marketing	3
III	7	20260EA39	Industrial Marketing	3
III Sem (Human Resource)				
Sem	**Paper no**	**Subject code**	**Sub title**	**Credit**
III	1	20260EB33	Knowledge Management	3
III	2	20260EB34	Organizational Development & Change management	3
III	3	20260EB35	Performance Management	3
III	4	20260EB36	Labor Legislations	3
III	5	20260EB37	Compensation Reward Management	3
III	6	20260EB38	Cross Culture Management	3
III	7	20260EB39	Conflict and Negotiation Management	3
III Sem (Finance)				
Sem	**Paper no**	**Subject code**	**Sub title**	**Credit**
III	1	20260EC33	Security Analysis and Portfolio Management	3
III	2	20260EC34	Derivatives Management	3
III	3	20260EC35	Project Finance	3
III	4	20260EC36	Financial Services and Institutions	3
III	5	20260EC37	International Finance	3
III	6	20260EC38	Insurance and Risk Management	3
III	7	20260EC39	Corporate Finance	3
III Sem (Logistics and Supply chain)				
Sem	**Paper no**	**Subject code**	**Sub title**	**Credit**
III	1	20260EE33	Purchasing and Procurement Management	3
III	2	20260EE34	Material Management	3
III	3	20260EE35	Inventory Management	3
III	4	20260EE36	Supply Chain Management	3
III	5	20260EE37	Logistics Management	3
III	6	20260EE38	Custom House Practice And Legalities	3
III	7	20260EE39	Export Trade And Documentation	3
III Sem (Hospital Management)				
Sem	**Paper no**	**Subject code**	**Sub title**	**Credit**
III	1	20260EH33	Management Of Hospital Services	3
III	2	20260EH34	Operations Management In Health Care	3
III	3	20260EH35	Marketing Management Of Hospital And Health Care Services	3
III	4	20260EH36	Community Health and Management of National Health Programmes	3
			Management of Clinical and Super	3

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III	5	20260EH37	Specialty Services in Hospitals	3
III	6	20260EH38	Patient Care Management	3
III	7	20260EH39	Health Related Laws and Ethics	3

III Sem (Productions and Operations)

Sem	Paper no	Subject code	Sub title	Credit
III	1	20260ED33	Project Management	3
III	2	20260ED34	Planning and control of operations	3

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III	3	20260ED35	Technology Management	3
III	4	20260ED36	Logistics Management	3
III	5	20260ED37	Supply Chain Management	3
III	6	20260ED38	Business Process Reengineering	3
III	7	20260ED39	Material Management	3

III Sem (International Business)

Sem	Paper no	Subject code	Sub title	Credit
III	1	20260EF33	International Marketing	3
III	2	20260EF34	International Human Resource Management	3
III	3	20260EF35	Cross Cultural Management	3
III	4	20260EF36	Global Logistics and Supply Chain Management	3
III	5	20260EF37	International Trade Procedures and Documentation	3
III	6	20260EF38	International Strategic Management	3
III	7	20260EF39	Global Business Ethics and Corporate Governance	3

III Sem (Systems)

Sem	Paper no	Subject code	Sub title	Credit
III	1	20260EG33	Software Engineering	3
III	2	20260EG34	Software Project Management	3
III	3	20260EG35	Relational Database Management Systems	3
III	4	20260EG36	E- Business Technology Management	3
III	5	20260EG37	Data Warehousing & Data Mining	3
III	6	20260EG38	Knowledge Management	3
III	7	20260EG39	Enterprise Resource Planning	3

III Sem (Tourism)

Sem	Paper no	Subject code	Sub title	Credit
III	1	20260EI33	Tourism Principles, Policies and Practices	3
III	2	20260EI34	Tourism Products of India	3
III	3	20260EI35	Destination Planning and development	3
III	4	20260EI36	Travel agency and Tour operations	3
III	5	20260EI37	Hospitality Management	3
III	6	20260EI38	Indian culture and Heritage	3
III	7	20260EI39	Tourism Marketing	3

III Sem (Agribusiness)

Sem	Paper no	Subject code	Sub title	Credit
III	1	20260EJ33	Agribusiness Environment and Policy	3
III	2	20260EJ34	Agricultural Marketing Management	3
III	3	20260EJ35	Farm Business Management	3
III	4	20260EJ36	Management of Agribusiness Cooperatives	3
III	5	20260EJ37	Food Retail Management	3
III	6	20260EJ38	Management of Agricultural Input Marketing	3
III	7	20260EJ39	Agri Supply Chain Management	3

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IV Sem (Marketing)				
Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EA42	Customer Relationship Management	3
IV	2	20260EA43	International Marketing	3
IV	3	20260EA44	Rural Marketing	3
IV Sem (Human Resource)				
Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EB42	Industrial Relation	3
IV	2	20260EB43	Training & Development	3

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V	3	20260EB44	Talent Management	3

IV Sem (Finance)

Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EC42	Micro Finance	3
IV	2	20260EC43	Strategic Financial Management	3
IV	3	20260EC44	Merchant Banking and Financial Services	3

IV Sem (Logistics and Supply chain)

Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EE42	Quality Management	3
IV	2	20260EE43	Air Cargo Logistics Management	3
IV	3	20260EE44	Shipping And Ocean Freight Logistics Management	3

IV Sem (Hospital Management)

Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EH42	Medical Tourism	3
IV	2	20260EH43	Hospital Architecture, Planning, Design and Maintenance	3
IV	3	20260EH43	Hospital Waste Management	3

IV Sem (Productions and Operations)

Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260ED42	Maintenance Management	3
IV	2	20260ED43	Service and Operation Management	3
IV	3	20260ED44	Product Design	3

IV Sem (International Business)

Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EF42	Management Of International Developmental Organizations	3
IV	2	20260EF43	Merger and Acquisitions	3
IV	3	20260EF44	International Financial Management	3

IV Sem (Systems)

Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EG42	Information Storage & Management	3
IV	2	20260EG43	Cloud Computing	3
IV	3	20260EG44	Decision Support System And Intelligent Systems	3

IV Sem (Tourism)

Sem	Paper no	Subject code	Sub title	Credit

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IV	1	20260EI42		Ecotourism	3
IV	2	20260EI43		Event Management	3
IV	3	20260EI44		E- Tourism	3

IV Sem (Agribusiness)

Sem	Paper no	Subject code	Sub title	Credit
IV	1	20260EJ42	Agriculture Economics	3
IV	2	20260EJ43	Agricultural and Micro-Finance	3
IV	3	20260EJ44	New Trends and Development in Agri-Sector	3

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20255CAS		4	0	0	3

Technical, General Aptitude and Skill Set Development

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in
understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring
and developing their own personal philosophy of management.

UNIT – I

Quantitative Ability (Basic Mathematics

1.1. Number Systems
1.2. LCM and HCF
1.3. Decimal Fractions
1.4. Simplification
1.5. Square Roots and Cube Roots
1.6. Average
1.7. Problems on Ages
1.8. Surds & Indices
1.9. Percentages
1.10 Problems on
Numbers UNIT – II
Quantitative Ability (Applied & Engineering Mathematics)
2.1. Logarithm
2.2. Permutation and Combinations 2.3 Probability
2.4 Profit and Loss 2.5 Simple and Compound Interest
2.6. Time, Speed and Distance 2.7. Time & Work
2.8. Ratio and Proportion
2.9. Area 2.10 Mixtures and
Allegation UNIT – III
3. Data Interpretation

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3.1. Data Interpretation
3.2. Tables
3.3. Column Graphs
3.4. Bar Graphs
3.5. Line Charts
3.6. Pie Chart
3.7. Venn Diagrams
UNIT - IV
4. Logical Reasoning (Deductive Reasoning)
4.1. Analogy
4.2. Blood Relation
4.3 Directional Sense
4.4. Number and Letter Series
4.5. Coding – Decoding
4.6. Calendars
UNIT V
5. Reasoning:
5.1 Clocks
5.2 Venn Diagrams
5.3 Seating Arrangement
5.4 Syllogism
5.5 Mathematical Operations
Reference books:
1. A Modern Approach To Verbal & Non Verbal Reasoning By R S Agarwal
2. Analytical and Logical reasoning by Sijwali B S
3. Quantitative aptitude for Competitive examination By R S Agarwal
4. Analytical and Logical reasoning for CAT and other management entrance test By Sijwali B S
5. Quantitative Aptitude by Competitive Examinations by Abhijit Guha 4 th edition 6. https://arepkonia.com/ 7. https://www.indiabix.com/ 8. https://www.lavagurus.com

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UNIT-II: **Types of Interviews**

Structured interview – To ask the questions set in advance-Semi-Structured interview – To ask questions based on candidate's response-Unstructured interview – Having a list of topics but no questions to ask Screening – Preliminary assessment of the candidate's profile-Initial Discussion and fact-finding – Exploring skills, experience, and cultural fit-Telephonic Connect – In the interest of time and resources telephonically connect with the candidate-Behavioural – Interview to assess behavioural competencies to match the job requirement-Individual / Face to Face interview – Upon initial screening and finding fitment-Group/ Panel interview – Basis initial confirmation schedule interview with stakeholders. UNIT-III: **Planning and Preparing for the interview**

Gathering needs from the hiring manager or department-Preparing job description-Analysing the candidate profile

Making repository of questions-Collaborating with line managers-Aligning interview questions with the competency required- Schedule time for the interview and stick to the timelines-Module 5: Managing and Conducting the Interview

UNIT-IV : Identifying Soft Skills

Negotiation skills-Communication skills-Positive attitude-Professionalism-

Eye contact Building Rapport-Ability & willingness to perform the job

UNIT-V Skills Required for Interviewing a Candidate

Assess the candidate's body language-Maintaining appropriate tone while interviewing-Being attentive and displaying active listening-Being unbiased during the interview-Giving positive feedback

Evaluation and Decision Making-Maintaining a record of the interview, reviewing feedback-Using the scorecard during the interview- considering competency and other aspects-Referring interview notes-Making the decision-Checking references

COURSE OUTCOMES:

1 Gain the confidence to ask relevant questions – prepare, practice and update the process.

2 Gain access to the most competent talent in the market and hire them.

2.Reach the desired goal of success and maintain the position by reinforcing the right practices

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		202SSCIM		4	0	0	3

Interview Skills Training and Mock Test

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

UNIT-I: **Introduction to Interview Skills and Techniques**

What are Interview Skills and Techniques-Importance and benefits of Interview Skills and Techniques Difference between Interview Skills and Techniques-Differentiate between soft and technical skills

Importance of Interview Techniques:Hiring the right fit for the organisation-Promoting growth and success for an employee- Understand the position you are hiring for-Understanding the role and responsibilities.

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EA34		4	0	0	3

Marketing Research

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

UNIT -1

Definition, Concept and Objectives of Marketing research. Advantages and limitations of Marketing Research. Problems and precautions in Marketing research. Analyzing Competition and Consumer Markets. Market Research Methodology.

UNIT -2

Types of Marketing Research: Consumer Research, product research, sales research, and advertising research. Various issue involved and ethics in marketing research. Rural Marketing Research, Institutional Management & Research.

UNIT -3

Problem formulation and statement of research, Research process, research design - exploratory research, descriptive research andexperimental research designs. Decision Theory and decision Tree.

UNIT -4

Methods of data collection - observational and survey methods. Questionnaire, Design attitude measurement techniques. UNIT -5

Administration of surveys, sample design, selecting an appropriate statistical technique. Tabulation and analysis of data, scaling techniques. Hypothesis, Concept, Need, Objectives of the hypotheses, Types of Hypotheses and its uses, Report writing.

Reference books:

Essentials of Marketing Research By S.A.Chunawala – Himalaya Publishing House.

Marketing Research By B.S.Goel - Pragati Prakashan, Meerut (UP)

Marketing Management by Kotler, keller, Koshy, Jha, (13th Edition Pearson.)

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EA39		4	0	0	3

Global Marketing

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

Unit I

Financial Environment, Cultural Issues and Buying Behaviour, Political/Legal Environment, Political/Legal Environment, Global Marketing Research, Global Segmentation and Positioning.

Unit II

Global Marketing Strategies, Global Market Entry Modes, Global Product Development. Global Product Development, Marketing Products and Services, Global Pricing.

Unit III

Communicating with the World Consumer, Sales Management, Global Logistics and Distribution, Global Logistics and Distribution

Export/Import Management, Planning, Organization, and Control of Global Marketing Operations.

Unit IV

Planning, Organization, and Control of Global Marketing

Operations- Marketing in Emerging Markets, Global Marketing and the Internet.

Introduction to business-to-business marketing, How business organizations buy, Strategic planning for global business markets, Ethical considerations for business marketers.

Unit V

Market research, Segmentation, targeting, and positioning, Services for business markets Pricing, Supply chain management and Managing distribution channels, Business to business marketing communications, Customer relationships and key-account management, Sales promotion, exhibitions, and trade fairs, Corporate reputation management, Marketing planning, implementation, and control.

Reference books:

1. Essentials of Marketing Research By S.A.Chunawala – Himalaya Publishing House
2. Marketing Research By B.S.Goel - Pragati Prakashan, Meerut (UP)
3. Marketing Management by Kotler, keller, koshy, Jha.(13th Edition Pearson.)

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EB33		4	0	0	3

Human Resource Information System

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from a conceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

Unit - I

Data & Information needs for HR Manager - Sources of Data - Role of IT in HRM - IT for HR Managers - Concept, Structure, & Mechanisms of HRIS - Programming Dimensions & HR Manager - Survey of Software Packages for Human Resource Information System including ERP Software such as SAP, Oracles Financials and Ramco's Marshal [only data input, output & screens] - EHRM - Objectives - Advantages & Disadvantages.

Unit - II

Data Management for HRIS - Data Formats - Entry Procedure & Process - Data Storage & Retrieval - Transaction Processing - Office Automation - Information Processing & Control Functions - Design of HRIS - Relevance of Decision Making Concepts for Information System Design - HRM Needs Analysis - Concept & Mechanisms - Standard Software and Customized Software - HRIS - An Investment.

Unit – III

HR Management Process & HRIS - Modules on HR Planning, Recruitment, Selection, Placement - Module on Performance Appraisal System - Training & Development Module - Module on Pay & other Related Dimensions - Information System's support for Planning & Control 2

Unit – IV

HR Management Process II & HRIS - Organization Structure & Related Management Processes - Authority & Responsibility Flows - Communication Process - Organization Culture and Power – Data Capturing for Monitoring & Review - Behavioral Patterns of HR - Other Managers and their Place in Information Processing for Decision Making.

Unit - V

Security, Size & Style of Organizations & HRIS - Security of Data and Operations of HRIS Modules - Common Problems during IT Acoption Efforts and Processes to Overcome - Orientation & Training Modules for HR & other Functionaries – Detailed Analytical Framework - Opportunities for combination of HRM & ITES Personnel - HRIS & Employee Legislation - An Integrated View of HRIS.

References

1. Michael Armstrong, A Handbook of Human Resource Management Practice, Kogan Page
2. Guental & Stone, THE BRAVE NEW WORLD OF HER, Jossey-Buss 3. Monk & Wagner, CONCEPTS IN ENTERPRISE RESOURCE PLANNING, Thomso

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EB37		4	0	0	3

Global HR Practice

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from a conceptual analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

Unit - I

Introduction - Growth of International Business and Globalization - Operational Objectives and Means of Globalization in HR Perspective - Use of Balanced Score Card - Choosing an International Competitive Strategy - Forms of Operations.

Unit - II

HR Challenges & Opportunities - National Differences Facing Operations – Domestic & MNC Perspectives - Linkages among Countries - Governance of Operations - Individual and Company Concerns – Multi cultural orientation to employees – Research and documentation Orientation in Global organizations - Ethical and Socially Responsible Behavior - Careers in International Business

Unit – III

HR Policies and Operations in a Global Setting - Distinctive Features of HR Functions -Planning, Organizing, Directing & Control - Operations - Manpower Planning to Separations in a Global Set-up - Staffing - Skill & Knowledge Development - Incentives & Compensation Package - Motivational Systems – Reporting Relationships – Performance Appraisal Systems – Employee Empowerment – Value systems – Shared Corporate Culture and Grievance Handling – Reactive & Proactive Mechanisms

Unit - IV

Change Management Model – Appreciating Change - Industry Analysis - Business Models - Mobilizing Support - Executing Change - Building Change Capability - Leadership and Change – Diversity as Enhancer of Learning and Effectiveness Within Groups and Organizations – HR to Develop Global Organizational Learning Systems.

Unit – V

Quality Performance in Knowledge Based Organizations - Technology – Behavioral & Technical - Universal Quality Standards & HRM – Eastern Management Thought for Global Management - Commitment, Quality, and Stress Free Work Life.

References:

1. Punnett Betty Jane, INTERNATIONAL PERSPECTIVES ON ORGANIZATIONAL BEHAVIOR AND HUMAN RESOURCE MANAGEMENT, M.E. Sharpe,
2. Monir Tayeb, INTERNATIONAL HRM, Oxford University Press,
3. Dowling & Welch, INTERNATIONAL HRM: MANAGING PEOPLE IN MULTINATIONAL CONTEXT, Cengage

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EB38		4	0	0	3

Human Resource Accounting

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from a conceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

Unit – I

Meaning & Definition of HRA – Importance - Development of the Concept – History of Score Card - HRA for Managers & HR Professionals - Investment in Human Resources – Quality of Work Force and Organizations' Performance - Efficient use of Human Resources – Modern Market Investment Theory - Enumerating the Assets- Calculating the Market Value of Assets – Illiquid and Non- Marketable Assets – Human Capital

Unit - II

Human Resource Planning – Human Capital Investment – Expenditure Vs Productivity –Training – Human Capital & Productivity - Human Resource Accounting – Measurement of Human Value addition into Money Value – Objectives of Human Resources Accounting – Approaches to Human Resource Accounting.

Unit - III

Investment Approach – Investment in Human Resources - HR Value – Concepts, Methods & Mechanisms - Recruiting and Training Costs – Depreciation –Rates of Return – Organization Behavior Vs Turnover – Non Value Adds in the Management of Human Resources, Measures and Prevention - Organization Climate Approach – Improvement Determination of Changes in Human Resource Variables – Increased Costs, Cost Reduction and Future Performance.

Unit – IV

HR Accounting – Design, Preparation & Implementation - Responsibility Accounting and Management Control - Management Control Structure and Process - Design of HR Accounting Process & Procedures for each of the HR Sub system including Recruitment, Induction, Performance Appraisal and Training - Classification of Costs in HR Accounting – Behavioral Aspects of Management Control – Social Control.

Unit - V

HR Auditing and Accounting – HRA Software - HRA Oriented Reporting Processes including P & L Accounts & Balance Sheet - Experiences and Extrapolations on HRA.

Reference:

1. Eric G. Flamholtz, HUMAN RESOURCE ACCOUNTING, Springer
2. Jac Fitz-enz, HOW TO MEASURE HUMAN RESOURCE MANAGEMENT, McGraw Hill
3. Rakesh Chandra Katiyar, ACCOUNTING FOR HUMAN RESOURCES, UK Publishing
4. M. Saeed, D.K. Kulsheshtha, HUMAN RESOURCE ACCOUNTING, Anmol Publications.
5. D. Prabakara Rao, HUMAN RESOURCE ACCOUNTING, Inter India Publications

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EC34		4	0	0	3

Banking and Indian Financial System

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face
in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

UNIT 1:

Historical background , Tracing the history of Indian financial system, components of Indian financial system, constitution of Indian financial system to economic development.

UNIT 2:

Financial Institutions, Commercial Banking - Nationalization of commercial Banks, Narasimhan Committee Report, Structure of Commercial Banks in India, Functions, Asset structure of Commercial banks, Sources of funds, Investment of funds, Investment policy, NPA's, Non Banking Institutions - SFC's SIDC's LIC, Mutual funcs, EXIM Bank- Constitution, objectives and functions.

UNIT 3:

Financial Market ,Money Market - Components, Characteristics of a developed money market, Functions and Instruments, Capital market - Primary & Secondary - Meaning, Objectives, Functions, Components of Capital Market, Instruments Traded, Methods of Marketing Securities, Components of primary market, Intermediaries, Stock Market, Stock Exchange, NSE, BSE, Derivatives (meaning only).

UNIT 4:

Financial Services , Classification - Fund Based, Non Fund Based and Modern Services - Hire Purchasing - Leasing - Portfolio Management - Merchant Banking-Factoring, Debt management.

UNIT 5:

Regulatory Institutions , RBI - Organisation, objectives, role and functions, monetary policy of RBI, NABARD, SEBI - Organisation and Objectives. SKILL DEVELOPMENT A visit to stock exchange to understand its working. List out the financial services rendered by non banking financial institutions. List the instruments traded in the financial market. To learn how to trade shares through dematerialized account

REFERENCES:

1. M. Y. Khan - Indian financial System, Tata McGraw Hill
2. L.M. Bhole - Financial Institutions & markets, Tata McGraw Hill.
3. P.N. Varshney & D.K., Mittal - India Financial Systems, Sultan Chand& Sons.
4. Shashi K. Gupta, Nisha Aggarwal, Neeti Gupta - Indian Financial System, Kalyani Publishers.
5. Gordan & K. Natarajan – Financial system.
6. R. s. aturwal. Mc hill. Publication. New delhi.

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EC34		4	0	0	3

Global Financial Management

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

Unit – I

Globalisation - Implications of Globalisation – Goals of International Financial Management - scope of International Finance – International Monetary System – Bimetallism – Gold Standard – Bretton Woods System – Floating Exchange Rate Regime –

European Monetary System – IMF – WTO –

GATT. Unit – II

Balance of Payments – The Current Account – The Capital Account: – significance - Balance of Payments in the World - Balance of Payments Account of India

Unit - III

International Financial Markets – Sources of International Funds – Multilateral Development Banks – Governments' Governmental Agencies – International Banks – Security Markets Instruments of International Financial Markets– International Equities – GDRs – ADRs – International Money Market and Bond Market Instruments – Euro Bonds – Repos – Euro Commercial Paper – Medium Term Notes – Floating Rate Notes – Loan Syndicates – Euro Deposits – Euro Issues in India.

Unit - IV

Currency Risk and Exposure – Types of Currency Risk – Management of Currency Risk – Concept and Measurement of Transaction Exposure – Techniques of Transaction Exposure Management – Translation Exposure – methods – Transaction Exposure Vs. Translation Exposure – Exchange Risk Management – Operating Exposure – measuring and managing Operating Exposure.

Unit - V

Foreign Direct Investment (FDI) – Forms of FDIs – FDI in World – purpose of overseas investment – Benefits to the Host Countries – Effects of FDI – Political Risk.

References

1. Joseph Anbarasu, GLOBAL FINANCIAL MANAGEMENT, Ane, Delhi, 2010
2. Kevin S, FUNDAMENTALS OF INTERNATIONAL FINANCIAL MANAGEMENT, PHI, Delhi, 2010
3. Jeff Madura, INTERNATIONAL FINANCIAL MANAGEMENT, Cengage learning, Delhi, 2008

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		20260EC39		4	0	0	3

Project Management

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

Unit - I

Project – Classification – Importance of Project Management – An Integrated Approach – Project Portfolio Management System – The Need – Choosing the appropriate Project Management Structure: Organizational considerations and project considerations – steps in defining the project – project Rollup – Process breakdown structure – Responsibility Matrices – External causes of delay and internal constraints.

Unit-II

Project feasibility studies - Opportunity studies, General opportunity studies, specific opportunity studies, pre-feasibility st

udies, functional studies or support studies, feasibility study – components of project feasibility studies – Managing Project resources flow – project planning to project completion: Pre-investment phase, Investment Phase and operational phase – Project Life Cycle – Project constraints.

Unit – III

Project Evaluation under certainty – Net Present Value (Problems - Case Study), Benefit Cost Ratio, Internal Rate of Return, Urgency, Payback Period, ARR – Project Evaluation under uncertainty – Methodology for Notes project evaluation – Commercial vs. National Profitability – Social Cost Benefit Analysis, Commercial or National Profitability, social or national profitability.

Unit - IV

Developing a Project Plan - Developing the Project Network – Constructing a Project Network (Problems) – PERT – CPM – Crashing of Project Network (Problems - Case Study) – Resource Leveling and Resource Allocation – how to avoid cost and time overruns – Steps in Project Appraisal Process – Project Control Process – Control Issues – Project Audits – the Project Audit Process – project closure – team, team member and project manager evaluations.

Unit - V

Managing versus leading a project - managing project stakeholders – social network building (Including management by wandering around) – qualities of an effective project manager – managing project teams – Five Stage Team Development Model – Situational factors affecting team development – project team pitfalls.

References:

Arun Kanda, PROJECT MANAGEMENT, PHI, Delhi, 2011 Panneerselvam & senthilkumar, PROJECT MANAGEMENT, PHI, Delhi, 2009 Ramakrishna, ESSENTIALS OF PROJECT MANAGEMENT, PHI, Delhi, 2010

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SEM	THREE	NATURE	CORE	L	P	T	C
COURSE CODE		CPE RPE		4	0	0	3

Research and Publication Ethics

COURSE OBJECTIVE: To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issuesmanagers face in today's business firms.

COURSE OUTCOME: Gives exposure to the practice of management in contemporary organizations from aconceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.

RPE 01: PHILOSOPHY ETHICS

Introduction to philosophy: definition, nature and scope, concept, branches
2.Ethics:definition,moralphilosophy, nature of moral judgements and reactions

RPE 02: SCIENTIFICCONDUCT

Ethics with respect to science and research
Intellectual honesty and research integrity
Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP)
Redundant publications: duplicate and overlapping publications, salami slicing
Selective reporting and misrepresentation of data

RPE 03: PUBLICATION ETHICS

Publication ethics: definition, introduction and importance
Best practices/standards setting initiatives and guidelines: COPE, WAME, etc.
Conflicts of interest
Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types
Violation of publication ethics, authorship and contributors
Open access publications and initiatives

RPE 04: PUBLICATION MISCONDUCT

A. Group Discussions
1. Subject specific ethical issues, FFP, authorship
2. Conflicts of interest
3. Complaints and appeals: examples and fraud from India and abroad
B. Software tools
Use of plagiarism software like Turnitin, Urkund and other open source software tools

References:

Bird, A. (2006). Philosophy of Science. Routledge.
MacIntyre, Alasdair (1967) A Short History of Ethics. London. P. Chaddah, (2018) Ethics in Competitive Research: Do not get

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Course Code	Course Title	L	T	P	C
20ILSCIC	Indian Constitution	-	-	-	2

Aim

Course Objectives:

- To make the students understand about the democratic rule and parliamentarian administration
- To appreciate the salient features of the Indian constitution
- To know the fundamental rights and constitutional remedies
- To make familiar with powers and positions of the union executive ,union parliament and the supreme court
- To exercise the adult franchise of voting and appreciate the electoral system of Indian democracy.

Course outcome:

1. Democratic values and citizenship training are gained
2. Awareness on fundamental rights are established
3. The function of union government and state government are learnt
4. The power and functions of the judiciary are learnt thoroughly
5. Appreciation of democratic parliamentary rule is learnt

Unit I: The making of Indian constitution

The constitution assembly organization -character-work salient features of the constitution- written and detailed constitution -socialism -secularism-democracy and republic.

Unit II: Fundamental rights and fundamental duties of the citizens

Right of equality -right of freedom- right against exploitation -right to freedom of religion- cultural and educational rights -right to constitutional remedies -fundamental duties .

Unit III: Directive principles of state policy

Socialistic principles-Gandhian principles-liberal and general principles -differences between fundamental rights and directive principles

Unit IV: The union executive, union parliament and Supreme Court

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Powers and positions of the president -qualification _method of election of president and vice president -prime minister -Rajya Sabah -Lok Sabah ,the supreme court -high court - functions and position of supreme court and high court

Unit V: State council -election system and parliamentary democracy in India

State council of ministers -chief minister -election system in India-main features election commission-features of Indian democracy.

References:

1) Palekar.s.a. Indian constitution government and politics, ABD publications, India

2) Aiyer, aladi krishnaswami, Constitution and fundamental rights 1955.

3) Markandan, k.c.directive Principles in the Indian const tution 1966.

4) Kashyap. Subash e, Our parliament ,National book trust , New Delhi 1989

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UNIVERSAL HUMAN VALUES

Course Code	Course Title	L	T	P	C
201LSC/V	Universal Human Values	-	-	-	2

This course aims at making learners conscious about universal human values in an integral manner, without ignoring other aspects that are needed for learner's personality development.

Course Objectives :

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realize one's potentials.

Course Outcomes :

By the end of the course the learners will be able to:

1. Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
2. Learn from case studies of lives of great and successful people who followed and practiced human values and achieved self-actualisation.
3. Become conscious practitioners of human values.
4. Realize their potential as human beings and conduct themselves properly in the ways of the world.

Unit 1

- Introduction What is love? Forms of love for self, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living
- Love and compassion and inter-relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love.
- Narratives and anecdotes from history, literature including local folklore
- Practicing love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion?
- Sharing learner's individual and/or group experience(s)
- Simulated Situations
- Case studies

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Unit II

- Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honesty among others)
- Individuals who are remembered in history for practicing this value
- Narratives and anecdotes from history, literature including local folklore
- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practice it?
- Learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Unit III

- Introduction: What is non-violence? Its need, Love, compassion, empathy, sympathy for others as pre-requisites for non-violence
- Ahimsa as non-violence and non-killing
- Individuals and organisations that are known for their commitment to non-violence
- Narratives and anecdotes about non-violence from history, and literature including local folklore
- Practicing non-violence: What will learners learn/gain if they practice non- violence? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Case studies

Unit IV

- Introduction: What is righteousness?
- Righteousness and *dharma*, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Unit V

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organisations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore

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- Sharing learner's individual and/or group experience(s) about peace
- Simulated situations
- Case studies

Unit VI

- Introduction: What is service? Forms of service for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress or disaster.
- Individuals who are remembered in history for practicing this value
- Narratives and anecdotes dealing with instances of service from history, literature including local folklore
- Practicing service: What will learners learn/gain gain if they practice service? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations
- Case studies

Unit VII

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restrain and

Ways of overcoming greed. Renunciation with action as true renunciation

- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature,including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

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Course Code	Course Title	L	T	P	C
201LSCCS	Communication Skills	-	-	-	2

Aim:

The goal of communication is to convey information—and the understanding of that information—from one person or group to another person or group.

Course Objectives :

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learners back
2. Identify what their non-verbal messages are communicating to others
3. Understand role of communication in teaching-learning process
4. Learning to communicate through the digital media
5. Understand the importance of empathetic listening

Unit I

- Techniques of effective listening
- Listening and comprehension
- Probing questions
- Barriers to listening

Unit II

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- Common Errors

Unit III

- Techniques of effective reading
- Gathering ideas and information from a given text

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i. Unit IV

·Clearly state theclaims

·Avoid ambiguity, vagueness, unwanted generalisations and over simplification of issues

·Provide backgroundinformation

·Effectively argue theclaim

·Provide evidence for theclaims

·Use examples to explainconcepts

·Followconvention

·Be properlysequenced

·Use proper signpostingtechniques

·Be well structured

i Well-knit

forlearners

Unit V

·Role ofDigital literacy in professionallife

·Treads and opportunities in using digital technology inworkplace

Internet Basic

Reference:

1.Sen Madhucchanda (2019). An Introduction to Critical Thinking. Pearson,Delhi

2.Silvia P. J. (2007). How to Read a Lot, American Psychological Association, Washington DC

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Course Code	Course Title	L	T	P	C
20ISSCBE	Basic Behavioral Etiquette	-	-	-	2

AIM:

To underscore the enduring relevance of basic etiquettes in fostering positive relationships, promoting mutual respect, and enhancing the quality of interpersonal interactions in today's interconnected world.

OBJECTIVES:

1. Basic etiquettes serve as the cornerstone of respectful and harmonious interactions.
2. Significance of basic etiquettes in various aspects of life, including social, professional, and personal contexts.
3. Fundamental principles of polite behavior, individuals can foster positive relationships, navigate diverse environments with ease, and contribute to a more civilized and empathetic society.

Unit:I: Introduction

Definition of basic etiquettes-Importance of etiquettes in communication and social cohesion.

Unit:II Basic Etiquettes in Social Interactions

Respect for others' feelings, opinions, and boundaries-Politeness, courtesy, and gratitude in everyday interactions. Active listening and empathy in conversations-Observing personal space and non-verbal cues

Unit:III Basic Etiquettes in Professional Settings

Professionalism and respect in the workplace-Punctuality and reliability in meetings and appointments Effective communication and collaboration with colleagues -Representing oneself and one's organization with integrity

Unit:IV Basic Etiquettes in Personal Life

Maintaining personal hygiene and grooming standards-Table manners and dining etiquette-Respecting cultural, religious, and social differences-Showing kindness and consideration in family and community settings.

Unit:IV Challenges and Solutions

Addressing challenges in practicing basic etiquettes in diverse environments-Strategies for overcoming barriers to etiquette adherence-Importance of continuous learning and adaptation in etiquette practices.

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Course Code	Course Title	L	T	P	C
201ACLSOAN	OFFICE AUTOMATION	-	-	-	2

Course Objectives

To provide an in-depth training in use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

Course Outcomes

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL) UNIT IV

Presentation (MS Power Point)

UNIT V

Internet & Advanced Communication

References:

1.Fundamentals of computers - V.Rajaraman - Prentice- Hall of india

2.Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen, cary N.Prague,Michael R.groh,Peter G.Aitken, and Lisa a.Bucki -Wiley India pvt.ltd.

3.Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.

Computer Fundamentals - P. K. Sinha Publisher: BPB Publications

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Course Code	Course Title	L	T	P	C
20ILSCLS	Leadership and Management Skills	-	-	-	2

Aim:

The aim of the course cultivating and nurturing the innate leadership skills of the youth so that they may transform these challenges into opportunities and become torch bearers of the future by developing creative solutions.

Course Outcomes:

Upon completion of the course students will be able to:

1.Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision.

UNIT I- Leadership Skills

a.Understanding Leadership and its Importance

•What is leadership?

•Why Leadership required?

•Whom do you consider as an ideal leader? b.Traits and Models of Leadership

•Are leaders born or made?

UNIT II - Managerial Skills

a.Basic Managerial Skills

•Planning for effective management

•How to organise teams?

•Recruiting and retaining talent

•Delegation of tasks

•Self-examination

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UNIT III - Entrepreneurial Skills a.Basics of Entrepreneurship

- Meaning of entrepreneurship

UNIT IV - Innovative Leadership and Design Thinking

- Concept of emotional and social intelligence
- Synthesis of human and artificial intelligence

UNIT V- Ethics and Integrity

A Learning through Biographies

- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration

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Course Code	Course Title	L	T	P	C
20ISSCAQ	General Aptitude and Quantitative Ability	2	-	-	2

AIM:

1. An aptitude test is designed to assess what a person is capable of doing or to predict what a person is able to learn or do given the right education and instruction.

2. It represents a person's level of competency to perform a certain type of task.

3. Helps them to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

UNIT-I

- Introduction
- Introduction to Aptitude Tests
- Diagnostic Tests
- Introduction to Speed Maths
- Quantitative Ability – Number Theory
- Numbers
- Properties of Numbers

UNIT-II Quantitative Ability – Arithmetic - I

- Percentage
- Simple Interest and Compound Interest
- Profit Loss
- Discount
- Mixture and Allegation
- Questions from Company Papers will be
- discussed

UNIT-III Quantitative Ability – Algebra

- Basic Terminologies in Algebra
- Equations
- Simple Equation
- Quadratic Equation
- Cubic Equation
- Functions
- Graphs
- Maxima and Minima
- Questions from Company Papers will be

UNIT-IV

- Quantitative Ability – Modern Maths
- Set Theory
- Fundamental way of Counting

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- Permutations and Combinations
- Probability
- Questions from Company Papers will be discussed
- Data Analysis
- Data Sufficiency

UNIT-V

1. Analytical and Logical Reasoning
   - Mono variate conditions
   - Multi variate conditions Puzzles
   - Coding
   - Decoding

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Course Code	Course Title	L	T	P	C
20IACLSPSL	Professional Skills	-	-	-	2

Course Objectives :

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue to partake in a successful career path
2. Prepare good resume, prepare for interviews and group discussions.
3. Explore desired career opportunities in the employment market in consideration of an individual SWOT.

Unit I: Resume Skills

Resume Skills : Preparation and Presentation.

•Introduction of resume and its importance.

•Difference between a CV, Resume and Bio data.

•Essential components of a

goodresume. ii.Resume skills :

common errors.

•Common errors people generally make in preparing their resume.

•Prepare a good resume of her/his considering all essential components.

Unit II: Interview Skills

i.Interview Skills : Preparation and Presentation.

•Meaning and types of interview (F2F, telephonic, video, etc.).

•Dress Code, Background Research, Do's and Don'ts.

•Situation, Task, Approach and Response (STAR Approach) for facing an interview.

•Interview procedure (opening, listening skills, closure, etc.).

Unit III: Group Discussion Skills

Meaning and methods of Group Discussion-Procedure of Group Discussion-Group Discussion- Simulation.

-Group Discussion - Common Errors.

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Unit IV: **Exploring Career Opportunities**

Knowing yourself – personal characteristics-Knowledge about the world of work, requirements of jobs including self- employment-Sources of career information-Preparing for a career based on their potentials and availability of opportunities.

Reference:

1. Alex, Dr. K. (2014). *Soft Skills* (1st edition) S Chand & Company.
2. Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ.* Bantam Books.
3. Kaul, Asha. (2009). *Business Communication* (2nd edition) PHI Learning.
4. Nelson-Jones, R. (1992). *Life skills, a handbook,* Trowbridge, Wilts: Detesias Ltd.
5. Panja, Sharmistha et al. (2006). *Business English,* Pearson.
6. Sen, Madhucchanda (2010). *An Introduction to Critical Thinking,* Pearson, Delhi.
7. Tuhovsky, Ian (2019). *Communication Skills Training* (2nd edition) Rupa Publication India.

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Course Code	Course Title	L	T	P	C
20ISSCIM	Interview Skills Training and Mock Test	-	-	-	2

AIM:

The participants of this course will be able to know the meaning of interview skills in line with their organisation and industry & acknowledge the importance and benefits of interview skills and techniques.

COURSE OBJECTIVES

- Differentiate between Interview skills and techniques.
- Know the skills required and carry out effective interviews
- Have a structured process of hiring the right candidate
- Plan and prepare for the interviews (self and the panel)
- Learn to set the right expectations with the candidates

UNIT-I: **Introduction to Interview Skills and Techniques**

What are Interview Skills and Techniques-Importance and benefits of Interview Skills and Techniques-Difference between Interview Skills and Techniques-Differentiate between soft and technical skills-Importance of Interview Techniques-Hiring the right fit for the organization-Promoting growth and success for an employee-Understand the position you are hiring for-Understanding the role and responsibilities.

UNIT-II: **Types of Interviews**

Structured interview – To ask the questions set in advance-Semi-Structured interview – To ask questions based on candidate's response-Unstructured interview – Having a list of topics but no questions to ask-Screening – Preliminary assessment of the candidate's profile-Initial Discussion and fact-finding – Exploring skills, experience, and cultural fit-Telephonic Connect – In the interest of time and resources telephonically connect with the candidate-Behavioural – Interview to assess behavioural competencies to match the job requirement-Individual / Face to Face interview – Upon initial screening and finding fitment-stakeholders.

UNIT-III: **Planning and Preparing for the interview**

Gathering needs from the hiring manager or department-Preparing job description-Analysing the candidate profile

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Making repository of questions-Collaborating with line managers-Aligning interview questions with the competency required-Schedule time for the interview and stick to the timelines-Module 5: Managing and Conducting the Interview.

UNIT-IV : **Identifying Soft Skills**

Negotiation skills-Communication skills-Positive attitude-Professionalism-Eye contact Building Rapport-Ability & willingness to perform the job

UNIT-V Skills Required for Interviewing a Candidate

Assess the candidate's body language-Maintaining appropriate tone while interviewing-Being attentive and displaying active listening-Being unbiased during the interview-Giving positive feedback Evaluation and Decision Making-Maintaining a record of the interview, reviewing feedback-Using the scorecard during the interview- considering competency and other aspects-Referring interview notes-Making the decision- Checking references.

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Course Code	Course Title	L	T	P	C
20ILSCCE	Community Engagement	-	-	-	1

Course Objectives

- To develop an appreciation of rural culture, life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

Course Outcomes:

After completing this course, student will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and bonds of mutuality with local community
- Appreciate significant contributions of local communities to Indian society and economy
- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio-economic improvements

UNIT-I INTRODUCTION

Community and community engagement: concept, nature, types and approaches-- Community Organization- concept, nature, objectives, values, scope, process and related concepts: community work, community development, community action-- Community organization as a method of social work intervention

UNIT II - Appreciation of Rural Society

Rural life style, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages" (Gandhi), rural infrastructure.

UNIT III- Understanding rural economy & livelihood Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets

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UNIT IV Rural Institutions

Tracitional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration

UNIT V Rural Development Programmes

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swatchh Bharat, PM AwaasYojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

COURSE OUTCOMES:

1. Analysis of Knowledge: Connects and extends knowledge (facts, theories, etc.) from one's own to community engagement and to one's own participation in community life, politics, and government.
2. Provides evidence of experience in community-engagement activities and describes what one has learned about oneself as it relates to a reinforced or clarified commitment to public action.
1. Demonstrates independent experience, accompanied by reflective insights or analysis about the aims and accomplishments of one's actions.

Books and References: -

1. Principles of Community Engagement, 2nd Edition, NIH Publication No. 11-7782, Printed June 2011.
2. Kretzmann, J.P., & McKnight, J.L. (1993). Building communities from the inside out: A path toward mobilizing a community's assets. Chicago, IL: ACTA Publishers.
3. Lakoff, G. (2004). Don't think of an elephant: Know your values and frame the debate. White River Junction, VT: Chelsea Green Publishing.

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2020 – 2021

VALUE ADDED DIPLOMA AND CERTIFICATE COURSE SYLLABUS

Certificate Course

DIGITAL MARKETING

PAPER 1: DIGITAL MARKETING FUNDAMENTALS
Marketing v/s Sales
Marketing Mix and 4 Ps
What is Digital Marketing
Inbound vs Outbound Marketing
Content Marketing
Understanding Traffic
Understanding Leads
Strategic Plans for Marketing Activities

PAPER 2: WEBSITE PLANNING AND STRUCTURE
WWW
Domains
Buying a Domain Website
Language & Technologys
Core Objective of Website and Flow
One Page Website
Strategic Design of Home Page
Strategic Design of Products & Services Page &
trategic Design of Pricing Page
Portfolio, Gallery and Contact Us Page
Call to Action (Real Engagement Happens)
Designing Other Pages
SEO Overview
Google Analytics Tracking Code
Website Auditing Designing
Word press Website

PAPER 3: EMAIL MARKETING – CONTENT WRITING
Email Machine – The Strategy
Email Frequency
Why People Don't Buy
The Fuel – Value
Triggers in Email using 4Ps
Sequence of Email Triggers
Email Example – Topic
Email Example – Intro
Email Example – Product

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF BIOTECHNOLOGY

Minutes of Board of Studies Meeting

The Board of Studies meeting for the Department of Biotechnology is held on 30.07.2020 at 10.30 AM Video Conference Media: ZOOM, PRIST Deemed to be University, Thanjavur under the chairmanship of Dr A.Bakrudeen Ali Ahamed.

The following members were present:

1. Dr. Bakrudeen Ali Ahamed, Professor (Chairperson, BOS)
2. Dr. I. Chinnappa / Dean (Special Invitee)
3. Dr P. Manonmani, Professor (Member, BOS)
4. Dr. Arjun Pandian, Associate Professor (Member, BOS)
5. Dr. C. Anushia, Associate Professor (Member, BOS)
6. Dr. A. Singaiah, Assistant Professor (Member, BOS)
7. Dr. G. Venkatkumar, Assistant Professor (Member, BOS)
8. Dr. R. V. Shalini, Assistant Professor (Member, BOS)
9. Dr. P. Anantharaman Professor, CAS in Marine Biology, Annamalai University (External Member, BOS)
10. Mr. Umar Ali Khan, Managing Director, Krind biotech Industry Pvt. Ltd (External Member, BOS)
11. Mr. D. Sathyaseelan, Special Invitee Alumni, Officer, MNC, Karur
12. Mr. J. Mohamed siddiq, B. Sc Biotechnology, PRIST Deemed to be University, Thanjavur

The Chairman (BOS) welcomed all the members and presented the feedbacks about existing curriculum received from various Stack holders and also from the department academic advisory committee.

The members of the Board have unanimously discussed and carefully reviewed the existing syllabus for (B. Sc Biotechnology, M. Sc Biotechnology and M. Phil) in detail and made the necessary changes in upcoming (B. Sc Biotechnology, M. Sc Biotechnology and M. Phil) as mentioned below.

1. **Resolved to introduce the following Audit Courses in the B.Sc. (Biotechnology) programme curriculum with effect from 2020-21**

   Semester I: Universal Human Values - 2 credits

   Semester II : Communication Skills- 2 credits

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Semester III: Office automation- 2 credits

Semester IV: Leadership and Management Skills- 2 credits

Semester V: Professional Skills- 2 credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in **Annexure-I**

2. **Resolved to introduce the following Audit Courses on Soft Skills in the B.Sc(Biotechnology) programme curriculum with effect from 2020-21**

   Year I: Basic Behavioural Etiquette: 2 Credits

   Year II : General Aptitude and Quantitative Ability: 2 Credits

   Year III: Interview Skills Training and Mock Test: 2 Credits

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses on Soft Skills as given in **Annexure-II**

3. Resolved to introduce Audit Course on "Community Engagement" with one credit in the 3rd year of B.Sc. (Biotechnology) programme curriculum with effect from 2020-21 **Annexure-II**

4. Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extensical Activities from the existing curriculum in B.Sc.Biotechnology programme with effect from 2020-21

5. Resolved to introduce 20117AEC44/Molecular biology and 20117AEC47L /Molecular Biology Lab course in IV semester in B.Sc curriculum with the new syllabus effect from 2020-21 **Annexure -II**

6. Resolved to drop the Development Biology course and to introduce 20117AEC51/Food and Agriculture Biotechnology and 20117AEC55L/Food and Agriculture Biotechnology Lab course in V semester in B.Sc Biotechnology with the new syllabus effect from 2020-21 **Annexure -II**

7. Resolved to modify the 20117DSC54A /Bioinformatics and Biostatistics as elective course in V semester in B.Sc curriculum with the new syllabus as given in **Annexure-II**

8. Resolved to Enzyme and Enzyme Technology course entitled as 20117AEC53/Industrial biotechnology and 20117AEC56L/Industrial biotechnology Lab revised the syllabus in B.Sc Biotechnology curriculum with effect from 2020-21 **Annexure -II**

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9. Resolved to modify the contents of 20117SEC62/Applied Biotechnology and 20117AEC65L/Applied Biotechnology Lab course in B.Sc curriculum with the new syllabus effect from 2020-21 **Annexure -II**

10. Resolved to continue with the existing curriculum and syllabi for M.Sc Biotechnology program without any change for the year 2020-21 **Annexure –III**

11. Resolved to introduce a course on "Research and Publication Ethics" with 2 credits in the M.Phil (Biotechnology) programme curriculum with effect from 2020-21. Further resolved to approve the syllabus for the same as given in **Annexure-IV**

Members of the Board updated the panel of examiners and submitted the same to the Academic Counsel for its approval. **(Annexure-V)**

Annexure I	-	Revised Curriculum structure Credits
Annexure II	-	Revised Curriculum structure and Syllabus of UG
Annexure III	-	Revised Curriculum structure and Syllabus of M.Sc
Annexure IV	-	Revised Curriculum structure and syllabus of M.Phil
Annexure V	-	New Value added course
Annexure VI	-	List of Examiners

Note: Annexure –II, III, IV and V are signed by the Chairman of BOS

The Meeting concluded with thanks from Board of Studies Chairman.

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Department of Biotechnology

Composition of Board of Studies 2020-2021

S.No.	Designation	Name	Qualification	Designation & Affiliation	Mail id
1	Chairperson/HoD	Dr. A. Bakrudeen Ali Ahamed	M.Sc., Ph.D	Professor, Department of Biochemistry, PRIST Deemed to be University, Vallam Thanjavur.	bakru24@gmail.com
2	External Expert-Academic	Dr. P. Anantharaman	M.Sc., Ph.D	Professor, CAS in Marine Biology, Annamalai University, Tamil Nadu, India	panantharaman@gmail.com
3	External Expert- Industry	Mr. Umar Ali Khan	M.Sc.,	Managing Director, Krish Biotech Industry, Trichy	bd@krishbiotech.com
4	Professor	Dr. P. Manoharan	M.Sc., Ph.D	Professor, Department of Biotechnology, PRIST Deemed to be University, Vallam, Thanjavur.	manohmani@prist.ac.in
5	Associate Professor	Dr. C. Anusha	M.Sc., Ph.D	Associate Professor, Department of Biotechnology, PRIST Deemed to be University, Vallam, Thanjavur.	anushia@prist.ac.in
6	Associate Professor	Dr. Arjunpandian	M.Sc., Ph.D	Associate Professor, Department of Biotechnology, PRIST Deemed to be University, Vallam, Thanjavur.	arjunpandian@prist.ac.in
7	Assistant Professor	Dr. A. Shajahan	M.Sc., Ph.D	Assistant Professor, Department of Biotechnology, PRIST Deemed to be University, Vallam, Thanjavur	shajahan@prist.ac.in
8	Assistant Professor	Dr. G. Venkatkumar	M.Sc., Ph.D	Assistant Professor, PRIST Deemed to be University, Vallam, Thanjavur.	venkatkumar@prist.ac.in
9	Assistant Professor	Dr. R.V. Shalini	M.Sc., Ph.D	Assistant Professor, PRIST Deemed to be University, Vallam, Thanjavur.	rvshalini@prist.ac.in
10	Special invitee-Dean	Dr. L. Chinnappa	M.Sc., M.Phil., Ph.D	Dean, School of Arts and Science, PRIST Deemed to be University, Vallam, Thanjavur.	deanasd@prist.ac.in
11	Special Invitee-Alumnus/Alumna	Mr. D. Sathyaseelan	M.Sc.,	Officer, MNC, Karur, Tamil Nadu	sathyaseeland@gmail.com
12	Special Invitee -Current student - UG or PG	Mr. J. Mohamedsiddiq	B.Sc	Student	mohamedsiddiq@prist.ac.in

Head of the Department
Department of Biotechnology
School of Arts & Science
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Signature of the Chairman & Members

1. Dr. Bakrudeen Ali Ahamed	
2. Dr. L. Chinnappa / Dean	
3. Dr. P. Manonmani	
4. Dr. Arjun Pandian	
5. Dr. C. Anusha	
6. Dr. A. Shajahan	
7. Dr. [illegible]	
8. Dr. R. V. Shalini	
9. Dr. P. Anandharaman	
10. Mr. Umar Ali Khan	
11. Mr. D. Sathyaseelan	
12. Mr. J. Mohamed siddiq	

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Department of Biotechnology
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Annexure I - Revised Curriculum structure Credits

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF BIOTECHNOLOGY
B. Sc., BIOTECHNOLOGY -REGULATION 2020
COURSE STRUCTURE

SEMESTER I

Course Code	Course Title	L	T	P	C
THEORY					
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Language-I (Tamil-I/ Advanced English-I/ Hindi-I/ French-I)	4	0	0	2
20117ALC12	English-I	4	0	0	2
20117AEC13	Fundamentals of Biological System	6	1	0	5
20115AEC14A	Biological Chemistry	6	1	0	4
PRACTICAL					
20117AEC15L	Fundamentals of Bio ogical System Lab	0	0	3	2
20115AEC16AL	Biological Chemistry Lab	0	0	3	2
	Total	20	2	6	17
AUDIT COURSE					
20IACLSICN	Indian Constitution	0	0	0	2
20IACLSUHV	Universal Human Values	0	0	0	2

SEMESTER - II

Course Code	Course Title	L	T	P	C
THEORY					
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Language-II (Tamil-II/ Advanced English-II / Hindi-II/ French-II)	4	0	0	2
20117AEC22	English-II	4	0	0	2

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20117AEC23	Cell Biology and Genetics	6	1	0	5
20116AEC24	Microbiology	6	1	0	4
PRACTICAL					
20117AEC25L	Cell Biology and Genetics Lab	0	0	3	2
20116AEC26L	Microbiology Lab	0	0	3	2
RESEARCH SKILL BASED COURSE					
20117RLC27	Research LED Seminar	-	-	-	1
	Total	20	2	6	18
201ACLSCOS	Communication Skills	-	-	-	2
201ACSSBBE	Basic Behavioral Etiquette	-	-	-	2

SEMESTER – III

Course Code	Course Title	L	T	P	C
THEORY					
20110AEC31/ 20111AEC31/ 20132AEC31/ 20135AEC31	Language-III (Tamil-III/ Advanced English-III/ Hindi-III/ French-III)	4	0	0	2
20111AEC32	English-III	4	0	0	2
20117AEC33	Plant Physiology	4	1	0	4
20117AEC34	Immunology	4	1	0	5
PRACTICAL					
20117AEC35L	Plant Physiology Lab	0	0	3	2
20117AEC36L	Immunology Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20117RMC37	Research Methodology	2	0	0	2
	Total	18	2	6	19
AUDIT COURSE					
201ACLSOAN	Office Automation	-	-	-	2

SEMESTER – IV

Course Code	Course Title	L	T	P	C
THEORY					
20110AEC41/ 20111AEC41/ 20132AEC41/ 20135AEC41	Language-IV (Tamil-IV/ Advanced English IV/ Hindi-IV/ French-IV)	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20117AEC43	Animal Physiology	4	1	0	4
20117AEC44	Molecular Biology	5	1	0	5
201ENSTU45	Environmental studies	2	0	0	2
PRACTICAL					
20117AEC46L	Animal Physiology Lab	0	0	3	2

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20117AEC47L	Molecular Biology Lab	0	0	3	2
	Total	19	2	6	17
AUDIT COURSE					
201ACLSLMS	Leadership and Management Skills	-	-	-	2
201ACSSAQA	General Aptitude and Quantitative Ability	-	-	-	2

SEMESTER – V

Course Code	Course Title	L	T	P	C
THEORY					
20117AEC51	Food and Agricultural Biotechnology	4	1	0	4
20117AEC52	Cell and Tissue Culture	4	1	0	3
20117AEC53	Industrial Biotechnology	4	1	0	4
20117DSC54	Discipline Specific Elective - I	4	1	0	3
PRACTICAL					
20117AEC55U	Food and Agricultural Biotechnology, Tissue Culture Lab	0	0	3	2
20117AEC56L	Industrial Biotechnology Lab	0	0	3	2
RESEARCH SKILL BASED COURSE					
20117BRC57	Participation in Bounded Research	-	-	-	
	Total	16	4	6	19
AUDIT COURSE					
201ACLSPSL	Professional Skills	0	0	0	2

SEMESTER – VI

Course Code	Course Title	L	T	P	C
THEORY					
20117AEC61	Plant and animal Biotechnology	4	1	0	4
20117SEC62	Applied Biotechnology	4	1	0	5
20117DSC63	Discipline Specific Elective – II	4	1	0	3
201 – OEC (3 DIGIT	Open Elective	4	0	0	2
PRACTICAL					
20117SEC64L	Plant and Animal Biotechnology Lab	0	0	3	2
20117AEC65L	Applied Biotechnology Lab	0	0	3	2
20117PRW66	Project Work	-	-	-	4
20117PROEE	Programme Exit Examination	-	-	-	1
	Total	16	3	6	23
AUDIT COURSE					

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20IACS31ST	Interview Skills Training and Mock Test	-	-	-	2
20IACLSCEF	Community Engagement	-	-	-	1
Total Credits for the Programme					115
Total Credits - Audit Courses					19

Discipline Specific Electives

Semester	Discipline Specific Elective Courses-I
V	a) 20117DSC54A - Bioinformatics and Biostatistics b) 20117DSC54B – rDNA Technology
	Discipline Specific Elective Courses-II
VI	a)20117DSC63A -Environmental Biotechnology b)20117DSC63B - Environmental Management

Open Electives

Semester	Open Elective Courses
VI	20ITNOEC-Tamil Illakkiya Varalaru 20IENOEC-Journalism 20IMAOEC-Development of Mathematical Skills 20IPHOEC-Instrumentation 20ICFOEC-Food and Adulteration 20ICSOEC E-Learning 20ICAOEC-Web Technology 20ICMOEC-Banking service

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	17	-	-	-	-	-	17
II	17	-	-	-	1	-	18
III	17	-	-	-	2	-	19
IV	17	-	-	-	-	2	19
V	15	-	3	-	1	-	19
VI	6	7	3	2	4	1	23
Total	89	7	6	2	8	3	115

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Annexure II - Revised Curriculum structure Credits M. Sc



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SCHOOL ARTS AND SCIENCE
M.Sc., BIOTECHNOLOGY– REGULATION 2020
COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20217SEC11	General Microbiology	6	1	0	5
20217SEC12	Molecular Genetics	5	1	0	5
20217SEC13	Biochemistry	5	1	0	4
20217SEC14L	Microbiology & Molecular Genetics – Lab	0	0	4	2
20217DSC15_	Discipline specific elective I	5	0	0	4
20217RLS16	Research Led Seminar	-	-	-	1
	Total	23	3	4	21
	SEMESTER II				
20217SEC21	Cell & Molecular Biology	5	1	0	5
20217SEC22	Biophysics & Bioinformatics	5	1	0	5
20217SEC23	Industrial Biotechnology	5	0	0	4
20217SEC24L	Molecular Biology & Industrial Biotechnology – Lab	0	0	4	2
20217DSC25	Discipline specific elective II	5	0	0	4
20217RMC26	Research Methodology	3	0	0	2
20217BRC27	Participation in Bounded Research	-	-	-	2
	Total	23	2	4	24
	SEMESTER III				
20217SEC31	Genomics	6	1	0	6
20217SEC32	Proteomics	6	1	0	6
20217SEC33L	Genomics & Proteomics - Lab	0	0	5	3
20217DSC34_	Discipline specific elective III	5	0	0	4
202_OEC	Open Elective	4	0	0	3
20217SRC35	Design/socio technical research	-	-	-	2
	Total	21	2	5	24
	SEMESTER IV				

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20217SEC41	Food Technology	6	1	0	6
20217SEC42	Bio instrumentation	6	1	0	6
20217SEC43L	Food technology and Bio instrumentation lab	0	0	5	3
20217DSC44	Discipline specific elective IV	5	0	0	4
20217PRW45	Project work	-	-	-	6
20217PEE	Programme Exit Examination	-	-	-	2
	Total	17	2	5	27
	Total Credits for the Programme				96

Discipline specific Electives

Semester	Discipline specific Elective Courses-I
I	a)20217DSC15A- Immunology b)20217DSC15B- Biosafety and biodiversity
	Discipline specific Elective Courses–II
II	a)20217 DSC25A- Endocrinology b)20217 DSC25B- Bioethics and IPR
	Discipline specific Elective Courses–III
III	a)20217 DSC34A- Nanobiotechnology b)20217 DSC34B- Environmental biotechnology
IV	Discipline specific Elective Courses–IV
	a)20217 DSC44A-Gene therapy utilization pharmacology b)20217 DSC44B- Plant conservation & disaster management

Open electives

Semester	Open Elective Courses
III	202FNOEC-Writing for the media 202MAOEC-Applicable Mathematics Techniques 202PHOEC-Bio-Medical Instrumentation 202CHOEC-Green Chemistry 202CSOEC – M-Marketing 202CMOEC-Financial Services

Credit Distribution:

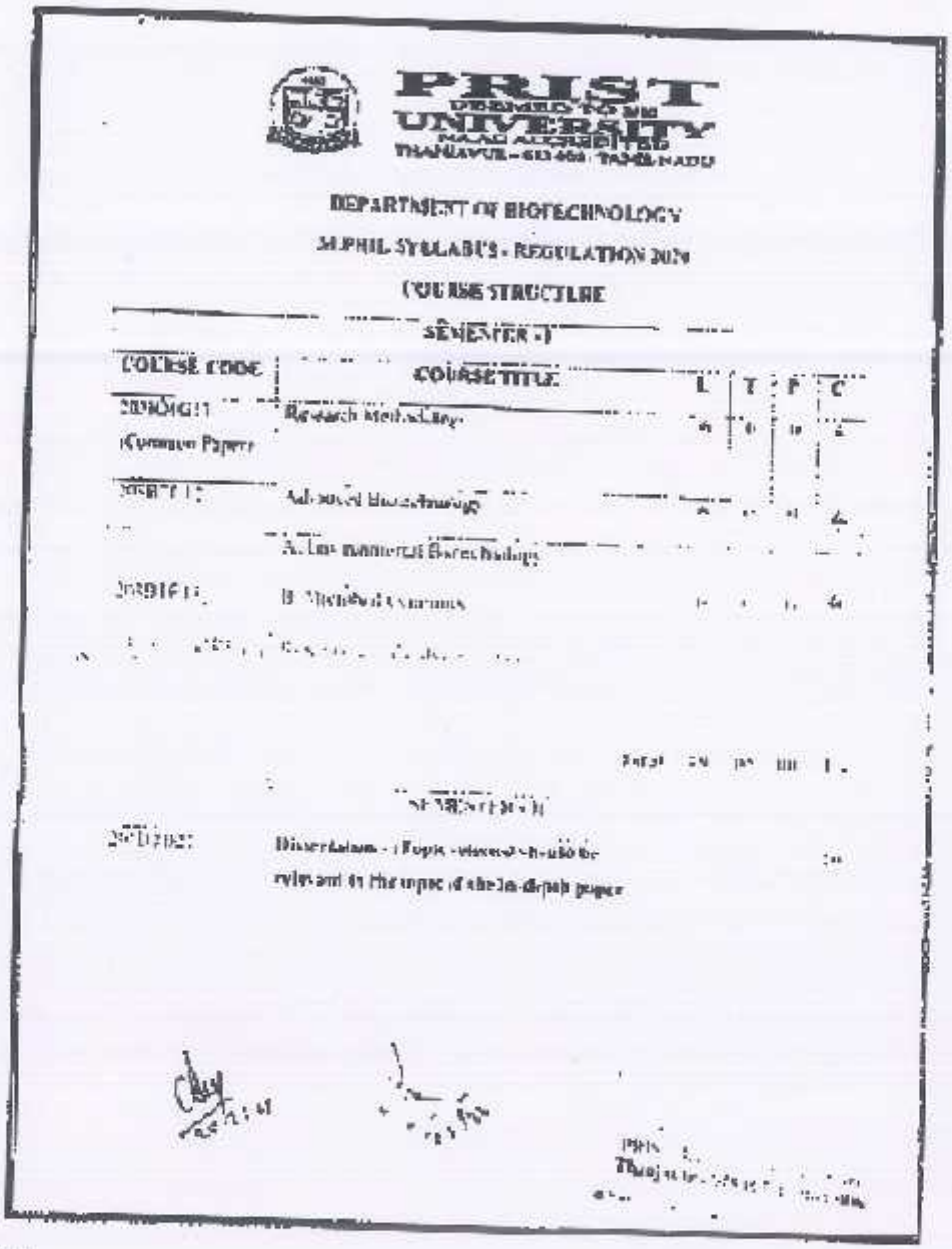
Sem	SEC	DSC	DEC	RSB Courses	Others	Total
I	16	4	-	1	-	21
II	16	4	-	4	-	24
III	15	4	3	2	-	24
IV	15	4	-	6	2	27
Total	62	16	3	13	2	96

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Annexure IV - Revised Curriculum structure Credits M. Phil



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DEPARTMENT OF BIOTECHNOLOGY

M.PHIL SYLLABUS - REGULATION 2020

COURSE STRUCTURE

SEMESTER I

COURSE CODE	COURSE TITLE	L	T	P	C
20BMGI1	Research Methodology	4	0	0	4
Common Paper					
20BBT11	Advanced Biotechnology	4	0	0	4
20BBT12	Advanced Biochemistry	4	0	0	4
20BBT13	Bioinformatics	4	0	0	4
20BBT14	Elective - I	4	0	0	4
20BBT15	Elective - II	4	0	0	4

SEMESTER II

20BBT21	Dissertation - Topic viva-voce should be relevant to the specialization paper				12

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Annexure V - **Revised Value added Courses**

a) Certificate course in Molecular Docking
b) Certificate Course in Environmental studies
c) Certificate course in Patent Law

Annexure VI - **List of Examiners**

Signature of the Chairman & Members

1. Dr. Bakrudeen Ali Ahamed	
2. Dr. L. Chinnappa / Dean	
3. Dr. P. Manonmani	
4. Dr. Arjun Pandian	
5. Dr. C. Anushia	
6. Dr. A. Shajehan	
7. Dr. G. Venkatkumar	
8. Dr. R. V. Shalini	
9. Dr. P. Anantharaman	
10. Mr. Umar Ali Khan	
11. Mr. D. Sathyaseelan	
12. Mr. J. Mohamed siddiq	

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LIST OF EXAMINERS -2020-2021 (Annexure-V)

1. Dr. Bakrudeen Ali Ahamed, Professor (Chairperson, BOS)
2. Dr. I. Chinnappa / Dean (Special Invitee)
3. Dr. P. Manonmani, Professor (Member, BOS)
4. Dr. Anjum Pandian, Associate Professor, (Member, BOS)
5. Dr. C. Anushia, Associate Professor (Member, BOS)
6. Dr. A. Shajahan, Assistant Professor (Member, BOS)
7. Dr. G. Venkatkumar, Assistant Professor (Member, BOS)
8. Dr. R. V. Shalini, Assistant Professor (Member, BOS)
9. Dr. P. Anantharaman Professor CAS in Marine Biology, Annamalai University (External Member, BOS)
10. Mr. Umar Ali Khan, Managing Director, Krind biotech Industry Trichy (External Member, BOS)
11. Mr. D. Sathyaseelan, Special Invitee Alumni Officer, MNC, Karur
12. Mr. J. Mohamed siddiq, B. Sc Biotechnology, PRIST Deemed to be University, Thanjavur

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Annexure-I

SEMESTER I

UNIVERSAL HUMAN VALUES

Course Code	Course Title	L	T	P	C
201ACLSUHV	Universal Human Values	-	-	-	2

Aim:

This course aims at making learners conscious about universal human values in an integralmanner, without ignoring other aspects that are needed for learner's personality development.

Course Objectives :

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realiseone's potentials.

Course Outcomes :

By the end of the course the learners will be able to.

1. Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
2. Learn from case studies of lives of great and successful people who followed and practised human values and achieved self-actualisation.
3. Become conscious practitioners of human values.
4. Realise their potential as human beings and conduct themselves properly in the ways of the world.

Unit I

- Introduction: What is love? Formsoflove—forself, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living
- Love and compassion and inner relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love
- Narratives and anecdotes from history, literature including local folklore
- Practicing love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion?
- Sharing learner's individual and/or group experience(s)
- Simulated Situations
- Casestudies

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Unit II

- Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honesty among others)
- Individuals who are remembered in history for practicing thisvalue
- Narratives and anecdotes from history, literature including local folklore
- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practiceit?
- Learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

Unit III

- Introduction: What is non-violence? Its need. Love, compassion, empathy sympathy for others as pre-requisites for non-violence
- Ahimsa as non-violence and non-killing
- Individuals and organisations that are known for their commitment to non-violence
- Narratives and anecdotesabounon-violence from history,and literature including local folklore
- Practicingaon-violence: What will learners learn/gain if they practice non-violence? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Casestudies

Unit IV

- Introduction: What is righteousness?
- Righteousness and *dharma*, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

Unit V

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organisations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulatedsituations
- Casestudies

Unit VI

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- Introduction: What is service? Forms of service for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress ordisaster.
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes dealing with instances of service from history, literature including local folklore
- Practicingservice: What will learners learn/gain gain if they practice service? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations
- Casestudies

Unit VII

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restraintand Ways of overcoming greed. Renunciation with action as true renunciation
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature,including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practiceit?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

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SEMESTER II

COMMUNICATION SKILLS

Course Code	Course Title	L	T	P	C
20IACLSC08	Communication Skills	-	-	-	2

Aim:

Course Objectives :

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learnersback
2. Identify what their non-verbal messages are communicating toothers
3. Understand role of communication in teaching-learningprocess
4. Learning to communicate through the digitalmedia
5. Understand the importance of empatheticlistening
6. Explore communication beyondlanguage.

Course Outcomes :

By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Unit I

- Techniques of effectivelistening
- Listening andcomprehension
- Probing questions
- Barriers tolistening

Unit II

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- CommonErrors

Unit III

- Techniques of effectivereading
- Gathering ideas and information from a giventext
  - i. Identify the main claim of thetext
  - ii. Identify the purpose of thetext
  - iii. Identify the context of thetext

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iv. Identify the conceptsmentioned

- Evaluating these ideas andinformation
  - i. Identify the arguments employed in thetext
  - ii. Identify the theories employed or assumed in thetext
- Interpret thetext
  - i. To understand what a textsays
  - ii. To understand what a textdoes
  - iii. To understand what a textmeans

Unit IV

- Clearly state theclaims
- Avoid ambiguity, vagueness, unwantec generalisations and over simplification of issues
- Provide background information
- Effectively argue theclaim
- Provide evidence for theclaims
- Use examples to explainconcepts
- Followconvention
- Be properlysequenced
- Use proper signpostingtechniques
- Be well structured
  - i Well-knit logicalsequence
  - ii Narrativesequence
  - iii Categorygroupings
- Different modesofWriting
  - i. E-mails
  - ii. Proposal writing for HigherStudies
  - iii. Recording the proceedings ofmeetings
  - iv. Any other mode of writing relevant forlearners

Unit V

- Role of Digital literacy in professionallife
- Trends and opportunities in using digital technology in workplace
- InternetBasics
- Introduction to MS Officetools
  - i. Paint
  - ii. Office
  - iii. Excel
  - iv. Powerpoint

Unit VI

- Introduction to social mediawebsites
- Advantages of socialmedia
- Ethics and etiquettes of socialmedia
- How to use Google searchbetter

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- Effective ways of using SocialMedia
- Introduction to DigitalMarketing

Unit VII

- Meaning of non-verbalcommunication
- Introduction to modes of non-verbalcommunication
- Breaking the misbeliefs
- Open and Closed Bodylanguage
- Eye Contact and FacialExpression
- HandGestures
- Do's andDon'ts
- Learning fromexperts
- Activities-BasedLearning

Reference:

1. SenMadhucchanda (2010), *An introduction to Critical Thinking*, Pearson.Delhi
2. Silvia P.J.(2007), *How to Read a Lot*, American Psychological Association, Washington DC

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SEMESTER III

Course Code	Course Title	L	T	P	C
201ACLSOAN	OFFICE AUTOMATION	-	-	-	2

Aim:

Course Objectives :

To provide an in-depth training in use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL)

UNIT IV

Presentation (MS Power Point)

UNIT V

Communicating with Internet

Reference:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of india

2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,cary N.Prague,Michael R.groh,Peter G.Aitken, and Lisa a.Bucki -Wiley India pvt.ltd.

3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd, 2013.

4. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications

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5. https://en.wikipedia.org

6. https://wiki.openoffice.org/wiki/Documentation

7. http://windows.microsoft.com/en-in/windows/windows-basics-all-topics

SEMESTER IV

Course Code	Course Title	L	T	P	C
20IACLSLMS	Leadership and Management Skills	-	-	-	2

Aim:

The aim of the course cultivating and nurturing the innate leadership skills of the youth so that they may transform these challenges into opportunities and become torch bearers of the future by developing creative solutions.

Course Objectives:

The Module is designed to:

- Help students to develop essential skills to influence and motivate others
- Inculcate emotional and social intelligence and integrative thinking for effective leadership
- Create and maintain an effective and motivated team to work for the society
- Nurture a creative and entrepreneurial mindset
- Make students understand the personal values and apply ethical principles in professional and social contexts.

Course Outcomes :

Upon completion of the course students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
2. Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.
3. Understand the basics of entrepreneurship and develop businessplans
4. Apply the design thinking approach for leadership
5. Appreciate the importance of ethics and moral values for making of a balanced personality.

UNIT I- Leadership Skills

a. **Understanding Leadership and its Importance**
   - What is leadership?
   - Why Leadership required?
   - Whom do you consider as an ideal leader?

b. ***Traits and Models of Leadership***
   - Are leaders born or made?

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- Key characteristics of an effective leader
- Leadership styles
- Perspectives of different leaders

c. ***Basic Leadership Skills***

- Motivation
- Team work
- Negotiation
- Networking

UNIT II - Managerial Skills

a. **Basic Managerial Skills**

- Planning for effective management
- How to organise teams?
- Recruiting and retaining talent
- Delegation of tasks
- Learn to coordinate
- Conflict management

b. ***Self Management Skills***

- Understanding self concept
- Developing self-awareness
- Self-examination
- Self-regulation

UNIT III - Entrepreneurial Skills

a. **Basics of Entrepreneurship**

- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

b. ***Creating Business Plan***

- Problem identification and idea generation
- Idea validation
- Pitch making

UNIT IV - Innovative Leadership and Design Thinking

a. **Innovative Leadership**

- Concept of emotional and social intelligence
- Synthesis of human and artificial intelligence
- Why does culture matter for today's global leaders

b. ***Design Thinking***

- What is design thinking?
- Key elements of designthinking:
  - Discovery
  - Interpretation
  - Ideation

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- Experimentation
- Evolution.

- How to transform challenges into opportunities?
- How to develop human-centric solutions for creating social good?

UNIT V- Ethics and Integrity

a. Learning through Biographies

- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration
- Drawing insights for leadership
- How leaders sail through difficult situations?

b. Ethics and Conduct

- Importance of ethics
- Ethical decision making
- Personal and professional moral codes of conduct
- Creating a harmonious life

Bibliography and Suggested Readings :

Books

- Ashokan, M. S. (2015). *Karmayogi: A Biography of E. Sreedharan*. Penguin, UK.
- Brown, T. (2012). *Change by Design*. Harper Business
- Elkington, J., & Hartigan, P. (2008). *The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World*. Harvard Business Press.
- Goleman D. (1995). *Emotional Intelligence*. Bloomsbury Publishing India Private Limited
- Kalam A. A. (2003). *Ignited Minds: Unleashing the Power within India*. Penguin Books India
- Kelly T., Kelly D. (2014). *Creative Confidence: Unleashing the Creative Potential Within Us*
  All. William Collins
- Kurien V., & Salve Q. (2012). *I Too Had a Dream*. Roli Books Private Limited
- Livermore D. A. (2010). *Leading with cultural intelligence: The New Secret to Success*. New York: American Management Association
- McCormack M. H. (1986). *What They Don't Teach You at Harvard Business School-Notes From A Street-Smart Executive*. RHUS
- O'Toole J. (2019) *The Enlightened Capitalists: Cautionary Tales of Business Pioneers Who Tried to Do Well by Doing Good*. Harpercollins
- Sinek S. (2009). *Start with Why: How Great Leaders Inspire Everyone to Take Action*. Penguin

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- Sternberg R. J., Sternberg R. J., & Baltes P. B. (Eds.). (2004). *International Handbook of Intelligence*. Cambridge University Press.

E-Resources

- Fries, K. (2019). 8 Essential Qualities That Define Great Leadership. *Forbes*. Retrieved 2019-02-15 from https://www.forbes.com/sites/kimberlyfries/2018/02/08/8-essential-qualities-that-define-great-leadership/#452ecc963b63.
- How to Build Your Creative Confidence. Ted Talk by David Kelly - https://www.ted.com/talks/david_kelley_how_to_build_your_creative_confidence
- India's Hidden Hot Beds of Invention Ted Talk by Anil Gupta - https://www.ted.com/talks/anil_gupta_india_s_hidden_hotbeds_of_invention
- Knowledge@Wharton Interviews Former Indian President APJ Abdul Kalam - . "A Leader Should Know How to Manage Failure" https://www.youtube.com/watch?v=InGZaS4sdeU
- Martin, R. (2007). How Successful Leaders Think. *Harvard Business Review*, 85(6): 60.
- NPTEL Course on Leadership - https://nptel.ac.in/courses/122105021/9

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SEMESTER V

Course Code	Course Title	L	T	P	C
20IACLSPSL	Professional Skills	-	-	-	2

Aim:

Course Objectives :

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue to partake in a successful career path
2. Prepare good resume, prepare for interviews and group discussions
3. Explore desired career opportunities in the employment market in consideration of an individual SWOT.

Course Outcomes :

At the end of this course the students will be able to:

1. Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax
2. Participate in a simulated interview
3. Actively participate in group discussions towards gainful employment
4. Capture a self - interview simulation video regarding the job role concerned
5. Enlist the common errors generally made by candidates in an interview
6. Perform appropriately and effectively in group discussions
7. Explore sources (online/offline) of career opportunities
8. Identify career opportunities in consideration of their own potential and aspirations
9. Use the necessary components required to prepare for a career in an identified occupation (as a case study).

Unit I: Resume Skills

Resume Skills : Preparation and Presentation

- Introduction of resume and its importance
- Difference between a CV, Resume and Bio data
- Essential components of a good resume

ii. Resume skills : common errors

- Common errors people generally make in preparing their resume
- Prepare a good resume of her/his considering all essential components

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Unit II: Interview Skills

i. **Interview Skills : *Preparation and Presentation***

- Meaning and types of interview (F2F, telephonic, video, etc.)
- Dress Code, Background Research, Do's and Don'ts
- Situation, Task, Approach and Response (STAR Approach) for facing an interview
- Interview procedure (opening, listening skills, closure, etc.)
- Important questions generally asked in a job interview (open and closed ended questions)

ii. ***Interview Skills : Simulation***

- Observation of exemplary interviews
- Comment critically on simulated interviews

iii. ***Interview Skills : Common Errors***

- Discuss the common errors generally candidates make in interview
- Demonstrate an ideal interview

Unit III: Group Discussion Skills

Meaning and methods of Group Discussion

- Procedure of Group Discussion
- Group Discussion– Simulation
- Group Discussion - Common Errors

Unit IV: Exploring Career Opportunities

Knowing yourself – personal characteristics

- Knowledge about the world of work, requirements of jobs including self-employment.
- Sources of career information
- Preparing for a career based on their potentials and availability of opportunities

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SEMESTER VI

Course Code	Course Title	L	T	P	C
201ACLSCET	Community Engagement	-	-	-	1

Aim:

Course Objectives:

- To develop an appreciation of rural culture, life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

Course Outcomes:

After completing this course, student will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and bonds of mutuality with local community
- Appreciate significant contributions of local communities to Indian society and economy
- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio-economic improvements

UNIT I - Appreciation of Rural Society

Rural life style, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages" (Gandhi), rural infrastructure.

UNIT II- Understanding rural economy & livelihood

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Agriculture, farming, landownership, water managtment, animal husbandry, non-farm livelihoods and artisans, rural entreprencurs, tural markets

UNIT II[Rural Institutions

Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Commitees), local civil society, local administration

UNIT IV Rural Development Programmes

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swatchh Bharat, PM AwaasYojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

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Annexure-II

Year I: Basic Behavioral Etiquette: 2 Credits

Year II : General Aptitude and Quantitative Ability: 2 Credits

Year III: Interview Skills Training and Mock Test: 2 Credits

Annexure-III

Course Code	Course Title	L	T	P	C
20117AEC44	Molecular biology	5	1	0	5

Aim:

- Understand the the basic concepts and applications of molecular mechanisms at a cell.

Objectives:

- To outline the basics of A central goal is understanding gene regulation at all levels, and the structure-function relationships of nucleic acids and proteins.

Outcomes:

- To Understand the regulation of protein and nucleic acids function
- To know the structure-function relationships and macromolecular interactions.
- To find out newer methods to implement rDNA Technology for various organisms.
- To understand several modern molecular methods to elucidate molecular and genetic questions.

UNIT I:

Organization of chromosomes, specialized chromosomes, chromosome abnormalities. Numerical and Structural chromosome mutations, crossing over.

DNA and RNA as genetic material, Concept of Gene, Gene-cistron relationship in prokaryotes and eukaryotes.

UNIT II:

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Principles of Transcriptional Regulation, Regulation of Chromatin Structure. regulatory RNAs, silencing gene expression by small RNAs, Viral infection strategy and gene expression

DNA damage and repair – excision repair, recombinational repair, promoter,operator, terminator and attenuator, Oncogenes and Tumor-suppressor genes

UNIT III:

Gene expression in prokaryotes and eukaryotes, Natural Gene Transfer in Bacteria-Types. Homologous recombination, Genomes and Mapping, gene linkage, three-point cross, tetrad analysis, Mobile Genetic Elements-Transposons, Retroelements and their consequences.

UNIT IV:

Plasmids-classification, replication and maintenance, artificial plasmids' Gene cloning: principles and strategies, Cloning vectors for higher plants and animals- Cloning DNA Sequences That Encode Eukaryotic Proteins.

Natural and artificial plasmid transfer and their applications. Insertion sequence in prokaryotes.

UNIT V:

Model organisms used as tool in rDNA Technology- *Escherichia coli* , *Saccharomyces cerevisiae* , *Saccharomyces cerevisiae*, *Caenorhabditis elegans and Arabidopsis thaliana*, zebrafish. Principles of PCR- Types and their applications.Construction of genomic DNA libraries and cDNA library- probes- types and construction- Screening a Library.

. REFERENCES

1. Advanced Molecular Biology: A Concise Reference (2000) R M Twyman, Garland/BIOS Scientific Publishers.
2. Molecular Biology (2000), Craig, Orna , Rachel Green, Carol W Greider, Carol W Greider. Oxford University Press
3. S.R. Maloy, J. Egronan and D. Friefelder (1994), Microbial genetics by Jones and Bartlett Publishers.
4. Watson JD, Baker TA, Bell SP, Gann A, Levine M and Losick R (2008) Molecular Biology of the Gene, 7th edition, CSHL Press, Pearson Publication.
5. Molecular Biology-Principles and Practice, Michael M. Cox, University of Wisconsin-Madison, Jennifer A. Doudna, Michael O'Donnell
6. Gene Cloning & DNA Analysis-An Introduction by T.A. Brown, 7th Edition, 2015. John Wiley & Sons, Ltd.

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Course Code	Course Title	L	T	P	C
20117AEC471	Molecular Biology Lab	0	0	3	2

Aim:

- Understand the the basic structure and applications of molecular mechanisms in a cell.

Objectives:

- To understanding gene regulation at all levels, and the structure-function relationships of nucleic acids and proteins.

Outcomes:

- To kow the isolation methods of protein and nucleic acids
- To know the structure-function of nucleic acid and protein.
- To find out newer methods to implement rDNA Technology for various organisms.
- To understand several modern molecular methods to elucidate molecular and genetic questions.

Experiments

1. Isolation of Genomic DNA
2. Isolation of Protein
3. Salting out- Dialysis method.
4. Protein precipitation method
5. Agarose Gel Electrophoresis
6. Amplification of DNA using PCR
7. Isolation of RNA.

REFERENCES:

1. Molecular Biology and Genomics(2007)- The Experimenter Series, Cornel Muthardt , Academic Press, Elsevier
2. Molecular Cloning-A LABORATORY MANUAL (2012), 4th Edition, Michael R. Green and Joseph Sambrook, CSHL Press
3. Principles and Techniques of Biochemistry and Molecular Biology(2018), 7th Edn. Keith Wilson and John Walker, Cambridge University Press

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Course Code	Course Title	L	T	P	C
20117AEC31	Food and Agricultural Biotechnology	4	1	0	4

Aim:

- To study theproduction mechanisms and various properties of Food and agricultural biotechnology

Objectives:

- The students will be able to apply principles of biotechnology in food and agriculture through biotechnology.
- To introduce basic processes in food technology and regulatory bodies and various factors in food shelf life evaluation

Outcomes:

- To study about molecular biology and enzymes and fermentation in food.
- To understand the food production and preservation techniques
- To acquire knowledge on agricultural techniques
- To know the knowledge about genetically modified food
- To understand food safety and standards

Unit I - Introduction to Food Biotechnology

History and evolution of food processing technology. Genetically Modified Foods-Plant and Animal origin. Ethical issues concerning GM Foods, testing for genetically modified organisms.

Unit II – Food Quality, Preservation and Processing

Basic principles and application of processing techniques- Food Additives. Principles of Food Preservation - processing of foods criteria for assessing freshness handling of fresh materials – on board handling and chilling methods.

Unit III – Drying, Freezing, Packing and Management

Drying and dehydration – conventional and modern methods. Freezing and cold storage – process of freezing and its types. Packing – Principles, food packaging requirements, packaging materials, types. Food hazards of physical and chemical origin and biological origin and its management.

Unit IV - Introduction and Importance of Agricultural biotechnology

Agricultural biotechnology - Introduction, Organic farming, green manure production, Soil fertility and management, vermicomposting. Fundamentals of Crop Production: evolution of crops – civilization of human, Crop improvement hybridization and plant breeding techniques, Technology for Crop Production.

Unit V – Future prospects of Agriculture Biotechnology

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Introduction to GM Crops, Implications of GM-Crops in Agriculture, Ethical Aspects and Public Acceptance, Crop seasons and crop rotation, Sustainable agriculture; pheromones, traps etc., - Benefits and controversies

References

1. Byong H. Lee, 2015. Fundamentals of Food Biotechnology, Second Edition, John Wiley & Sons, Ltd
2. Chandran, K.K., 2000 Post Harvest Technology of Fish and Fishery Products, Daya Publishing House, New Delhi.
3. Oliveira, F.A.R. and J.C Oliveira, 1999. Processing Foods: Quality Optimization and Process Assessment, CRC Press.
4. Food Biotechnology- Marwa, Arora
5. Hemant Rawat, 2008, Agricultural Biotechnology, Oxford Book Company
6. Arie Altman, 2006, Agricultural Biotechnology, Taylor & Francis

Course Code	Course Title	L	T	P	C
20117AEC55L	Food and Agricultural Biotechnology, Tissue Culture Lab	0	0	3	2

Aim:

- To study evaluation of microbiological quality and various properties of Food and agricultural biotechnology
- Identify and describe the structural features of plants
- Explain the mechanisms which lead to cell determination.

Objectives:

- To introduce basic processes in food technology and regulatory bodies and various factors in food shelf life evaluation
- Discuss the basic processes of plant metabolism, transport, nutrition, growth, and reproduction.

Outcomes:

- To understand the principles of biotechnology in food and agriculture through biotechnology.
- To know the food and agriculture analytical techniques
- To gain knowledge on design experiments to test the hypothesis.

Experiments

1. Effect of cleaning and disinfection on microbial load
2. Analysis of water for potable and food purposes
3. Detection/Estimation of adulterants in some foods.
4. Acid hydrolysis and action of salivary amylase on starch
5. Evaluation of microbiological quality of milk
6. Demonstration of microbial production of curd
7. Microbial Examination of vegetable sample-surface washing and internal tissue
8. Preparation of Tissue culture Media
9. Demonstration of surface sterilisation of explant
10. Isolation of protoplast

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11. Induction of Callus
12. Primary cell culture and maintenance of cell lines

References

1. Microbiology: A Laboratory Manual,20th Edn, James Cappuccino, Natalie Sherman.Pearson Higher education
2. Morris B. Jacobs, The chemical analysis of foods and food products, III Edition, CBS Publishers and distributors New Delhi.
3. Practical Microbiology, R C Dubey, D K Maheshwary
4. James Cappuccino, Microbiology: A Laboratory Manual, 10th edition., NatalieSherman.Pearson Higher education
5. Plant tissue culture manual, K. Unsey, 2007, Eastern book corporation.

Course Code	Course Title	L	T	P	C
20117AEC53	Industrial Biotechnology	4	1	0	4

Aim:

- Understanding the industrial importance of microorganisms and their products.

Objectives

- To study the development of industrial biotechnology and microbes of industrial prominence.
- To aquire knowledge on design of fermentors and its types.
- Industrial production of various pharmaceutical and commercial products using microbes.

Outcomes

CO1- To understand the vital role of various substrate used in fermentation.

CO2- To Learn the different types of reactors or fermenters.

CO3- To gain knowledge about upstream and downstream processing

Co4 - To acquire the knowledge on different product production

UNIT – I

Historical development of Industrial Microbiology, Industrially important microorganisms, Primary and secondary screening and preservation of industrially important strains. Microbial strains improvement. Primary and secondary metabolites.

UNIT – II

Fermenter: Design, types and basic functions of fermenter. Fermentation media formulation strategies, Essential factors (pH and temperature, incubation), carbon, nitrogen, vitamin and mineral sources, role of buffers, precursors, inhibitors, inducers and antifoams, types of fermentation.

UNIT – III

Downstream processing: Product recovery and purification (intracellular and extracellular), cell disruption, precipitation, filtration, centrifugation, solvent recovery, chromatography, ultrafiltration, drying, Enzyme and cells immobilizations and its applications.

UNIT – IV

Microbial products of pharmaceutical value – raw materials, organism and Industrial processes involved in the production of Penicillin, Streptomycin, Vitamin B12, Riboflavin and rabies vaccine.

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UNIT - V

Microbial products of industrial value – Raw materials, organism and industrial processes involved in the production of ethanol, vinegar, amylase, protease, glutamic acid. Recycling and safe disposal of industrial wastes through microbes.

Reference:

1. Stanbury, P.F.Whitaker, A.Hall, S.J. 1995. Principles of Fermentation Technology, Pergamon Press.
2. Sikyta, B.1983. Methods in Industrial Microbiology. Ellis horwood limited.
3. Click, B.R.Pasternak, J.J. 1994. Molecular Biotechnology – ASM Press.
4. Demain A.L.Solomon, N.A.1986. Manuall of Industrial Microbiology and Biotechnology. ASM Press
5. Reed. G. 1982. Prescott and Dunn's Industrial Microbiology. Macmillian Publishers
6. Prave, P.Faust, V. Sitting, W., Sukansch, DA. 1987. Fundamentals of Biotechnology. ASM Press.
7. Malik V.S.Sridhar, P.1992. Industrial Biotechnology. Oxford & IBH.

Course Code	Course Title	L	T	P	C
20117AEC56L	Industrial Biotechnology Lab	0	0	3	2

Aim:

- To learn the methods of industrial product production

Objectives:

- To make students familiar with principles of enzyme activity, analysis of enzyme on the immune system and different product production

Outcomes:

- To gain knowledge on enzyme production and characteristic analysis.
- To know the industrial process of various product production
- To gain the knowledge on industrial strain isolation and purification

Experiments

1. Microbial cell growth kinetics
2. Kinetic study of amylase
3. Immobilization of cells and enzymes by calcium alginate method
4. Estimation of enzyme (amylase)
5. Enzyme production and extraction-Lipase, protease and cellulase
6. Production of citric acid
7. Isolation and screening of antibiotic producers by crowded plate technique.
8. Isolation of Actinomycetes from soil

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9. Isolation of Nitrogen fixers from soil
10. Enzyme activity – Effect of pH

REFERENCES:

1. K.J Laidler and P.S.Bunting, The chemical kinetics of enzyme action: Oxford University Press,London.
2. Molecular cloning by Sambrook *et al.* volume-I

Peter F. Stanbury, Stephen J Hall &A. Whitaker, Principles of Fermentation Technology, Science & Technology Books.

Course Code	Course Title	L	T	P	C
20117SE062	Applied Biotechnology	4	1	0	5

Aim:

- To introduce students to the application aspects of mathematical modeling by analysing biological systems including populations of molecules, cells and organisms.

Objectives:

- The applied biotechnology provides students with the scientific background and laboratory experience necessary for employment in the biotechnology.

Outcomes:

- To receive enhanced knowledge and understanding for future work in both academia and industry.
- To know the role of biotechnology in the worldwide market
- To understand the recent techniques involved in biotechnological aspects

Unit I - INDUSTRIAL BIOTECHNOLOGY.

Fermenter Types, Production of enzymes-amylase, protease & lipase; Antibiotics- Penicillin, Streptomycin; Amino acids- Glutamic acid, Production of Alcohol and Xanthan Gum and SCP.

Unit II – MODERN CONCEPTS PRINCIPLES OF APPLIED BIOTECHNOLOGY

Protein engineering – Genome projects – HGP Structural genomics, Nano biotechnology – Bio Nano particles – Nano biosensors.

Unit III – CONCEPTS OF NANO-BIOLOGY

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Nano-definitions, biosystems, biological networks, biological neurons, neurotransmitters. Protein interactions modulated by chemical energy. Bio nanoparticles – nanocomposites, nanoparticulate

Unit IV - NANOMEDICINE AND NOVEL DRUG DELIVERY SYSTEMS

Drug delivery systems – polymer therapeutics; polymer drug conjugates; polymeric micelles. Mechanical testing: elasticity; toughness; effect of fabrication on strength. Application of Nano materials in medicine: cardiovascular medical devices; tissue regeneration (tissue engineering). Dendrimers as nanoparticulate drug carriers.

Unit V – BIOETHICS & BIOSAFETY

Intellectual Property Rights. General ethics and ethical issues. Animal rights, Environmental safety of GMOs. Regulations of GMOs, Biocthics for the future.

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1. Applied Biotechnology and Plant Genetics Hardcover – (2000) by M Sudhir. Dominant Publishers & Distributors.
2. Plant Biotechnology: Current and Future Applications of Genetically Modified Crops Hardcover – (2006) by Nigel Halford (Editor). Wiley Publisher.
3. Applied Biotechnology and Plant Genetics Hardcover – (2009) by GANGULI ASHOK (Author). Oxford Book Company.
4. Plant Biotechnology and Genetics: Principles, Techniques and Applications Hardcover – (2008) by C. Neal Stewart Jr. (Editor). Wiley-Blackwell Publisher.
5. Plant Physiology and Biotechnology: Fundamental and Applied Research Paperback (2014) by Hossain a B M Sharif (Author). LAP Lambert Academic Publishing.

Course Code	Course Title	L	T	P	C
20117AEC65L	Applied Biotechnology Lab	0	0	3	2

Aim:

- To introduce and understand the biotechnological application in various field.

Objectives:

- The applied biotechnology provides students with the scientific background and laboratory experience necessary for employment in the biotechnology.

Outcomes:

- To receive enhanced knowledge and understanding for future work in both academia and industry,
- To know the role of biotechnology in the worldwide market

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- To know the methods of different kinds of product production

1. Estimation of total solids in effluent sample
2. Soil analysis- pH, Chloride, Calcium, Magnesium, Phosphorous and Nitrate
3. Determination of BOD& COD
4. Sericulture preparation
5. Spawn preparation
6. Mushroom cultivation
7. Preparation of vermibeds
8. Collection and Identification of earthworm
9. Isolation of microorganism from vermicompost
10. Isolation of airborne bio particles

Experiments

1. Experimental procedures in Life Sciences, S.Rajan and R. Selvi Christy, 2010, Anjanaa book house.
2. Handbook of practical sericulture, Ullal and Narushima, CSIR Bulletins on Sericulture
3. Experiments in Microbiology Plant Pathology, Tissue Culture and Mushroom production technology. K.R.Aneja. 2001, New age international (P) Ltd publishers.

Annexure-IV

RESEARCH AND PUBLICATION ETHICS

Course Code	Course Title	L	T	P	C
CPE_RPE	Research and publication ethics				2

THEORY

Unit 1: PHILOSOPHY AND ETHICS (3 hours)

1. Introduction to philosophy. definition, nature and scope, concept, braches.
2. Ethics: definition, moral philosophy, nature of moral judgements and reactions.

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Unit II: SCIENTIFIC CONDUCT (5 hours)

1. Ethics with respect to science and research.
2. Intellectual honesty and research integrity.
3. Scientific misconducts: Falsification, Fabrication and Plagiarism (FFP)
4. Redundant publications: duplicate and overlapping publications, salami slicing.
5. Selective reporting and misrepresentation of data.

Unit III : PUBLICATION ETHICS (7 hours)

1. Publication ethics: definition, introduction and importance.
2. Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.
3. Conflicts of interest.
4. Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types.
5. Violation of publication ethics, authorship and contributorship.
6. Identification of publication misconduct, complaints and appeals.
7. Predatory publishers and journals.

PRACTICE

Unit IV: OPEN ACCESS PUBLISHING (4 hours.)

1. Open access publications and initiatives.
2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies.
3. Software tool to identify predatory publications developed by SPPU.
4. Journal finder / journal suggestion tools viz, JANE, Elsevier Journal Folder, Springer Journal Suggester, etc.

UNIT V : PUBLICATION MISCONDUCT (4 hours)

A. Group Discussions (2 hours)

1. Subject specific ethical issues, FFP, authorship
2. Conflicts of interest,
3. Complaints and appeals: examples and fraud from India and abroad.

B. Software tools (2 hours)

Use of plagiarism software like Turnitin, Urkund and other open source software tools.

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UNIT VI: DATABASES AND RESEARCH METRICS (7 hours)

A. Databases (4 hours)

1. Indexing databases.
2. Citation database: Web of Science, Scopus etc

B. Research Metrices (3 hours)

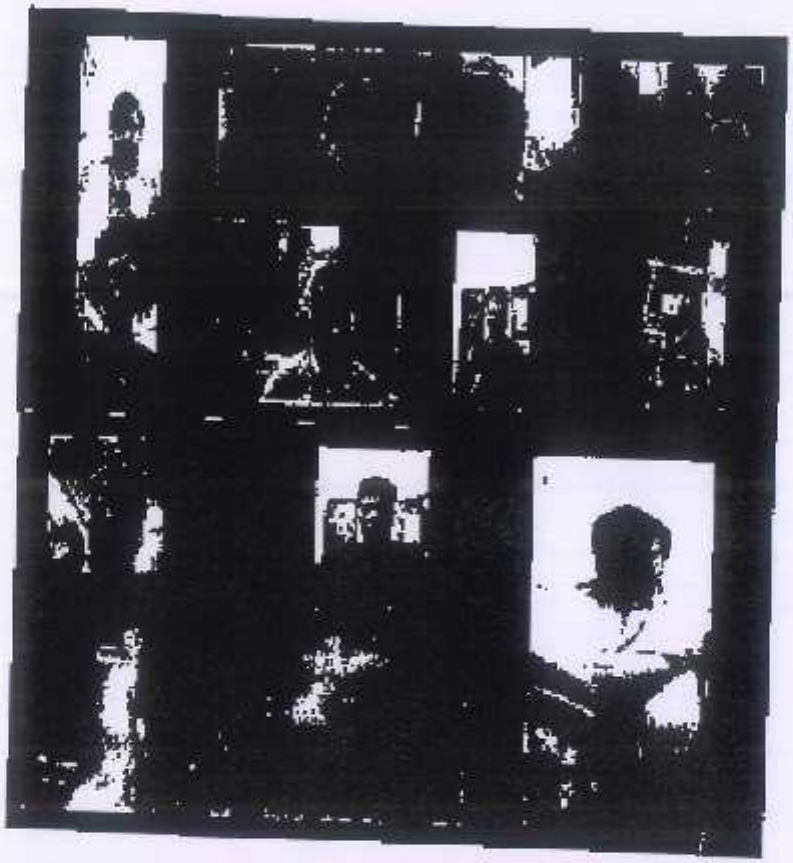
1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score.
2. Metrices: h-index, g index, i10 index, altmetrics.

Annexure-V

LIST OF MEMBERS -2020-2021

1. Dr. Bakrudeen Ali Ahamed Professor (Chairman , BOS)
2. Dr. L.Chinnappa / Dean (EX-Officio)
3. Dr. P. Arjun Associate Professor, (Member, BOS)
4. Dr. R. Arun Kumar, Associate Professor (Member, BOS)
5. Dr. A. Shajahan Assistant Professor, (Member, BOS)
6. Dr. C Anushia Assistant Professor, (Member, BOS)
7. Dr. P. Anantharaman Professor, CAS in Marine Biology, Annamalai University (External Member, BOS)
8. Mr. Umar Ali Khan, Managing Director, Krind biotech industry Trichy (External Member, BOS)

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DEPARTMENT OF BIOTECHNOLOGY

CERTIFICATE COURSE SYLLABUS

ACADEMIC YEAR 2020-2021

PATENT LAW

Subject code: 20517PL

COURSE OUTCOME

1. Students learnt the fundamental aspects of IPR
2. They also gained knowledge on patent, copyright and trademark

UNIT I

Intellectual Property Rights: Introduction and Protection of Intellectual Property. Copyrights. Trademarks, Patents, Designs, Utility Models, Trace Secrets and Geographical Indications. The Paris Convention, Patent Co-operation Treaty, TRIPS, The World Intellectual Property Organization (WIPO) and the UNESCO

UNIT II

Patents – Concept of Patent, Product : Process Patents & Terminology, Duration of Patents, Law and Policy Consideration Elements of Patentability, Novelty and Non Obviousness, Industrial Application, Non- Patentable Subject Matter.

UNIT III

Patent Law and practice in India: Novelty and Inventive step, Procedure for Filing of Patent Application and types of Applications Procedure for Opposition, Revocation of Patents, Ownership and Maintenance of Patents, Assignment and licensing of Patents, Working of Patents- Compulsory Licensing, Patent Agent- Qualification and Registration Procedure, Patent Drafting, Infringement and Defenses, PCT and Patent search.

UNIT IV

International Patent Law: American patent law-Patentability Requirements, Eligible subject matter, Application process, Infringement and defenses, America Invents Act, Hatch Waxman Act & FDA, Bayh-Dole Act, Re-examination.

UNIT V:

Standard setting and Technology transfer of Patent Law: Standard setting and patent Law- patent pools, standard essential patents and FRAND, Technology transfer and Patent Law- Technology transfer, IP Licensing and patent trolls.

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Books Reference

1. R.S Khandpur, Handbook of Biomedical instrumentation, Tata McGraw Hill publishing company Limited. New Delhi.(2003). (Unit I,II,IV & V).
2. Leslie Cromwell, "Biomedical Instrumentation and Measurement", Prentice Hall ofIndia, New Delhi. 2007.
3. Lestlie Cromwell. Fred J. Weibell, Erich A. Pfeiffer, Bio medical instrumentation and measurements, PHI, New Delhi.(Unit-III).
4. Khandpur R.S, Handbook of Biomedical Instrumentation, Tata McGraw-Hill, New Delhi,2nd edition, 2003

3 Joseph J Carr and John M.Brown, Introduction to Biomedical Equipment Technology, John Wiley and sons. New York, 4th edition, 2012.

Journal reference

1. John G. Webster, Medical Instrumentation Application and Design, John Wiley and sons, New York. 1998.
2. Dunn Knudson, Fundamentals of Biomechanics, Springer, 2nd Edition, 2007.
3. Suh, Sang, Gurupur, Varadraj P., Tanik, Murat M., Health Care Systems Technology and Techniques, Springer, 1st Edition, 2011.
4. Ed. Joseph D. Bronzino, The Biomedical Engineering Hand Book. Third Edition, Boca Raton, CRC Press LLC. 2006.
5. M.Arumugam, 'Bio-Medical Instrumentation', Anuradha Agencies, 2003. Aswani Kumar Bansal : Law of Trademarks in India
6. B L Wadehra : Law Relating to Patents, Trademarks, Copyright, Designs and Geographical Indications.
7. G.V.G Krishnamurthy : The Law of Trademarks, Copyright, Patents and Design. Satyaw'at Pookie : The Management of Intellectual Property. Feroz Ali, The Law of Patents, LexisNexis

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DEPARTMENT OF BIOTECHNOLOGY

CERTIFICATE COURSE SYLLABUS

ACADEMIC YEAR 2020-2021

ENVIRONMENTAL STUDIES

Subject code: 20517EVS

Course outcome

1. Discover knowledge in ecological perspective and value of environment,
2. Understand the significance of various natural resources and its management. Demonstratea comprehensive understanding of the world's biodiversity and the importance of its conservation.
3. Categorize different types of pollutions and their control measures. Discover effectivemethods of waste Management.
4. Analyze global environmental problems and come out with best possiblesolutions. Understand environmental laws and sustainable development.
5. Demonstrate an integrative approach to environmental issues with a focus on sustainability; Use critical thinking, problem-solving, and the methodological approaches of the social sciences, natural sciences, and humanities in environmental problem solving.
6. Communicate complex environmental information to both technical and non-technical audiences; Understand and evaluate the global scale of environmental problems; and Reflect critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world.

UNIT-I

Introduction to environmental studies Multidisciplinary nature of environmental studies Scope and importance; Concept of sustainable development.

UNIT-II

Ecosystems.What is an ecosystem? Structure And function of ecosystem: Energy Flow in an ecosystem: Food chains, food webs and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries.

UNIT-III

Natural Resources: Renewable and Non--renewable Resources and resources and land use change: Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment.

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forests and biodiversity. Water: Use and overexploitation of surface and ground water. Energy resources: Renewable and non-renewable energy sources, Use of alternate energy sources.

UNIT-IV

Biodiversity and Conservation levels of biological diversity :genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns and global biodiversity hotspots. endangered and endemic species of India. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. biological invasions; Conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational value.

UNIT-V

Environmental Pollution - Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution etc. Nuclear hazards and human health risks, Solid waste management Control Measures of urban and industrial waste. Pollution case studies.

UNIT-VI

Environmental Policies & Practices: Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture - Environment Laws : Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution).

References:

1. Benny Joseph, "Environmental Studies", Tata Mc Graw Hill Publishing Co. Ltd. New Delhi, 1stEdition. 2006.

2. Erach Bharucha, "Textbook of Environmental Studies for Under Graduate Courses", Orient Black Swan, 2ndEdition. 2013.

3. Dr P. D Sharma, "Ecology and Environment", Rastogi Publications, New Delhi, 12thEdition, 2015.

4. Tyler Miller, Scott Spoolman, "Environmental Science", Cengage Learning, 14thEdition, 2012.

5. Anubha Kaushik, "Perspectives in Environmental Science", New Age International, New Delhi, 4thEdition, 2006.

6. Gilbert M. Masters, Wendell P. Ela, "Introduction to Environmental Engineering and Science, Pearson, 3rdEdition, 2007.

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DEPARTMENT OF BIOTECHNOLOGY

CERTIFICATE COURSE SYLLABUS

ACADEMIC YEAR 2020-2021

MOLECULAR DOCKING

Subject code: 20S17MDG

COURSE OBJECTIVE

- To learn various software and tools for computer-aided drug designing.
- To make students understand the essential features of the interdisciplinary field of science

UNIT I: Drug Discovery

Historic development of drug discovery. Modern drug discovery. Molecular modelling-drug targets discovery-target identification, Hits and lead identification, lead optimization, principles of drug ability, Role of Bioinformatics in drug design

UNIT II: Molecular Mechanics

Basic Chemistry Review & Drug Discovery - Bio-molecular Structure & their Molecular Interactions and Recognition – Introduction to Methods in 3-D Structure Determination and Molecular modeling - Molecular Conformation & Primary Sampling Methods for Computer Simulations

UNIT III: Drug – Receptor interaction

Molecular basis of drug action: Drug Receptor Interaction: Basic ligand concept, agonist, antagonist, partial agonist, inverse agonist, Drug receptor concepts, Enzyme Inhibition – enzyme Inhibitors - reversible, irreversible, enzyme inhibitors as drugs

UNIT IV: Drug design

Prediction of binding site and virtual screening. Drug design -Structure-based drug design, Ligand based drug design, De novo ligand design, Molecular docking-search algorithm, scoring functions, ADMET properties.

UNIT V: Molecular Docking

Methods and Tools in Computer-aided molecular design, Molecular Docking- searching Methods - Scoring function-Protein ligand interaction- Docking using AUTODOCK- Pitfalls in docking

COURSE OUTCOME

- Apply basic bioinformatics tools for various needs in biotechnology
- Identify the drug targets and understand the mode of action
- To know software and tools for computer-aided drug designing

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1. D. Baxivanis and Foulette - Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins, Wiely Indian Edition, 2001.
2. T K Attwood, D J parry-Smith, Introduction to Bioinformatics, Pearson Education. 1st Edition, 11th Reprint 2005.
3. A. R.Leach - Molecular Modeling Principles and Application, 2nd edition. Longman Publications. 1996.
4. Gore M, Jagtap, *Computational Drug Discovery and Design*, Humana Press , ISBN: 978-1493977550

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF ENGLISH

BOARD OF STUDIES(BOS) MEETING CIRCULAR

Date: 03.07.2020

There will be a Board of studies Meeting on 10.07.2020 at 3 pm inthe staff room

All the staff members are requested to attend the meeting

Agenda:

Curriculum

Feedback

Academic Calendar

Department Activities

Workload

Time table

Others

HOD

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF ENGLISH

The following members were present:

S.NO	NAME	DESIGNATION	SIGNATURE
1	Dr.K.Shibila	HOD, English- PRIST A&S	
2	Dr.Kannan	Prof., Devanagere, University Karnataka	
3	Dr.Dasari Murali Manohar	Prof., University of Hyderabad, Telugana	
4	Dr. N. Meenunjathi	Professor -PRIST	
5	Dr. R.A. Rajasekaran	Professor - PRIST	
6	Dr. N.Prema	Associate Professor-PRIST	
7	Dr.D.Ravikumar	Associate Professor-PRIST	
8	R.Vishalakshi	Assistant Professor- PRIST	
9	Banulakshmi Paladugu	Assistant Professor- PRIST	
10	Dr.L.Chinnappa	DEAN of Arts and Science	
11	A.Nivethitha	Beautician	
12	Magesh V	Student	

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MINUTES OF THE BOARD OF STUDIES MEETING 2020-2021

The meeting of the Board of studies was held on 30-07-2020 at 3.pm through online under the chairmanship of Dr.K.Shibila, Head of the department of English.

- The Chairman (BOS) welcomed all the members. Members analyzed the feedbacks from the stakeholders and reviewed the existing syllabus for B.A, M.A, M.Phil. in detail. The members of the board have discussed and passed the following

1. Resolved to introduce the following Audit Courses in the B.A.(English) programme curriculum with effect from 2020-21
   Semester I: Universal Human Values - 2 credits
   Semester II : Communication Skills- 2 credits
   Semester III: Office automation- 2 credits
   Semester IV: Leadership and Management Skills- 2 credits
   Semester V: Professional Skills- 2 credits
   Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in Annexure-I

2. Resolved to introduce the following Audit Courses on Soft Skills in the B.A.(English) programme curriculum with effect from 2020-21
   Year I: Basic Behavioral Etiquette: 2 Credits
   Year II : General Aptitude and Quantitative Ability: 2 Credits
   Year III: Interview Skills Training and Mock Test: 2 Credits

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses on Soft Skills as given in Annexure-II

3. Resolved to introduce an Audit Couse on "Community Engagement" with one credit in the 3rd year of B.A.(English) programme curriculum with effect from 2020-2021

4. Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of B.A.(English) programme with effect from 2020-2021.

5. Resolved to modify the contents for the following courses in the II semester of M.A. English programme
   Post-colonial literature 19211AEC22 -Unit IV
   Diaspora Literature19211AEC23 -Unit IV&V and
   Canadian Literature19211DSC25A-Unit II & IV

HOD Resolved to introduce an Discipline Specific Elective Courses in B.A. (English) programme curriculum with effect from 2020 – 2021

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Semester V a) 20111DSC55A-Single Author Study-Tagore
b) 20111DSC55B-Single Author Study- Charles Dickens
c) 20111DSC55C- Single Author Study - Kamala Das
d) 20111DSC55D- Single Author Study- R.K.Narayan
e) 20111DSC55E- Single Author Study- Leo Tolstoy

Semester VI a) 20111DSC64A-Study of a genre- One act Play
b) 20111DSC64B-Study of a genre-Novel

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c) 20111DSC64C-Study of a genre-Fiction
d) 20111DSC64D-Study of a genre-Short stories
e) 20111DSC64E-Study of a genre-Drama

7. Value added courses alike Spoken English and public speaking were introduced to the curriculum, which is the purpose of resolving the student demands in the feedback .

8. Resolved to introduce an Discipline Specific Elective Courses in M.A. (English) programme curriculum with effect from 2020 – 2021

Semester I a)20211DSC15A- Romantic Movement
b)20211DSC15B- Literature and Gender
c)20211DSC15C- Indian Literature - II
d)20211DSC15D- Gothic Literature
e)20211DSC15E- 18th Century Drama

Semester II a)20211DSC25A- Canadian Literature
b)20211DSC25B- New Literature
c)20211DSC25C- Irish Literature
d)20211DSC25D- Indian Literature - II
e)20211DSC25E- 19th Century Drama

Semester III a)20211DSC34A- African Literature
b)20211DSC34B- French Literature
c)20211DSC34C- Medieval Literature
d)20211DSC34D- Modernism and PostModernism
e)20211DSC34E- 20th Century Drama

Semester IV a)20211DSC44A- Australian Literature
b)20211DSC44B- Epics in Translation
c)20211DSC44C – Linguistics Approach to Literature
d)20211DSC44D – Approaches to Teachin

9. Resolved to introduce a course on "Research and Publication Ethics" with 2 credits in the M.Phil. (English) programme curriculum with effect from 2020-21. Further resolved to approve the syllabus for the same as given in Annexure-IV Resolved not to make changes in other courses in B.A. English, M.A. English and M.Phil English programmes

10. Resolved not to make changes in Add on course journalism, public speaking. Members of the board updated the panel of examiners and submitted the same to theAcademic Counsel for its approval.

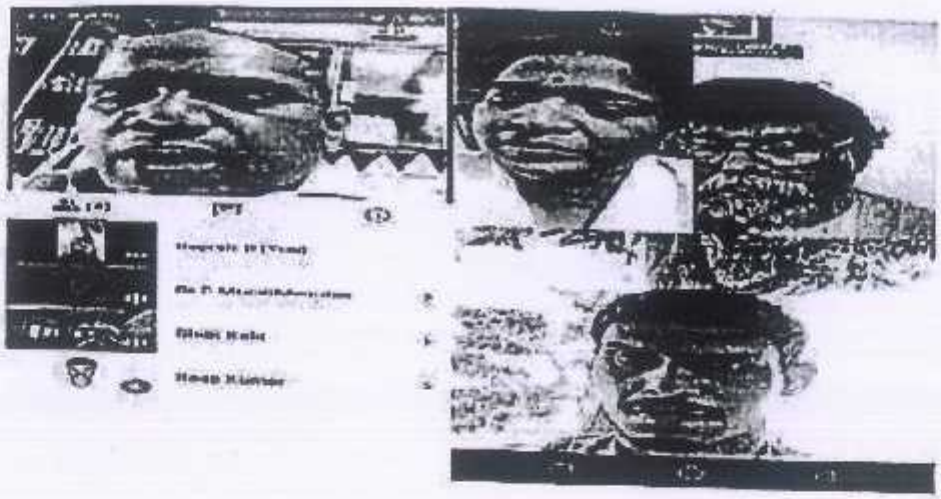
Annexure 1 - Revised Curriculum structure Credits

Annexure 2 - Revised Curriculum structure and Syllabus of UG

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Annexure 1 - Revised Curriculum structure Credits

Annexure 2 - Revised Curriculum structure and Syllabus of PG

Annexure 3 - Revised Curriculum structure and syllabus of M.Phil

Annexure 4 – Value added courses discussion and enchanting course introduce

Annexure 5 - List of Examiners

Note: Annexure 1,2,3,4 and 5 are Signed by the Chairman of BOS

The meeting concluded with the vote of thanks from the Board of Studies, Chairman.

Chairman of the Board of Studies Members

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SCHOOLOFARTSANDSCIENCE
DEPARTMENTOFENGLISH

2020 – 2021

BA ENGLISH- REGULATION 2020
COURSE STRUCTURE
SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Language-I(Tamil-I/ Advanced English-I/ Hindi-I/ French-I)	4	0	0	2
20111AEC12	English-I	4	0	0	2
20111AEC13	Literature in1400-1600Period	5	0	0	3
20111AEC14	Literature in Elizabethan Period	5	0	0	3
20111AEC15	Social History of England-I	4	0	0	3
20111AEC16	History of English Literature-I	5	0	0	4
	Total				17
	AUDITCOURSE				
201ACLSICN	Indian Constitution	-	-	-	2
201ACLSUHV	Universal Human Values	-	-	-	2

SEMESTER–II

CourseCode	CourseTitle	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Language-II(Tamil-II/ Advanced English-II/ Hindi-II/ French-II)	4	0	0	2
20111AEC22	English-II	4	0	0	2
20111AEC23	Literature in Jacobean Period	5	0	0	3
20111AEC24	Literature in Restoration Period	5	0	0	4
20111AEC25	Social History of England-II	4	0	0	3
20111AEC26	History of English Literature-II	5	0	0	4
	RESEARCHSKILLBASEDCOURSE				
20111RLC27	Research Led Seminar	-	-	03	1
	Total				19
	AUDITCOURSES				
201ACCSCOS	Communication Skills				
201ACSSBEE	Basic Behavioral Etiquette				

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SEMESTER-III

CourseCode	CourseTitle	L	T	P	C
	THEORY				
20110AEC31/ 20111AEC31/ 20132AEC31/ 20135AEC31	Language-III(Tamil-III/ Advanced English-III/ Hindi-III/ French-III)	4	0	0	2
20111AEC32	English-III	4	0	0	2
20111AEC33	Literature in AugustanPeriod	4	0	0	3
20111AEC34	Literature in RomanticPeriod	4	0	0	3
20111SEC35	Literary Forms and Prosody	5	0	0	4
20111AEC36	Shakespeare	4	0	0	3
	RESEARCHSKILLBASEDCOURSE				
20111RMC37	Research Methodology	2	0	0	2
	Total				19
	AUDITCOURSE				
201ACLSOAN	Office Automation	-	-	-	2

SEMESTER-IV

CourseCode	CourseTitle	L	T	P	C
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 20135AEC41	Language-IV(Tamil-IV/ Advanced English-IV/ Hindi-IV/ French-IV)	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20111SEC43	Language and Linguistics	4	0	0	3
20111AEC44	Literature in Victorian Period	4	0	0	3
20111AEC45	Literary Criticism	5	0	0	4
20111AEC46	Indian and European Classics in Translation	4	0	0	3
201ENSTU45	Environmental Studies	2	0	0	2
	Total				19
	AUDITCOURSE				
201ACLSLMS	Leadership and Management Skills	-	-	-	2
201ACSSAQA	General Aptitude and Quantitative Ability				2

SEMESTER-V

CourseCode	Course Title	L	T	P	C
	THEORY				
20111AEC51	Literature in ModernPeriod-I	5	0	0	3
20111AEC52	American Literature	5	0	0	3
20111SEC53	English Language Teaching	5	0	0	3
20111SEC54	Translation	5	0	0	4

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20I1IDSC55_	Discipline Specific Elective-I	5	0	0	3
	RESEARCHSKILLBASEDCOURSE				
20I20BRC57	Participation in Bounded Research	-	-	-	1
	Total				19
	AUDITCOURSE				
20IACLSPSL	Professional Skills	-	-	-	2

SEMESTER–VI

CourseCode	CourseTitle	L	T	P	C
	THEORY				
20111AEC61	Literature in Modern Period-II	5	0	0	4
20111AEC62	Indian Writing in English	5	0	0	4
20111AEC63	Common wealth Literature	5	1	0	5
20111DSC64_	Discipline Specific Elective-II	5	0	0	3
201__OEC(2Digit Course Name)	Open Elective	4	0	0	2
	PRACTICAL				
20112PRW66	Project Work	-	-	-	4
20111PEE	ProgrammeExitExamination	-	-	-	1
	Total				23
	AUDITCOURSE				
20IACSSIST	InterviewSkillsTrainingandMockTest	-	-	-	2
20IACLSCET	CommunityEngagement	-	-	-	1
	TotalCredits-Programme				116
	TotalCredits-AuditCourses				19

DisciplineSpecificElectives

Semester	DisciplineSpecificElectiveCourses
V	a) 20111DSC55A-SingleAuthorStudy-Tagore b) 20111DSC55B-Single AuthorStudy-OliverGoldsmith
VI	a) 20111DSC64A-Studyofagenre-Poetry b) 20111DSC64B-Studyofagenre-Novel

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SCHOOL OF ARTS AND SCIENCE DEPARTMENT OF ENGLISH

M.A ENGLISH-20PGENGGE-COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20211AEC11	History of English Language and Structure	6	0	0	4
20211AEC12	Shakespeare	6	0	0	4
20211AEC13	British Literature	6	0	0	4
20211AEC14	Indian Writing in English	6	0	0	4
20211DSC15_	Discipline Specific Elective-I	5	0	0	4
20211RLC16	Research Led seminar	-	-	-	1
	Total	29	0	0	21
	SEMESTER II				
20211AEC21	Women's writing in English	5	0	0	4
20211AEC22	Post-Colonial Literature	6	0	0	4
20211AEC23	Diaspora Literature	6	0	0	4
20211AEC24	Comparative Literature & World Classics in Translation	5	0	0	4
20211DSC25_	Discipline Specific Elective- II	5	0	0	4
20211RMC26	Research Methodology	3	0	0	2
20211BRC27	Participation in Bounded Research	-	-	-	2
	Total	30	0	0	24
	SEMESTER III				
20211SEC31	Critical Approaches to English Literature	6	0	0	5
20211AEC32	American Literature	6	1	0	5
20211AEC33	Literary Criticism	6	1	0	5
20211DSC34	Discipline Specific Elective- III	5	0	0	4
202OEC	Open Elective	4	0	0	3
20211SRC36	Design/Socio Technical Research	-	-	-	2
	Total	27	2	0	24
	SEMESTER IV				
20211SEC41	Translation	5	1	0	5
20211SEC42	English Language Teaching	6	1	0	5
20211AEC43	English Literature for Competitive Examination	6	0	0	5
20211DSC44_	Discipline Specific Elective- IV	5	0	0	4
20211PRW45	Project Work	0	0	0	6
20211PEE	Programme Exit Examination	0	0	0	2
	Total	22	2	0	27
	Total Credits for the Programme				96

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Discipline Specific Electives

Semester	Discipline Specific Elective Courses
I	a)20211DSC15A-RomanticMovement b)20211DSC15B-LiteraryMovement
II	a)20211DSC25A-CanadianLiterature b)20211DSC25B-AsianLiteraturesinEnglish
III	a)20211DSC34A- AfricanLiterature b)20211DSC34B- PopularLiterature
IV	a)20211DSC44A- Australian Literature b)20211DSC44B- IndianFictioninTranslation

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DEPARTMENTOFENGLISH
M.PhilENGLISHLITERATURE-2020SYLLABUS
M.PhilENGLISHLITERATURE-20MPENGGE

SYLLABUS–REGULATION2020 COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	Semester I				
203ENC11	Research Methodology and Theory of Literature	2	2	0	2
203ENC12	Literary Theory	2	2	0	2
203ENC13	Discipline Specific Elective	2	2	0	2
Common Paper	Research and PublicationEthics	2	2	0	2
	Total	8	8	0	8
	Semester II				
203ENDS21	Dissertation				12
	Total				
Total					12

Discipline Specific Electives

Semester	Discipline Specific Elective Courses
I	203ENC13A-ModernCriticism
	203ENC13B-CulturalStudies

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VALUE ADDED COURSES

Spoken English

Public speaking

SPOKEN ENGLISH

Objectives: To speak fluently

To gain confidence to communicate

Course Content:

UNIT I: Phonetics

UNIT II: LSRW TRAINING

UNIT III: Speak about a movie, book, incident, thing, person, place, or any current issue

UNIT IV: Story narration

UNIT V: Conversation

PUBLIC SPEAKING

Objectives: Speak fluently in public

Course Content:

UNIT I- Personality development-grooming, eye contact, body language

UNIT II- Master of ceremony, welcome address, vote of thanks, news reading

UNIT III- Conversation, Group discussion

UNIT IV- Making presentation

UNIT V- Oration

Recommended Reading:

Julius Caesar - Funeral oration

The Merchant of Venice- Portia's speech, Paradise Lost- Book- II- Satan's speech, American Taxation- Edmond Burke, The rise and fall of the Roman

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Course Code	Course Title	L	T	P	C
20IACLSICN	Indian Constitution	-	-	-	2

Aim

- To understand the salient features of the Indian Constitution

Course Objectives:

- To make the students understand about the democratic rule and parliamentarian administration
- To appreciate the salient features of the Indian constitution
- To know the fundamental rights and constitutional remedies
- To make familiar with powers and positions of the union executive ,union parliament and the supreme court
- To exercise the adult franchise of voting and appreciate the electoral system of Indian democracy.

Course outcome:

1. Democratic values and citizenship training are gained
2. Awareness on fundamental rights are established
3. The function of union government and state government are learnt
4. The power and functions of the judiciary are learnt thoroughly
5. Appreciation of democratic parliamentary rule is learnt

Unit I: The making of Indian constitution

The consitution assembly organization –character -work salient features of the constitution- written and detailed constitution -socialism –secularism-democracy and republic.

Unit II: Fundamental rights and fundamental duties of the citizens

Right of equality -right of freedom- right against exploitation -right to freedom of religion- cultural and educational rights -right to constitutional remedies -fundamental duties .

Unit III: Directive principles of state policy

Socialistic principles-Gandhi an principles-liberal and general principles -differences between fundamental rights and directive principles

Unit IV: The union executive, union parliament and Supreme Court

Powers and positions of the president -qualification _method of election of president and vice president -prime minister -Rajya Sabah -Lok Sabah ,the supreme court -high court -functions and position of supreme court and high court

Unit V: State council -election system and parliamentary democracy in India

State council of ministers -chief minister -election system in India-main features election commission-features of Indian democracy.

References:

1) Palekar.s.a. Indian constitution government and politics, ABD publications, India
2) Alyer, alladi krishnaswami, Constitution and fundamental rights 1955.
3) Markandan, k.c.directive Principles in the Indian constitution 1966.
4) Kashyap. Subash c, Our parliament ,National book trust , New Delhi 1989

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Course Code	Course Title	L	T	P	C
201ACLSUHV	Universal Human Values	-	-	-	2

Aim:

This course aims at making learners conscious about universal human values in an integralmanner, without ignoring other aspects that are needed for learner's personality development.

Course Objectives :

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realiseone's potentials.

Course Outcomes :

By the end of the course the learners will be able to:

1. Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
2. Learn from case studies of lives of great and successful people who followed and practised human values and achieved self-actualisation.
3. Become conscious practitioners of human values.
4. Realise their potential as human beings and conduct themselves properly in the ways of the world.

Unit I

- IntroductionWhat is love? Formsoflove—forself, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living
- Love and compassion and inter-relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love.
- Narratives and anecdotes from history, literature including local folklore
- Practicing love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion?
- Sharing learner's individual and/or group experience(s)
- Simulated Situations
- Casestudies

Unit II

- Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honesty among others)
- Individuals who are remembered in history for practicing thisvalue

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- Narratives and anecdotes from history, literature including localfolklore
- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practiceit?
- Learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

Unit III

- Introduction: What is non-violence? Its need. Love, compassion, empathy sympathy for others as pre-requisites for non-violence
- Ahimsa as non-violence and non-killing
- Individuals and organisations that are known for their commitment to non-violence
- Narratives and anecdotesaboutnon-violence from history,and literature including local folklore
- Practicingnon-violence; What will learners learn/gain if they practice non- violence? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Casestudies

Unit IV

- Introdoction: What is righteousness?
- Righteousness and dharma, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

Unit V

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organisations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulatedsituations

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- Casestudies

Unit VI

- Introduction: What is service? Forms of service for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress oddisaster.
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes dealing with instances of service from history, literature including local folklore
- Practicingservice: What will learners learn/gain gain if they practice service? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations
- Casestudies

Unit VII

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restraintand

  Ways of overcoming greed. Renunciation with action as true renunciation
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature,including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practicet?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

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Course Code	Course Title	L	T	P	C
201ACLSC0S	Communication Skills	-	-	-	2

Aim:

Course Objectives :

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learnersback
2. Identify what their non-verbal messages are communicating toothers
3. Understand role of communication in teaching-learningprocess
4. Learning to communicate through the digitalmedia
5. Understand the importance of empathiclistening
6. Explore communication beyondlanguage.

Course Outcome :

By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Unit I

- Techniques of effectivelistening
- Listening andcomprehension
- Probing questions
- Barriers tolistening

Unit II

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- CommonErrors

Unit III

- Techniques of effectivereading
- Gathering ideas and information from a giventext
  - i. Identify the main claim of thetext
  - ii. Identify the purpose of thetext
  - iii. Identify the context of thetext
  - iv. Identify the conceptsmentioned
- Evaluating these ideas andinformation
  - i. Identify the arguments employed in thetext
  - ii. Identify the theories employed or assumed in thetext
- Interpret thetext
  - i. To understand what a textsays
  - ii. To understand what a textdoes
  - iii. To understand what a textmeans

Unit IV

- Clearly state theclaims
- Avoid ambiguity, vagueness, unwanted generalisations and over simplification of issues
- Provide backgroundinformation
- Effectively argue theclaim
- Provide evidence for theclaims
- Use examples to explainconcepts

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- Followconvention
- Be properlysequenced
- Use proper signpostingtechniques
- Be well structured
  i. Well-knit logicalsequence
  ii. Narrativesequence
  iii. Categorygroupings
- Differen modesofWriting
  i. E-mails
  ii. Proposal writing for HigherStudies
  iii. Recording the proceedings ofmeetings
  iv. Any other mode of writing relevant forlearners

Unit V

- Role of Digital literacy in professionallife
- Trends and opportunities in using digital technology inworkplace
- InternetBasics
- Introduction to MS Officetools
  i. Paint
  ii. Office
  iii. Excel
  iv. Powerpoint

Unit VI

- Introduction to social mediawebsites
- Advantages of socialmedia
- Ethics and etiquettes of socialmedia
- How to use Google searchbetter
- Effective ways of using SocialMedia
- Introduction to DigitalMarketing

Unit VII

- Meaning of non-verbalcommunication
- Introduction to modes of non-verbalcommunication
- Breaking the misbeliefs
- Open and Closed Bodylanguage
- Eye Contact and FacialExpression
- HandGestures
- Do's andDon'ts
- Learning fromexperts
- Activities-BasedLearning

Reference:

1. SenMadhucchanda (2010). *An Introduction to Critical Thinking*, Pearson, Delhi
2. Silvia P. J. (2007). *How to Read a Lot*, American Psychological Association, Washington DC

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Course Code	Course Title	L	T	P	C
20IACLSLMS	Leadership and Management Skills	-	-	-	2

Aim:

The aim of the course cultivating and nurturing the innate leadership skills of the youth so that they may transform these challenges into opportunities and become torch bearers of the future by developing creative solutions.

Course Objective:

The Module is designed to:

- Help students to develop essential skills to influence and motivate others
- Inculcate emotional and social intelligence and integrative thinking for effective leadership
- Create and maintain an effective and motivated team to work for the society
- Nurture a creative and entrepreneurial mindset
- Make students understand the personal values and apply ethical principles in professional and social contexts.

Course Outcomes :

Upon completion of the course students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
2. Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.
3. Understand the basics of entrepreneurship and develop business plans
4. Apply the design thinking approach for leadership
5. Appreciate the importance of ethics and moral values for making of a balanced personality.

UNIT I- Leadership Skills

a. **Understanding Leadership and its Importance**
   - What is leadership?
   - Why Leadership required?
   - Whom do you consider as an ideal leader?

Traits and Models of Leadership
   - Are leaders born or made?
   - Key characteristics of an effective leader
   - Leadership styles
   - Perspectives of different leaders

Basic Leadership Skills
   - Motivation
   - Team work
   - Negotiation
   - Networking

UNIT II - Managerial Skills

a. **Basic Managerial Skills**
   - Planning for effective management
   - How to organise teams?
   - Recruiting and retaining talent

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- Delegation of tasks
- Learn to coordinate
- Conflict management

Self Management Skills

- Understanding self concept
- Developing self-awareness
- Self-examination
- Self-regulation

UNIT III - Entrepreneurial Skills

a. Basics of Entrepreneurship

- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

Creating Business Plan

- Problem identification and idea generation
- Idea validation
- Pitch making

UNIT IV - Innovative Leadership and Design Thinking

a. Innovative Leadership

- Concept of emotional and social intelligence
- Synthesis of human and artificial intelligence
- Why does culture matter for today's global leaders

Design Thinking

- What is design thinking?
- Key elements of design thinking:
  - Discovery
  - Interpretation
  - Ideation
  - Experimentation
  - Evolution.
- How to transform challenges into opportunities?
- How to develop human-centric solutions for creating social good?

UNIT V- Ethics and Integrity

a. Learning through Biographies

- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration
- Drawing insights for leadership
- How leaders sail through difficult situations?

Ethics and Conduct

- Importance of ethics
- Ethical decision making
- Personal and professional moral codes of conduct
- Creating a harmonious life

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Bibliography and Suggested Readings :

Books

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- Brown, T. (2012). *Change by Design*. Harper Business
- Elkington, J., & Hartigan, P. (2008). *The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World*. Harvard Business Press.
- Goleman D. (1995). *Emotional Intelligence*. Bloomsbury Publishing India Private Limited
- Kalam A. A. (2003). *Ignited Minds: Unleashing the Power within India*. Penguin Books India
- Kelly T., Kelly D. (2014). *Creative Confidence: Unleashing the Creative Potential Within Us All*. William Collins
- Kurien V., & Salve G. (2012). *I Too Had a Dream*. Roli Books Private Limited
- Livermore D. A. (2010). *Leading with cultural intelligence: The New Secret to Success*. New York: American Management Association
- McCormack M. H. (1986). *What They Don't Teach You at Harvard Business School: Notes From A Street-Smart Executive*. RHUS
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Course Code	Course Title	L	T	P	C
201ACLSCET	Community Engagement	-	-	-	1

Aim:

Course Objectives:

- To develop an appreciation of rural culture, life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

Course Outcomes:

After completing this course, student will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and bonds of mutuality with local community
- Appreciate significant contributions of local communities to Indian society and economy
- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio-economic improvements

UNIT I - Appreciation of Rural Society

Rural life style, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages" (Gandhi), rural infrastructure.

UNIT II- Understanding rural economy & livelihood

Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets

UNIT III Rural Institutions

Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration

UNIT IV Rural Development Programmes

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swachh Bharat, PM AwaasYojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

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Date: 20.07.2020

DEPARTMENT OF MATHEMATICS
BOARD OF STUDIES COMMITTEE MEETING CIRCULAR

There will be a Board of Studies Meeting on 29.07.2020 at 5.00 p.m. in the ZOOM MEETING PLATFORM.

All the staff members are required to attend the meeting.

HOD

DEAN

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Date:29.07.2020

DEPARTMENT OF MATHEMATICS

Minutes of Board of Studies Meeting

The Board of Studies meeting for the department of Mathematics is held on 29.07.2020 at 5p.m. through Video Conference Media ZOOM, PRIST Deemed to be University, Thanjavur under the chairmanship of Dr.S.Subramanian.

The following members were present:

Sl.No	Name of The Member	Position	Role
1	Dr. S. Subramanian	HOD	Chair Person
2	Dr. L.Chinnappa	Dean	Internal Member
3	Dr. N. Latha	Assistant Professor	Internal Member
4	Dr. K. Selvaraj	Assistant Professor	Internal Member
5	Dr. N.Saivaraju	Professor	External Member
6	Dr. A. Mohan	Professor	External Member

The Chairman (BOS) welcomed all the members and presented the feedbacks about existing curriculum received from various Stack holders and also from the department academic advisory committee.

The members of the Board have unanimously discussed and carefully reviewed the existing syllabus for (B.Sc.,Mathematics, M.Sc.,Mathematics and M.Phil., Matheamtics) in detail and made the necessary changes in upcoming (B.Sc.,.Mathematics, M.Sc.,Mathematics and M.Phil., Mathematics) as mentioned below.

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REVIEW OF CURRICULUM & SYLLABUS IN B.SC., MATHEMATICS
REGULATION 2020

1. **Resolved to introduce the following Audit Courses in the B.Sc. (Mathematics) programme curriculum with effect from 2020-21**

Semester I: Universal Human Values	- 2 credits
Semester II : Communication Skills	- 2 credits
Semester III: Office automation	- 2 credits
Semester IV: Leadership and Management Skills	- 2 credits
Semester V: Professional Skills	- 2 credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in Annexure-I

2. **Resolved to introduce the following Audit Courses on Soft Skills in the B.Sc. (Mathematics) programme curriculum with effect from 2020-21**

Year I: Basic Behavioral Etiquette	: 2 Credits
Year II : General Aptitude and Quantitative Ability	: 2 Credits
Year III: Interview Skills Training and Mock Test	: 2 Credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses on Soft Skills as given in Annexure-II

3. **Resolved to introduce Audit Course on "Community Engagement" with one credit in the 3rd year of B.Sc. (Mathematics) programme curriculum with effect from 2020-21**

4. **Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of B.Sc.(Mathematics) programme with effect from 2020-21.**

5. **To introduce machine learning course as value added course.**

Members of the Board updated the panel of examiners and submitted the same to the Academic Counsel for its approval.

Annexure 1	-	Revised Curriculum structure Credits
Annexure 2	-	Revised Curriculum structure and Syllabus of UG.,
Annexure 3	-	Revised Curriculum structure and Syllabus of M.Sc.,
Annexure 4	-	List of Examiners

Note: Annexure 1,2,3, and 4 are Signed by the Chairman of BOS

The Meeting concluded with thanks from Board of Studies Chairman.

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SCHOOL OF ARTS AND SCIENCE

Department of Mathematics

B.Sc. Mathematics Syllabus

[Regulation 2020]

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF MATHEMATICS
B.Sc, MATHEMATICS - REGULATION 2020

COURSE STRUCTURE

SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami – I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20112AEC13	Differential Calculus and Vector Calculus	5	0	0	3
20112AEC14	Trigonometry, Analytical Geometry 3D and Calculus	5	0	0	3
20120AEC15	Programming in C	6	0	0	5
	PRACTICAL				
20120AEC16L	Programming in C Lab	0	0	3	2
	Total	24	0	3	17
	AUDIT COURSE				
201ACLSICN	Indian Constitution	-	-	-	2
201ACLSUHV	Universal Human Values	-	-	-	2

SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Tamil – II/ Advanced English-II/Hindi-II/ French – II	4	0	0	2
20111AEC22	English-II	4	0	0	2
20112AEC23	Integrals & Differential Equations	5	0	0	3
20112SEC24	Sequence and series	5	0	0	4
20120AEC25	Web Programming	5	1	0	5
	PRACTICAL				
20120AEC26L	Web Programming Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20112RLC27	Research Led Seminar	-	-	-	1
	Total	23	1	3	18

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AUDIT COURSES					
201ACLSCOS	Communication Skills	-	-	-	2
201ACSSBBE	Basic Behavioral Etiquette	-	-	-	2

SEMESTER – III

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC31/ 20132AEC31/ 20111AEC31/ 20135AEC31	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
20111AEC32	English-III	4	0	0	2
20112AEC33	Number Theory	4	0	0	3
20112AEC34	Numerical Analysis	4	0	0	3
20118AEC35	Mathematical Statistics-I	5	1	0	5
	PRACTICAL				
20118AEC36L	Mathematical Statistics-I Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20112RMC37	Research Methodology	2	0	0	2
	Total	23	1	3	19
	AUDIT COURSE				
201ACLSOAN	Office Automation	-	-	-	2

SEMESTER – IV

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 20135AEC41	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20112SEC43	Operations Research	4	0	0	3
20112AEC44	Astronomy	4	0	0	3
201ENSTU45	Environmental Studies	2	0	0	2
20118AEC46	Mathematical Statistics-II	5	1	0	5
	PRACTICAL				
20118AEC47L	Mathematical Statistics-II Lab	0	0	3	2
	Total	23	1	3	19
	AUDIT COURSE				
201ACLSLMS	Leadership and Management Skills	-	-	-	2
201ACSSAQA	General Aptitude and Quantitative Ability				2

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SEMESTER – V

Course Code	Course Title	L	T	P	C
	THEORY				
20112AEC51	Modern Algebra	5	0	0	4
20112AEC52	Real Analysis	5	1	0	4
20112SEC53	Statics	5	1	0	4
20112SEC54	Programming in C++	5	0	0	3
20112DSC55_	Discipline Specific Elective -I	5	0	0	3
	RESEARCH SKILL BASED COURSE				
201128RC56	Participation in Bounded Research	-	-	-	1
	Total	25	2	0	19
	AUDIT COURSE				
201ACLSPSL	Professional Skills	-	-	-	2

SEMESTER – VI

Course Code	Course Title	L	T	P	C
	THEORY				
20112AEC61	Complex Analysis	5	0	0	4
20112SEC62	Dynamics	5	1	0	4
20112AEC63	Discrete Mathematics	5	0	0	4
20112DSC64_	Discipline Specific Elective –II	5	0	0	4
201__OEC(2 Digit Course Name)	Open Elective	4	0	0	2
	PRACTICAL				
20120SEC65L	Project Work	-	-	-	4
20120SEC66L	Program Exit Examination	-	-	-	1
	Total	24	1	0	23
	AUDIT COURSE				
201ACSSIST	Interview Skills Training and Mock Test	-	-	-	2
201ACLSCET	Community Engagement	-	-	-	1
	Total Credits -Programme				115
	Total Credits - Audit Courses				19

Discipline Specific Electives

Semester	Discipline Specific Elective Courses-I
V	a) 20112DSC55A – Fuzzy Analysis b) 20112DSC55B – Formal Languages and Automata Theory
	Discipline Specific Elective Courses-I
VI	a) 20112DSC64A - Graph Theory b) 20112DSC64B - Mathematical Modelling

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Open Electives

Semester	Open Elective Courses
VI	a) 201TNOEC-Tamil IlakkiyaVaralaru b) 201ENOEC-Journalism c) 201PHOEC-Instrumentation d) 201CEOEC-Food and Adulteration e) 201BTOEC- Wildlife Conservation f) 201CSOEC – E-Learning g) 201CAOEC-Web Technology h) 201CMOEC-Banking service

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	17	-	-	-	-	-	17
II	13	4	-	-	1	-	18
III	17	-	-	-	2	-	19
IV	14	3	-	-	-	2	19
V	8	7	3	-	1	-	19
VI	8	4	4	2	4	1	23
Total	77	18	7	2	8	3	115

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M.Sc., MATHEMATICS -CURRICULUM – REGULATION 2020

COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20212AEC11	Algebra	6	0	0	4
20212AEC12	Real Analysis	7	0	0	4
20212AEC13	Ordinary Differential Equations	6	0	0	4
20220SEC14	C++ Programming	6	0	0	4
20212DSC15_	Discipline Specific Elective – I	5	0	0	4
20212RLC16	Research Led seminar	-	-	-	1
	Total	30	0	0	21
	SEMESTER II				
20212AEC21	Complex Analysis	5	1	0	4
20212AEC22	Measure Theory and Integration	5	0	0	4
202125EC23	Mathematical Methods	6	0	0	4
20212AEC24	Graph Theory	5	0	0	4
20212DSC25_	Discipline Specific Elective – II	5	0	0	4
20212RMC26	Research Methodology	3	0	0	2
202126RC27	Participation in Bounded Research	-	-	-	2
	Total	29	1	0	24
	SEMESTER III				
20212AEC31	Topology	6	0	0	5
20212SEC32	Stochastic Process	6	1	0	5
20212AEC33	Advanced Numerical Analysis	6	1	0	5
202120SC34_	Discipline Specific Elective – III	5	0	0	4
202__OEC	Open Elective	4	0	0	3
20212SRC36	Participation in Scaffold Research (Societal Project)	-	-	-	2
	Total	27	2	0	24
	SEMESTER IV				
20212AEC41	Functional Analysis	5	1	0	5
20212SEC42	Visual Programming	6	1	0	5
20212AEC43	Number Theory	6	0	0	5
20212DSC44_	Discipline Specific Elective – IV	5	0	0	4
20212PRW45	Project Work	0	0	0	6

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20212PEE	Programme for Exit Examination	0	0	0	2
	Total	22	2	0	27
	Total Credits for the Programme				96

Discipline Specific Electives

Semester	Discipline Specific Elective Courses
I	a) 20212DSC15A- Classical Dynamics b) 20212DSC15B- Fluid Dynamics
II	a) 20212DSC25A- Mathematical Probability b) 20212DSC25B- Mathematical Modelling
III	a) 20212DSC34A- Cryptography b) 20212DSC34B- Algebraic Coding Theory
IV	a) 20212DSC44A- Combinatorial Mathematics b) 20212DSC44B- Design And Analysis of Algorithm

Open Electives

Semester	Open Elective Courses
III	a) 20211OEC-Writing For the Media b) 20213OEC-Bio-medical Instrumentation c) 20214OEC-Green Chemistry d) 20215OEC-Herbal Medicines e) 20220OEC-M-Marketing f) 20261OEC- Financial Service g) 20280OEC-Counselling and Psychology

Credit Distribution:

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	12	04	04	-	01	-	21
II	09	03	04	-	05	-	21
III	10	05	04	02	02	-	23
IV	10	05	04	-	08	02	29
Total	41	17	16	02	14	02	92

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DEPARTMENT OF MATHEMATICS

M.Phil
SYLLABUS

(REGULATION 2020)

DEPARTMENT OF MATHEMATICS

COURSE STRUCTURE

COURSE STRUCTURE

SEMESTER - I					
COURSE CODE	COURSE TITLE	L	T	P	C
203___11 (Common Paper)	Research Methodology	2	2	0	2
203MAC12	Algebra and Analysis	2	2	0	2
203MAC13	Advanced Numerical Analysis	2	2	0	2
(Common Paper) CPE RPE	Research and Publication Ethics	2	2	0	2
	Total	08	08	00	08
SEMESTER - II					
203MAC31	Project Work				02

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NEW VALUE ADDED COURSE

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Course Code	20S12ML	TITLE OF THE COURSE	L	T	P	C
Value Added		MACHINE LEARNING	4	1	-	4
Pre-requisite		Knowledge in basic algebra	Syllabus Version		2020-21	

Course Objectives

The main objectives of this course are to:

- To Learn about Machine Intelligence and Machine Learning applications To implement and apply machine learning algorithms to real-world applications.
- To identify and apply the appropriate machine learning technique to classification, pattern recognition, optimization and decision problems.
- To understand how to perform evaluation of learning algorithms and model selection.
- To understand about the basic theory of problem solving paradigms and search strategies in artificial intelligence
- To make the students familiar with knowledge representation, planning, learning, natural language processing and robotics

Expected Course Outcomes

On completion of the course students will be expected to:

1	Have a good understanding of the fundamental issues and challenges of machine learning: data, model selection, model complexity, etc	K2
2	Have an understanding of the strengths and weaknesses of many popular machine learning approaches	K4
3	Appreciate the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and unsupervised learning	K3
4	Be able to design and implement various machine learning algorithms in a range of real-world applications	K3
5	Understand the computation intelligence	K6

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create

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Unit:1	
	Introduction to ML
Unit:2	
	Fundamentals of ML
Unit:3	
	Selected Algorithms
Unit:4	1
	Neural Network Learning
Unit:5	
	Key Concepts from ML
Books for Study	
1	Marc Peter Deisenroth, A. Aldo Faisal, Cheng Soon Ong, Mathematics for Machine Learning, Cambridge University Press (23 April 2020
2	Tom M. Mitchell- Machine Learning - McGraw Hill Education, International Edition

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SCREEN IMAGE



Annexure 4 - List of Examiners

Signature of the Chairman & Members

Sl. No	Signature
1	
2	
3	
4	
5	
6	
7	

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List of Members

2020-2021

Sl.No	Name of The Member	Position	Role
1	Dr. S. Subramanian	HOD	Chair Person
2	Dr. L.Chinnappa	Dean	Internal Member
3	Dr. N. Latha	Assistant Professor	Internal Member
4	Dr. K. Selvaraj	Assistant Professor	Internal Member
5	Dr. N.Saivaraju	Professor	External Member
6	Dr. A. Mohan	Professor	External Member

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Dean
School of Arts & Science
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Vallam, Thanjavur - 613 403.

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INDIAN CONSTITUTION

Course Code	Course Title	L	T	P	C
20IACLSICN	Indian Constitution	-	-	-	2

Objectives:

1. To make the students understand about the democratic rule and parliamentarian administration
2. To appreciate the salient features of the Indian constitution
3. To know the fundamental rights and constitutional remedies
4. To make familiar with powers and positions of the union executive, union parliament and the Supreme Court

To exercise the adult franchise of voting and appreciate the electoral system of Indian democracy.

Unit I::The making of Indian constitution

The constitution assembly organization –character -work salient features of the constitution- written and detailed constitution -socialism –secularism-democracy ard republic.

Unit II: Fundamental rights and fundamental duties of the citizens

Right of equality -right of freedom- right against exploitation -right to freedom of religion- cultural and educational rights -right to constitutional remedies -fundamental duties.

Unit III: Directive principles of state policy

Socialistic principles-Gandhi an principles-liberal and general principles -differences between fundamental rights and directive principles

Unit IV: The union executive, union parliament and Supreme Court

Powers and positions of the president -qualification _method of election of president and vice president -prime minister -Rajya Sabah -Lok Sabah .the supreme court -high court -functions and position of supreme court and high court

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Unit V: State council -election system and parliamentary democracy in India

State council of ministers -chief minister -election system in India-main features election commission-features of Indian democracy.

References:

1) Palekar.s.a. Indian constitution government and politics, ABD publications, India

2) Alyer, alladi krishnaswami, Constitution and fundamental rights 1955.

3) Markandan. K.c.directive Principles in the Indian constitution 1966.

4) Kashyap. Subash c, our parliament, National book trust, New Delhi 1989

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UNIVERSAL HUMAN VALUES

Course Code	Course Title	L	T	P	C
201ACLSUHV	Universal Human Values	-	-	-	2

Course Objectives :

The present course deals with meaning, purpose, and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realize one's potentials.

Course outcomes :

By the end of the course the learners will be able to:

1. Knowaboutuniversalhumanvaluesandunderstandtheimportanceofvaluesinindividual, social circles, career path, and national life.
2. Learnfromcasestudiesoflivesofgreatandsuccessfulpeoplewhofollowedandpractised human values and achieved self-actualization.
3. Become conscious practitioners of human values.
4. Realisetheirpotentialashumanbeingsandconductthemselvesproperlyintheirwaysofthe world.

Unit I : Love & Compassion

- Introduction: What is love? Forms of love for self, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living
- Love and compassion and inter-relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love.
- Narratives and anecdotes from history, literature including local folklore
- Practicing love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion?
- Sharing learner's individual and/or group experience(s)
- Simulated Situations
- Case studies.

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Unit II: Truth

- Introduction: What is truth? Universal truth, truth as value, truth as fact(veracity,

  Sincerity, honesty among others)

- Individuals who are remembered in history for practicing this value
- Narratives and anecdotes from history, literature including local folk-lore
- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practice it?
- Learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Unit III :Non-Violence

- Introduction: What is non violence? Its need. Love, compassion, empathy sympathy

  for others as pre-requisites for non-violence

- Ahimsa as non-violence and non-killing
- Individuals and organizations that are known for their commitment to non-violence
- Narrativesandanecdotesaboutnon-violencefromhistory,andliteratureincluding

  local folklore

- Practicing on-violence: What will learners learn/gain if they practice non- violence? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Case studies

Unit IV: Righteousness

- Introduction: What is righteousness?
- Righteousness and *dharma*, Righteousness and Propriety

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- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will earners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Unit V:Peace

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organizations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulated situations
- Case studies

Unit VI: Service

- Introduction: What is service? Forms of service, for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress or disaster.
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes dealing with instances of service from history, literature including local folklore
- Practicing service: What will earners learn/gain gain if they practice service? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations
- Case studies

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Unit VII: Renunciation(Sacrifice)

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restrain and

  Ways of overcoming greed. Renunciation with action as true renunciation

- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature, including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

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Course code	Course Title	L	T	P	C
201ACLSCOS	Communication Skills	-	-	-	2

Course Objectives :

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learnersback
2. Identify what their non-verbal messages are communicating toothers
3. Understand role of communication in teaching-learningprocess
4. Learning to communicate through the digitalmedia
5. Understand the Imporiance of empatheticlistening
6. Explore communication beyondlanguage.

Course Outcome :

By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Unit I :Listening

- Techniques of effective listening
- Listening and comprehension
- Probing questions
- Barriers to listening

Unit II: Speaking

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- Common Errors

Unit III :Reading

- Techniques of effective reading
- Gathering ideas and information from a given text
  - i. Identify the main claim of the text
  - ii. Identify the purpose of the text
  - iii. Identify the context of the text
  - iv. Identify the concepts mentioned
- Evaluating these ideas and information
  - i. Identify the arguments employed in the text
  - ii. Identify the theories employed or assumed in the text
- Interpret the text
  - i. To understand what a text says
  - ii. To understand what a text does
  - iii. To understand what a text means

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Unit IV: Writing and different modes of writing

- Clearly state the claims
- Avoid ambiguity, vagueness, unwanted generalizations and oversimplification of issues
- Provide background information
- Effectively argue the claim
- Provide evidence for the claims
- Use examples to explain concepts
- Follow convention
- Be properly sequenced
- Use proper signposting techniques
- Be well structured
    i. Well-knit logical sequence
    ii. Narrative sequence
    iii. Category groupings
- Different modes of Writing
    i. E-mails
    ii. Proposal writing for Higher Studies
    iii. Recording the proceedings of meetings
    iv. Any other mode of writing relevant for learners

Unit V:Digital Literacy

- Role of Digital literacy in professional life
- Trends and opportunities in using digital technology in workplace
- Internet Basics
- Introduction to MS Office tools
    i. Paint
    ii. Office
    iii. Excel
    iv. PowerPoint

Unit VI: Effective use of Social Media

- Introduction to social media websites
- Advantages of social media
- Ethics and etiquettes of social media
- How to use Google search better
- Effective ways of using Social Media
- Introduction to Digital Marketing

Unit VII : Non-verbal communication

- Meaning of non-verbal communication
- Introduction to modes of non-verbal communication
- Breaking the misbelieves
- Open and Closed Body language
- Eye Contact and Facial Expression
- Hand Gestures
- Do's and Don'ts
- Learning from experts
- Activities-Based Learning

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Reference Books

- SenMadhucchanda (2010). *An Introduction to Critical Thinking*. Pearson,Delhi
- Silvia P. J. (2007), *How to Read a Lot*. American Psychological Association, Washington DC

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OFFICE AUTOMATION

Course Code	Course Title	L	T	P	C
20IACLSOAN	OFFICE AUTOMATION	-	-	-	2

Course Objective:

To provide an in-depth training in use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet.

Unit I

Knowing the basics of Computers

Unit II

Word Processing (MS word)

Unit III

Spread Sheet (MS XL)

Unit IV

Presentation (MS Power Point)

Unit V

Communicating with Internet

Reference Books:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of india
2. Microsoft Office 2007 Bible - John Walkenbach,HerbTyson,FaitheWempen,caryN.Prague,MichaelR.groh,PeterG.Aitken, and Lisa a.Bucki -Wiley India pvt.ltd.
3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.
4. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications
5. https://en.wikipedia.org
6. https://wiki.openoffice.org/wiki/Documentation
7. http://windows.microsoft.com/en-in/windows/windows-basics-all-topics

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Course code	Course Title	L	T	P	C
201ACLSLMS	Leadership and Management Skills	-	-	-	2

Course Objectives :

The Module is designed to:

- Help students to develop essential skills to influence and motivate others
- Inculcate emotional and social intelligence and integrative thinking for effective leadership
- Create and maintain an effective and motivated team to work for the society
- Nurture a creative and entrepreneurial mindset
- Make students understand the personal values and apply ethical principles in professional and social contexts.

Course Outcomes :

Upon completion of the course students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
2. Learnanddemonstrateasetofpracticalskillssuchastimemanagement,selfmanagement,handling conflicts, team leadership, etc.
3. Understand the basics of entrepreneurship and develop business plans
4. Apply the design thinking approach for leadership
5. Appreciate the importance of ethics and moral values for making of a balanced personality.

Unit I-Leadership Skills

Understanding Leadership and its Importance

- What is leadership?
- Why Leadership required?
- Whom do you consider as an ideal leader?

b. Traits and Models of Leadership

- Are leaders born or made?
- Key characteristics of an effective leader
- Leadership styles

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- Perspectives of different leaders

c. Basic Leadership Skills
- Motivation
- Teamwork
- Negotiation
- Networking

Unit II--Managerial Skills

a. Basic Managerial Skills
- Planning for effective management
- How to organize teams?
- Recruiting and retaining talent
- Delegation of tasks
- Learn to coordinate
- Conflict management

b. Self Management Skills
- Understanding self concept
- Developing self-awareness
- Self-examination
- Self-regulation

Unit III--Entrepreneurial Skills

a. Basics of Entrepreneurship
- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

b. Creating Business Plan
- Problem identification and idea generation
- Idea validation
- Pitch making

Unit IV - Innovative Leadership and Design Thinking

a. Innovative Leadership
- Concept of emotional and social intelligence
- Synthesis of human and artificial intelligence
- Why does culture matter for today's global leaders

b. Design Thinking
- What is design thinking?
- Key elements of design thinking:
  - Discovery
  - Interpretation
  - Ideation
  - Experimentation
  - Evolution

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- How to transform challenges into opportunities?
- How to develop human-centric solutions for creating social good?

Unit V- Ethics and Integrity

a. Learning through Biographies
- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration
- Drawing insights for leadership
- How leaders sail through difficult situations?

b. Ethics and Conduct
- Importance of ethics
- Ethical decision-making
- Personal and professional moral codes of conduct
- Creating a harmonious life

Reference Books:

- Ashokan, M. S. (2015). *Karmayogi: A B biography of E. Sreedharan*. Penguin,UK.
- Brown, T. (2012). *Change by Design*. Harper Business
- Elkington, J., &Hartigan, P. (2008). *The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World*. Harvard Business Press.
- Goleman D. (1995). *Emotional Intelligence*. Bloomsbury Publishing India Private Limited
- Kalam A. A. (2003). *Ignited Minds: Unleashing the Power within India*. Penguin BooksIndia
- Kelly T., Kelly D. (2014). *Creative Confidence: Unleashing the Creative Potential WithinUs*
  *All*WilliamCollins

- KurienV., & Salve G. (2012). *I Too Had a Dream*. Roli Books PrivateLimited
- Livermore D. A. (2010). *Leading with cultural intelligence: The New Secret to Success*. New York: American ManagementAssociation
- McCormackM.H.(1986).*WhatTheyDon'tTeachYouatHarvardBusinessSchool:Notes-FromA Street-Smart Executive*. RHUS
- O'Toole J. (2019) *The Enlightened Capitalists: Cautionary Tales of Business Pioneers Who Tried to Do Well by Doing Good*.Harpercollins
- SinekS. (2009). *Start with Why: How Great Leaders Inspire Everyone to Take Action*.Penguin
- Sternberg R. J., Sternberg R. J., &BaltesP. B. (Eds.). (2004). *International Handbook of Intelligence*. Cambridge UniversityPress.

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PROFESSIONAL SKILLS

Course Code	Course Title	L	T	P	C
201ACLSPSL	Professional Skills	-	-	-	2

The Course Professional Skills is divided into two parts:

a) CareerSkills
b) Team Skills

A. Career Skills

Course Objectives :

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue to partake in a successful career path
2. Prepare good resume, prepare for interviews and group discussions
3. Explore desired career opportunities in the employment market in consideration of an individual SWOT.

Course Outcomes :

At the end of this course the students will be able to:

1. Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax
2. Participate in a simulated interview
3. Actively participate in group discussions towards gainful employment
4. Capture a self - interview simulation video regarding the job role concerned
5. Enlist the common errors generally made by candidates in an interview
6. Perform appropriately and effectively in group discussions
7. Explore sources (online/offline) of career opportunities
8. Identify career opportunities in consideration of their own potential and aspirations
9. Use the necessary components required to prepare for a career in an identified occupation (as a case study).

Unit I: Resume Skills

i. **Resume Skills : Preparation and Presentation**
   - Introduction of resume and its importance
   - Difference between a CV, Resume and Bio data
   - Essential components of a good resume

ii. **Resume skills : common errors**
   - Common errors people generally make in preparing their resume
   - Prepare a good resume of her/his considering all essential components

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Unit II: Interview Skills

5Hours

i. **Interview Skills : Preparation and Presentation**
   - Meaning and types of interview (F2F, telephonic, video, etc.)
   - Dress Code, Background Research, Do's and Don'ts
   - Situation, Task, Approach and Response(STAR Approach)for facing an interview
   - Interview procedure (opening, listening skills, closure, etc.)
   - Important questions generally asked in a job interview(open and closed ended questions)

ii. **Interview Skills : Simulation**
   - Observation of exemplary interviews
   - Comment critically on simulated interviews

iii. **Interview Skills : Common Errors**
   - Discuss the common errors generally candidates make in interview
   - Demonstrate an ideal interview

Unit III: Group Discussion Skills

- Meaning and methods of Group Discussion
- Procedure of Group Discussion
- Group Discussion-Simulation
- Group Discussion - Common Errors

Unit IV: Exploring Career Opportunities

- Knowing yourself – personal characteristics
- Knowledge about the world of work, requirements of jobs including self employment.
- Sources of career information
- Preparing for a career based on their potentials and availability of opportunities

Reference

Please check IT-ITeS Sector Skills Council readiness programs namely

- Foundation Skills In IT (FSIT) -Refer the websites like https://www.sscnasscom.com/Ssc-projects/capacity-building-and-development/training/fsit/and
- GlobalBusinessFoundationSkills (GBFS)–Referwebsiteslikehttps://www.sscnasscom.Com/ssc-projects/capacity-building-and-development/training

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B. Team Skills

Course Objectives:

The objectives of the course are to make learners:

1. Understand the significance of Team Skills and help them in acquiring them
2. To help them design, develop and adapt to situations as an individual and as a team

Course Outcomes:

By the end of this course the learners/candidates will be able to:

1. Use common technology messaging tools that are used in enterprises for flow of information and transition from command and control to informal communication during an online/offline team session
2. Actively use and operate online team communication tools: Webinar, Skype, Zoom, Google hangout etc
3. Appreciate and demonstrate Team Skills
4. Participate in a digital lifestyle conversant with computers, applications, Internet and nuances of cyber security
5. Explore (online) and identify career opportunities in consideration of their own potential and aspirations.
6. Discuss and articulate the key requirements of an entrepreneurial exercise
7. Empathies and trust colleagues for improving interpersonal relations
8. Engage in effective communication by respecting diversity and embracing good listening skills
9. Distinguish the guiding principles for communication in a diverse, smaller internal world
10. Practice interpersonal skills for better relations with seniors, juniors, peers and stakeholders
11. Project a good personal image and social etiquettes so as to have positive impact on building of one's chosen career
12. Generate, share and maximise new ideas with the concept of brainstorming and the documentation of key critical ideas/thoughts articulated and action points to be implemented with timelines in a team discussion (as MOM) in identified applicable templates.

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Course Code	Course Title	L	T	P	C
201ACSSIST	Interview Skills Training and Mock Test	-	-	-	2

Unit I:Presentation Skills

- Types of presentations
- Internal and external presentation
- Knowing the purpose
- Knowing the audience
- Opening and closing a presentation
- Using presentation tools
- Handling questions
- Presentation to heterogenic group
- Ways to improve presentation skills overtime

Unit II: Trust and Collaboration

- Explain the importance of trust in creating a collaborative team
- Agree to Disagree and Disagree to Agree–Spirit of Teamwork
- Understanding fear of being judged and strategies to overcome fear

Unit III: Listening as a Team Skill

- Advantages of Effective Listening

Listening as a team member and team leader. Use of active listening strategies to encourage sharing of ideas (full and undivided attention, no interruptions, no pre- think, us **Credit Distribution**

- e empathy, listen to tone and voice modulation, recapitulate points, etc.).**Unit IV: Brain-storming**
  - Use of group and individual brainstorming techniques to promote idea generation.
  - Learning and showcasing the principles of documentation of team session outcomes

Unit V: Social and Cultural Etiquette

- Need for etiquette (impression, image, earn respect, appreciation, etc)
- Aspects of social and cultural/corporate etiquette in promoting team work
- Importance of time, place, propriety and adaptability to diverse cultures

Unit VI: Internal Communication

- Use of various channels of transmitting information including digital and

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physical.
to team members.

References:

PleasecheckIT-ITeSSectorSkillsCouncilreadinessprogrammamelyGlobalBusinessFoundation Skills (GBFS) in website (https://www.sscnasscom.com/ssc-projects/capacity-building-and-development/training/gbfs/),and Generic and the entrepreneurial

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COMMUNITY ENGAGEMENT

Course Code	Course Title	L	T	P	C
201ACLSCET	Community Engagement	-	-	-	2

Course Objectives:

- To develop an appreciation of rural culture, life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and there by improve quality of learning

Course Outcomes:

After completing this course, student will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and bonds of mutuality with local community
- Appreciate significant contributions of local communities to Indian society and economy
- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio-economic improvements

Unit I : Appreciation of Rural Society

Rural lifestyle, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages' (Gandhi), rural infrastructure

Unit II : Understanding rural economy & livelihood

Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets

Unit III : Rural Institutions

Traditional rural organizations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration

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Unit IV : Rural Development Programmes

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, BetiBachao, BetiPadhao, Ayushman Bharat, Swatchh Bharat, PM Awaas Yojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

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DEPARTMENT OF BIOCHEMISTRY

BOARD OF STUDIES COMMITTEE MEETING CIRCULAR

MINUTES OF BOARD OF STUDIES MEETING 2020-21

The Board of Studies meeting for the department of Biochemistry is held on 28.07.2020 at 10 a.m. Video Conference Media: ZOOM, PRIST Deemed to be University, Thanjavur under the chairmanship of Dr. A.Baltrudeen Ali Ahmed.

The following members were present:

1. Dr. Baltrudeen Ali Ahmed Prof & HOD (Chairman, BOS)
2. Dr. L. Chennappa / Dean (EX-Officio, BOS)
3. Dr. A. Salma Chandra Pachiavathi Professor (Member, BOS)
4. Dr. S. Anbiga / Associate Professor (Member, BOS)
5. Dr. M. Vijay / Assistant Professor (Member, BOS)
6. Dr. S. Sathishkumar / Assistant Professor (Member, BOS)
7. Dr. Binugeorge / Assistant Professor (Member, BOS)
8. Dr. K. Jeyaprakash / Head and Associate Professor, Department of Biochemistry, Rajah Serfoji Government College (Autonomous), Thanjavur, (External Member, BOS)
9. Mr. Ashok Ramachandran/ Manager, In vitro Diagnostics (IVD), Lab Care Diagnostic (India) Pvt Ltd, Sarigam, Gujarat (External Member, BOS)

The Chairman (BOS) welcomed all the members and presented the feedbacks about existing curriculum received from various Stack holders and also from the department academic advisory committee.

The members of the Board have unanimously discussed and carefully reviewed the existing syllabus for (B.Sc., Biochemistry, M.Sc., Biochemistry and M.Phil.,) in detail and made the necessary changes in upcoming (B.Sc., Biochemistry, M.Sc., Biochemistry and M.Phil.,) as mentioned below

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REVIEW OF CURRICULUM & SYLLABUS IN B.Sc., BIOCHEMISTRY-REGULATION 2020

1. **Resolved to introduce the following Audit Courses in the B.Sc. (Biochemistry) programme curriculum with effect from 2020-21**

   Semester I: Universal Human Values - 2 credits

   Semester II: Communication Skills- 2 credits

   Semester III: Office automation- 2 credits

   Semester IV: Leadership and Management Skills- 2 credits

   Semester V: Professional Skills- 2 credits

   Further resolved to approve the syllabus copy for the above-mentioned Audit Courses as given in Annexure-I

2. **Resolved to introduce the following Audit Courses on Soft Skills in the B.Sc., (Biochemistry) programme curriculum with effect from 2020-21**

   Year I: Basic Behavioral Etiquette: 2 Credits

   Year II: General Aptitude and Quantitative Ability: 2 Credits

   Year III: Interview Skills Training and Mock Test: 2 Credits

   Further resolved to approve the syllabus copy for the above-mentioned Audit Courses on Soft Skills as given in Annexure-II

3. **Resolved to introduce Audit Course on "Community Engagement" with one credit in the 3rd year of B.Sc. (Biochemistry) programme curriculum with effect from 2020-21**

4. **Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of B.Sc., (Biochemistry) programme with effect from 2020-21.**

- **The following changes have been recommended by the committee with regard to Biochemistry (BSc I year I semester)**

1. **"Biomolecules /19115AEC13" syllabus content is modified UNIT I, II, III, IV & V (Annexure III)**

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Dean (Academic Affairs)
Pondicherry University

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REVIEW OF CURRICULUM & SYLLABUS in M.Sc BIOCHEMISTRY - REGULATION 2020

The following changes have been made in upcoming with respect to existing curriculum.

The Committee suggested and incorporated the following changes

1. "Biomolecules /19215SEC11" syllabus content is modified UNIT I, II, III & IV (Annexure III)

REVIEW OF CURRICULUM & SYLLABUS in M.Phil., BIOCHEMISTRY -REGULATION 2020

1. **Resolved to introduce a course on "Research and Publication Ethics" with 2 credits in the M.Phil., (Biochemistry) programme curriculum with effect from 2020-21. Further resolved to approve the syllabus for the same as given in Annexure-III**

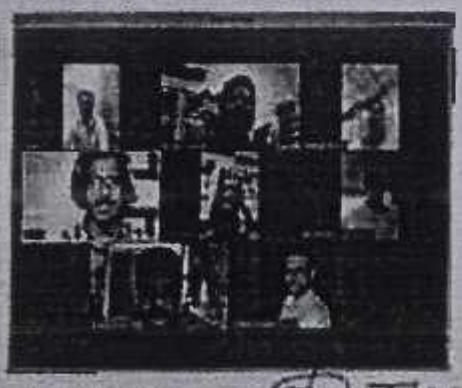
The following value-added courses are introduced Certificate Course on Vermicompost and Diploma Course on Organic Farming.

Members of the Board updated the panel of examiners and submitted the same to the Academic Counsel for its approval.

Annexure 1	-	Revised Curriculum structure Credits
Annexure 2	-	Revised Curriculum structure and Syllabus of B.Sc.,
Annexure 3	-	Revised Curriculum structure and Syllabus of M.Sc.,
Annexure 4	-	Revised Curriculum structure and syllabus of M.Phil.,

The Meeting concluded with thanks from Board of Studies Chairman.

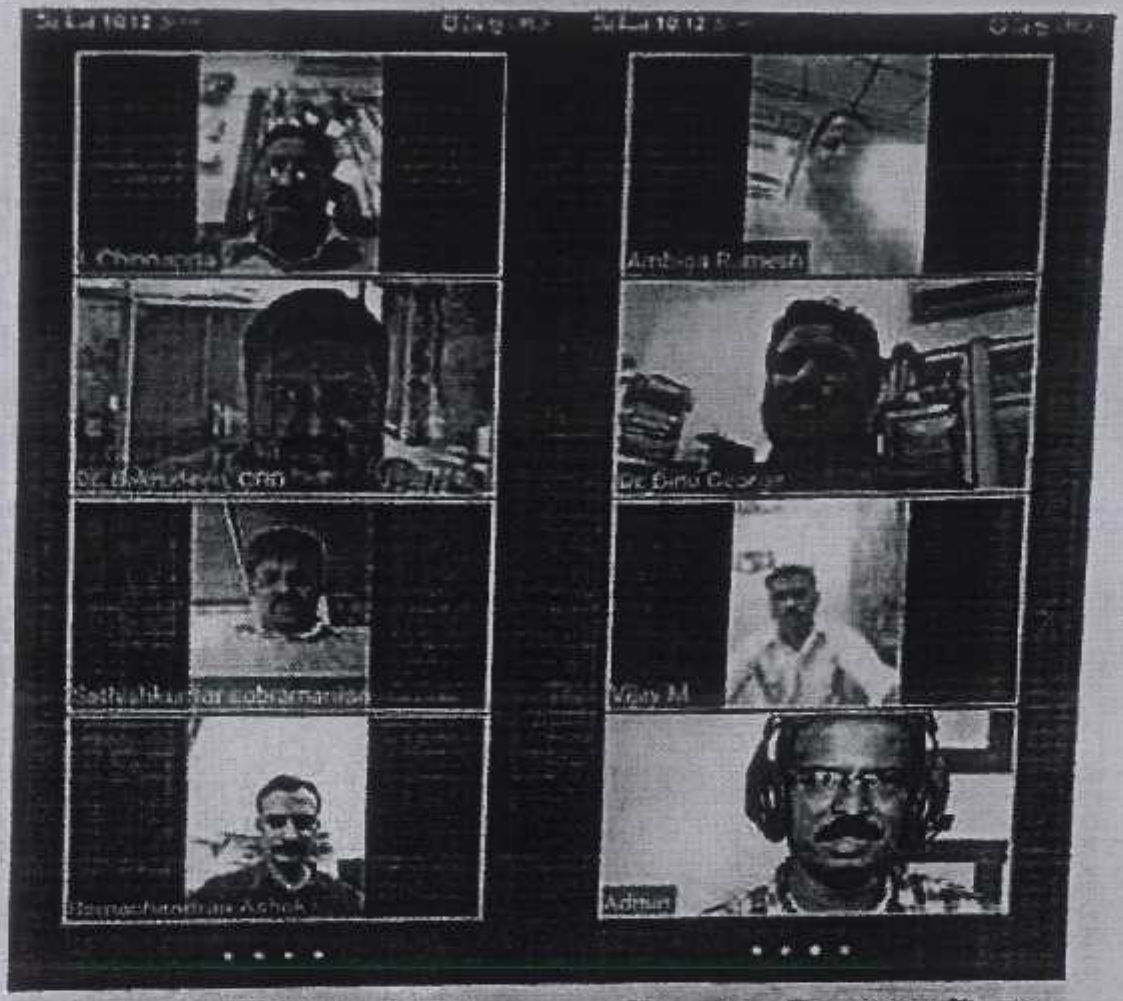




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Thanjavur-613 403

Dean of Arts, Science & Humanities
PRIST Deemed to be University
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BIOCHEMISTRY BOARD OF STYDIES MEETING ON 28.7.2020 THROUGH ZOOM MEETING

Head of the Department
Department of Biochemistry
School of Arts & Science
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Dean of Arts & Science
PRIST Deemed to be University
Thanjavur - 613 403, Tamil Nadu

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Signature of the Chairperson and Members

1. Dr. Baknadeen Ali Ahmed (Chairman, BOS)
2. Dr. L. Chinnappa / Dean (EX-Officio, BOS)
3. Dr. A. Sohna Chandra Packiavathi / Professor (Member, BOS)
4. Dr. S. Ambiga / Associate Professor (Member, BOS)
5. Dr. S. Sathishkumar / Assistant Professor (Member, BOS)
6. Dr. M. Vijay / Assistant Professor (Member, BOS)
7. Dr. Binugeorge / Assistant Professor (Member, BOS)

External Members

8. Dr. K. Jeyaprakash (External Member, BOS)
   Head and Associate Professor,
   Department of Biochemistry,
   Rajah Serfoji Government College (Autonomous),
   Thanjavur.

9. Mr. Ashok Ramachandran / (External Member, BOS)
   Manager, In vitro Diagnostics (IVD),
   Lab Care Diagnostic (India) Pvt Ltd,
   Sarigam, Gujarat

Head of the Department
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Thanjavur - 613 403, Tamilnadu.

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COURSE STRUCTURE
SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami – I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20115AEC13	Biomolecules	6	1	0	5
20114AEC14	Chemistry –I	6	1	0	4
	PRACTICAL				
20115AEC15L	Biomolecules Lab-I	0	0	3	2
20114AEC16L	Volumetric Analysis Lab	0	0	3	2
	Total	20	2	6	17
	AUDIT COURSE				
20IACLSICN	Indian Constitution	-	-	-	2
20IACLSUHV	Universal Human Values	-	-	-	2

SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Tamil – II/ Advanced English-II/Hindi-II/ French – II	4	0	0	2
20111AEC22	English-II	4	0	0	2
20115AEC23	Biochemical Techniques	6	1	0	5
20114AEC24	Chemistry – II	6	1	0	4
	PRACTICAL				
20115AEC25L	Biochemical Techniques Lab-I	0	0	3	2
20114AEC26L	Organic Analysis Lab	0	0	3	2

Head of the Department
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School of Arts & Science
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Dean of Arts & Science
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RESEARCH SKILL BASED COURSE					
20[illegible]RLC47	Research Led Seminar	-	-	-	1
	Total	**30**	**3**	**6**	**18**
AUDIT COURSES					
20[illegible]ACLSCOS	Communication Skills	-	-	-	2
20[illegible]ACSSBBE	Basic Behavioral Etiquette	-	-	-	2

SEMESTER – III

Course Code	Course Title	L	T	P	C
THEORY					
20[illegible]AEC31/ 20[illegible]AEC31/ 20[illegible]AEC31/ 20[illegible]AEC31	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
20[illegible]AEC32	English-III	4	0	0	2
20[illegible]AEC33	Cell Biology and Genetics	4	1	0	4
20[illegible]AEC34	Programming in C	4	1	0	5
PRACTICAL					
20[illegible]AEC35L	Cell Biology and Genetics Lab	0	0	3	2
20[illegible]AEC36L	Programming in C Lab	0	0	3	2
RESEARCH SKILL BASED COURSE					
20[illegible]SRMC37	Research Methodology	2	0	0	2
	Total	**18**	**2**	**6**	**19**
AUDIT COURSE					
20[illegible]ACLSOAN	Office Automation	-	-	-	2

SEMESTER – IV

Course Code	Course Title	L	T	P	C
THEORY					
20[illegible]AEC41/ 20[illegible]AEC41/ 20[illegible]AEC41/ 20[illegible]AEC41	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
20[illegible]AEC42	English-IV	4	0	0	2
20[illegible]AEC43	Human Physiology	4	1	0	4

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School of [illegible]
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Dean of Arts & [illegible]
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Pondicherry [illegible]
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20120AEC44	Fundamentals of Computing	5	1	0	5
201ENSTU45	Environmental studies	2	0	0	2
	PRACTICAL				
20115AEC46L	Biochemical Techniques Lab-II	0	0	3	2
20120AEC47L	Web Design Lab	0	0	3	2
	Total	19	2	6	19
	AUDIT COURSE				
201ACLSLM5	Leadership and Management Skills	-	-	-	2
201ACSSAQA	General Aptitude and Quantitative Ability	-	-	-	2

SEMESTER – V

Course Code	Course Title	L	T	P	C
	THEORY				
20115AEC51	Enzymes	4	1	0	4
20115AEC52	Bioenergetics and Metabolism	4	1	0	3
20115AEC53	Immunology	4	1	0	4
20115DSC54_	Discipline Specific Elective -I	4	1	0	3
	PRACTICAL				
20115AEC55L	Food and enzyme Analysis Lab	0	0	3	2
20115AEC56L	Immunology Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20115BRC57	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
	AUDIT COURSE				
201ACLSPSL	Professional Skills	-	-	-	2

SEMESTER – VI

Course Code	Course Title	L	T	P	C
	THEORY				
20115AEC61	Clinical Biochemistry	4	1	0	4
20115SEC62	Molecular Biology	4	1	0	5
20115DSC63_	Discipline Specific Elective -II	4	1	0	3
201—OEC	Open Elective Course	4	0	0	2
	PRACTICAL				

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Dean of Arts & Science
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20115AEC64L	Hematology and clinical biochemistry Lab	0	0	3	2
20115SEC65L	Molecular Biology Lab	0	0	3	2
20115PRW66	Project Work	-	-	-	4
20115PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
	AUDIT COURSE				
201ACSSIST	Interview Skills Training and Mock Test	-	-	-	2
201ACLSCET	Community Engagement	-	-	-	1
	Total Credits -Programme				115
	Total Credits - Audit Courses				19

Semester	Discipline Specific Electives
V	Discipline Specific Elective Courses-I
	a) 20115DSC54A – Pharmaceutical Biochemistry b) 20115DSC54B –Basic Biotechnology
VI	Discipline Specific Elective Courses-I
	a) 20115DSC63A- Biochemistry of plants and microbes b) 20115DSC63B – Hospital Managements

Open Electives

Semester	Open Elective Courses
VI	a) 201TNOEC-Tamil Ilakkiya Varalaru b) 201ENOEC-Journalism c) 201MAOEC-Development of Mathematical Skills d) 201PHOEC-Instrumentation e) 201CEOEC-Food and Adulteration f) 201CSOEC – E-Learning g) 201CAOEC-Web Technology h) 201CMOEC-Banking service

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	17	-	-	-	-	-	17
II	17	-	-	-	1	-	18
III	17	-	-	-	2	-	19
IV	17	-	-	-	-	2	19
V	15	-	3	-	1	-	19
VI	6	7	3	2	4	1	23
Total	89	7	6	2	8	3	115

HOD
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DEAN
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COURSE STRUCTURE
SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami – I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20115AEC13	Biomolecules	6	1	0	5
20114AEC14	Chemistry –I	6	1	0	4
	PRACTICAL				
20115AEC15L	Biomolecules Lab-I	0	0	3	2
20114AEC16L	Volumetric Analysis Lab	0	0	3	2
	Total	20	2	6	17
	AUDIT COURSE				
20IACLSICN	Indian Constitution	-	-	-	3
20IACLSUHV	Universal Human Values	-	-	-	3

SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Tamil – II/Advanced English-II/Hindi-II/ French – II	4	0	0	2
20111AEC22	English-II	4	0	0	2
20115AEC23	Biochemical Techniques	6	1	0	5
20114AEC24	Chemistry – II	6	1	0	4
	PRACTICAL				
20115AEC25L	Biochemical Techniques Lab-I	0	0	3	2
20114AEC26L	Organic Analysis Lab	0	0	3	2

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	[illegible]	-	-	-	1
	Total	30	2	6	18

AUDIT COURSES

[illegible]	Communicative Skills	-	-	-	2
[illegible]	[illegible]	-	-	-	2

SEMESTER – III

Course Code	Course Title	L	T	P	C
	THEORY				
[illegible]	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
[illegible]	English-III	4	0	0	2
[illegible]	Cell Biology and Genetics	4	1	0	4
[illegible]	Programming in C	4	1	0	5
	PRACTICAL				
[illegible]	Cell Biology and Genetics Lab	0	0	3	2
[illegible]	Programming in C Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
[illegible]	Research Methodology	2	0	0	2
	Total	18	2	6	19
	AUDIT COURSE				
[illegible]	Office Automation	-	-	-	2

SEMESTER – IV

Course Code	Course Title	L	T	P	C
	THEORY				
[illegible]	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
[illegible]	English-IV	4	0	0	2
[illegible]	Human Physiology	4	1	0	4

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20120AEC44	Fundamentals of Computing	5	1	0	5
201ENSTU45	Environmental studies	2	0	0	2
	PRACTICAL				
20115AEC46L	Biochemical Techniques Lab-II	0	0	3	2
20120AEC47L	Web Design Lab	0	0	3	2
	Total	19	2	6	19
	AUDIT COURSE				
201ACLSLMS	Leadership and Management Skills	-	-	-	2
201ACSSAQA	General Aptitude and Quantitative Ability	-	-	-	2

SEMESTER – V

Course Code	Course Title	L	T	P	C
	THEORY				
20115AEC51	Enzymes	4	1	0	4
20115AEC52	Bioenergetics and Metabolism	4	1	0	3
20115AEC53	Immunology	4	1	0	4
20115DSC54_	Discipline Specific Elective -I	4	1	0	3
	PRACTICAL				
20115AEC55L	Food and enzyme Analysis Lab	0	0	3	2
20115AEC56L	Immunology Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20115BRC57	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
	AUDIT COURSE				
201ACLSPSL	Professional Skills	-	-	-	2

SEMESTER – VI

Course Code	Course Title	L	T	P	C
	THEORY				
20115AEC61	Clinical Biochemistry	4	1	0	4
20115SEC62	Molecular Biology	4	1	0	5
20115DSC63_	Discipline Specific Elective -II	4	1	0	3
201--OEC	Open Elective Course	4	0	0	2
	PRACTICAL				

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20115AEC64L	Hematology and clinical biochemistry Lab	0	0	3	2
20115SEC65L	Molecular Biology Lab	0	0	3	2
20115PRW66	Project Work	-	-	-	4
20115PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
	AUDIT COURSE				
201ACSSIST	Interview Skills Training and Mock Test	-	-	-	2
201ACLSCET	Community Engagement	-	-	-	1
	Total Credits -Programme				115
	Total Credits - Audit Courses				19

Discipline Specific Electives

Semester	Discipline Specific Elective Courses-I
V	a) 20115DSC54A – Pharmaceutical Biochemistry b) 20115DSC54B – Basic Biotechnology
	Discipline Specific Elective Courses-I
VI	a) 20115DSC63A - Biochemistry of plants and microbes b) 20115DSC63B – Hospital Managements

Open Electives

Semester	Open Elective Courses
VI	a) 201TNOEC-Tamil Ilakkiya Varalaru b) 201ENOEC-Journalism c) 201MAOEC-Development of Mathematical Skills d) 201PHOEC-Instrumentation e) 201CEOEC-Food and Adulteration f) 201CSOEC – E-Learning g) 201CAOEC-Web Technology h) 201CMOEC-Banking service

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	17	-	-	-	-	-	17
II	17	-	-	-	1	-	18
III	17	-	-	-	2	-	19
IV	17	-	-	-	-	2	19
V	15	-	3	-	1	-	19
VI	6	7	3	2	4	1	23
Total	89	7	6	2	8	3	115

HOD
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Dean of Arts & Science
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SCHOOL OF ARTS AND SCIENCE
M. Sc BIOCHEMISTRY -SYLLABUS – REGULATION 2020
COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20215SEC11	Biomolecules	6	1	0	5
20215SEC12	Biochemical and Instrumental analysis	6	1	0	5
20215SEC13	Enzymology	6	1	0	5
20215SEC14L	Biochemical Techniques Lab - I	0	0	4	2
20215DSC15	Discipline specific elective	5	0	0	4
20215RLC16	Research Led Seminar	-	-	-	1
	Total	23	3	4	21
	SEMESTER II				
20215SEC21	Cellular Biochemistry	5	1	0	5
20215SEC22	Metabolism and Regulation	5	1	0	5
20215SEC23	Neuro Biochemistry	5	0	0	4
20215SEC24L	Enzymology Lab- II	0	0	4	2
20215DSC25	Discipline Specific Elective -II	5	0	0	4
20215RMC26	Research Methodology	3	0	0	2
20215BRC27	Participation in Bounded Research	-	-	-	2
	Total	23	2	4	24
	SEMESTER III				
20215SEC31	Molecular Biology	6	1	0	6
20215SEC32	Clinical Biochemistry	6	1	0	6
20215SEC33L	Clinical Biochemistry Lab	0	0	5	3
20215DSC34_	Discipline Specific Elective -III	5	0	0	4
202_OEC-	Open Elective	4	0	0	3
20215SRC35	Design/Socio technical research	-	-	-	2
	Total	21	2	5	24
	SEMESTER IV				
20215SEC41	Molecular Basis of diseases	6	1	0	6
20215SEC42	Environmental Biochemistry	6	1	0	6
20215SEC43L	Molecular and Environmental biochemistry lab	0	0	5	3
20215DSC44	Discipline Specific elective –IV	5	0	0	4
20215PRW45	Project Work	-	-	-	6
20215PEE	Programme Exit Examination	-	-	-	2
	Total	17	2	5	27
	Total Credits for the Programme				**96**

Head of the Department
Department of Biochemistry
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Dean of Arts
PRIST Deemed to be University
Thanjavur-613 403

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Discipline specific Electives

Semester	Discipline specific Elective Courses-I
I	a)20215DSC15A- Biostatistics b) 20215DSC15B- Immunology
	Discipline specific Elective Courses-II
II	a)2015DSC25A- Endocrinology b)20215 DSC25B- Clinical nutrition and dietetics c) 20215 DSC25C – Bioinformatics
	Discipline specific Elective Courses-III
III	a)20215DSC34A- Genetics and Genetic Engineering b)20215DSC34B- Pharmaceutical Biotechnology
VI	a) 20215DSC44A – Medical Biotechnology b) 20215DSC44B – Applied Microbial Biochemistry

Open Electives

Semester	Open Elective Courses
III	a. 20211OEC-Writing for the media b. 20212OEC-Applicable Mathematics Techniques c. 20213OEC-Bio-Medical Instrumentation d. 20214OEC-Green Chemistry e. 20220OEC – M-Marketing f. 20261OEC- Insurance Services g. 20240OEC-Counseling Psychology

Credit Distribution:

Sem	SEC	DSC	OEC	HSB Courses	Others	Total
I	16	4	-	1	-	21
II	16	4	-	4	-	24
III	15	4	3	2	-	24
IV	13	4	-	6	2	27
Total	62	16	3	13	2	96

HOD

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SCHOOL OF ARTS AND SCIENCE
M.Phil., BIOCHEMISTRY -SYLLABUS – REGULATION 2020
COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
203RMG11	Research Methodology				4
203BCC12	Advanced Biochemistry				5
203BCE13-	A. Clinical Biochemistry Or B. Principles And Applications Of Molecular Techniques				5
CPE_RPE	Research and publication ethics	-	-	-	2
	Total				16
	SEMESTER II				
203BCD21	Project work	-	-	-	10

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BIOMOLECULES

Aim

- To know the various biomolecules, present in biological system

Course objectives

- To understand the properties and importance of water in biological system
- To introduce the importance of vitamins in human body

Course outcomes (CO's)

1. Recognize water as a universal solvent and elixir of life by knowing its importance
2. Identify the properties and classification of carbohydrates
3. Recall the role of various lipids in biomembrane including signal transduction
4. Categories the amino acids and know their properties
5. Differentiate the structure, properties and functions of DNA and RNA
6. List the functions and deficiency disease of fat- and water-soluble vitamins

Unit I Carbohydrates:

Classification - structural elucidation of glucose and fructose. Interconversion of sugars. Structure, Properties and biological functions of mono, di, oligo and polysaccharides. Homoglycans and Heteroglycans.

Unit II Amino acids and protein:

Amino acid Structure, classification, physical and chemical properties. Peptides, peptide bond, peptide synthesis, biologically important peptides. Proteins: classification, physical and chemical properties, Biological importance. Primary structure, Secondary, tertiary and quaternary structure- forces stabilizing the structure of proteins.

Unit III Nucleic acids:

Components of mono nucleotides- pyrimidines, purines, nucleosides, nucleotide. 5'diphosphates and 5' triphophates. Polynucleotides: DNA and RNAComposition, structure and biological importance. Properties -hydrolysis of nucleic acids by acids, bases and enzymes. Denaturation and renaturation. Isolation, separation and purification of DNA and RNA

Unit IV Lipids:

Classification and Biological significance. Simple lipids: types of fatty acids, triglycerides, waxes. Compound lipids-structure and functions- Phospholipids, sphingolipids and glycolipids. Lipoproteins: classification and composition. Steroids and prostaglandins-

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structure and functions. Characterization of oils: Reichert-Meisel value, Iodine number, saponification value, acid number and determination of acetyl value.

Unit V Vitamins and Antibiotics:

Definition and classification. Source, Structure and biological role, daily requirement and deficiency manifestation of the fat soluble vitamins A,D,E & K. Water soluble vitamins- Ascorbic acid, thiamine, riboflavin, pyridoxine, niacin, pantothenic acid, lipoic acid, biotin, folic acid and vitamin B12. Antibiotics – Definition, types and general properties; Structure and significance of Penicillin and tetracycline

REFERENCE BOOKS:

1. Principles of Biochemistry – 7th edition Lehninger, Nelson Cox Macmillan worth Publishers, 2013.
2. Textbook of Biochemistry-West & Todd,4th edition, Macmillan, 1966.
3. Harper's Biochemistry 29th edition, McGraw Hill, 2012.
4. Fundamentals of Biochemistry –11th edition Agarwal O.P., Goel Publishing House, 2008.
5. Essentials of Biochemistry –2nd edition A.I. Jain. S. Chand publications, 2004.
6. Chemistry of Biomolecules, S. P. Bhutani, 2010.
7. Fundamentals of biochemistry, J.L. Jain, 2006.

INDIAN CONSTITUTION

Aim:

The aim of the constitution is mentioned in the *preamble that is to constitute* India into a sovereign, socialist, democratic republic and it's the provision of the rights of citizens it's primary objective is to provide economic, social & political justice.

Course Objectives:

- To make the students understand about the democratic rule and parliamentarian administration
- To appreciate the salient features of the indian constitution
- To know the fundamental rights and constitutional remedies
- To make familiar with powers and positions of the union executive, union parliament and the supreme court
- To exercise the adult franchise of voting and appreciate the electoral system of indian democracy.

Course outcome:

- Democratic values and citizenship training are gained

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- Awareness on fundamental rights are established
- The function of union government and state government are learnt
- The power and functions of the judiciary are learnt thoroughly
- Appreciation of democratic parliamentary rule is learnt

Unit I: The making of Indian constitution

The constitution assembly organization -character -work salient features of the constitution- written and detailed constitution -socialism -secularism-democracy and republic.

Unit II: Fundamental rights and fundamental duties of the citizens

Right of equality -right of freedom- right against exploitation -right to freedom of religion- cultural and educational rights -right to constitutional remedies -fundamental duties.

Unit III: Directive principles of state policy

Socialistic principles-Gandhi an principles-liberal and general principles -differences between fundamental rights and directive principles

Unit IV: The union executive, union parliament and Supreme Court

Powers and positions of the president - qualification method of election of president and vice president -prime minister - Rajya Sabah -Lok Sabah. The supreme court -high court -functions and position of supreme court and high court

Unit V: State council -election system and parliamentary democracy in India State council of ministers -chief minister -election system in India-main features election commission - fentures of Indian democracy.

References:

1) Palekar.s.a, Indian constitution government and politics, ABD publications, India

2) Aiyer, alladi krishnaswami, Constitution and fundamental rights 1955

3) Markandan. k.c.directive Principles in the Indian constitution 1966.

4) Kashyap. Subash c, Our parliament, National book trust, New Delhi 1989

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UNIVERSAL HUMAN VALUES

Aim:

This course aims at making learners conscious about universal human values in an integral manner, without ignoring other aspects that are needed for learner's personality development.

Course Objectives:

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realize one's potentials.

Course Outcomes:

By the end of the course the learners will be able to:

- Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
- Learn from case studies of lives of great and successful people who followed and practiced human values and achieved self-actualisation.
- Become conscious practitioners of human values.
- Realize their potential as human beings and conduct themselves properly in the ways of the world.

Unit I

Introduction: What is love? Forms of love for self, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living. Love and compassion and inter-relatedness. Love, compassion, empathy, sympathy and non-violence. Individuals who are remembered in history for practicing compassion and love. Narratives and anecdotes from history, literature including local folklore. Practicing love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion? Sharing learner's individual and/or group experience(s). Simulated Situations. Case studies

Unit II

Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honesty among others). Individuals who are remembered in history for practicing this value. Narratives and anecdotes from history, literature including local folklore. Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practice it?. Learners' individual and/or group experience(s). Simulated situations. Case

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studies

Unit III

Introduction: What is non-violence? Its need. Love, compassion, empathy, sympathy for others as pre-requisites for non-violence. Akimsa as non-violence and non-killing. Individuals and organisations that are known for their commitment to non-violence. Narratives and anecdotes about non-violence from history and literature including local folklore. Practicing non-violence. What will learners learn/gain if they practice non-violence? What will learners lose if they don't practice it? Sharing learner's individual and/or group experience(s) about non-violence. Simulated situations. Case studies.

Unit IV

Introduction: What is righteousness? Righteousness and dharma. Righteousness and Dharma. Individuals who are remembered in history for practicing righteousness. Narratives and anecdotes from history, literature including local folklore. Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it? Sharing learners' individual and/or group experience (s). Simulated situations. Case studies.

Unit V

Introduction: What is peace? Its need. relation with harmony and balance. Individuals and organisations that are known for their commitment to peace. Narratives and Anecdotes about peace from history, and literature including local folklore. Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it? Sharing learner's individual and/or group experience(s) about peace. Simulated situations. Case studies

Unit VI

Introduction: What is service? Forms of service for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress or disaster. Individuals who are remembered in history for practicing this value. Narratives and anecdotes dealing with instances of service from history, literature including local folklore. Practicing service: What will learners learn/gain gain if they practice service? What will learners lose if they don't practice it? Sharing learners' individual and/or group experience(s) regarding service. Simulated situations. Case studies

Unit VII

Introduction: What is renunciation? Renunciation and sacrifice. Self-restraint and Ways of overcoming greed. Renunciation with action as true renunciation. Individuals who are

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remembered in history for practicing this value. Narratives and anecdotes from history and literature, including local folklore about individuals who are remembered for their sacrifice and renunciation. Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practice it? Sharing learners' individual and/or group experience (s). Simulated situations. Case studies

BASIC BEHAVIORAL ETIQUETTE

Aim: aim of this program is Eliminating negative thought, developing enriching habits, unlocking individual potentials and well-versed communication

Course Objectives:

Training is mainly focused on discipline, grooming, career planning and building personality. As it is the first year of the university, students are given awareness about the job market right from the start so that they prepare accordingly at their own pace and potential.

The module consists of

- Communication Skills
- Goal Setting
- Career Planning
- Reaching your Potential
- Time Management
- Stress Management
- Grooming and Discipline
- Learning skills
- Listening Skills
- Team Building

OFFICE AUTOMATION

Aim:

To provide an in-depth training in use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

Course Objectives:

To provide an in-depth training in the use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

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Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with the internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL)

UNIT IV

Presentation (MS Power Point)

UNIT V

Communicating with Internet

Reference:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of India
2. Microsoft Office 2007 Bible - John Walkenbach, Herb Tyson, Faithe Wempen, cary N. Prague,Michael R groh, Peter G.Aitken, and Lisa a.Bucki - Wiley India pvt. ltd.
3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.
4. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications
5. https://en.wikipedia.org
6. https://wiki.openoffice.org/wiki/Documentation
7. http://windows.microsoft.com/en-in/windows/windows-basics-all-topics

LEADERSHIP AND MANAGEMENT SKILLS

Aim:

The aim of the course cultivating and nurturing the innate leadership skills of the youth so that they may transform these challenges into opportunities and become torchbearers of the future by developing creative solutions.

Course Objective:

The Module is designed to:

- Help students to develop essential skills to influence and motivate others
- Inculcate emotional and social intelligence, and integrative thinking for effective

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leadership

- Create and maintain an effective and motivated team to work for the society
- Nurture a creative and entrepreneurial mindset
- Make students understand the personal values and apply ethical principles in professional and social contexts.

Course Outcomes:

Upon completion of the course, students will be able to:

- Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
- Learn and demonstrate a set of practical skills such as time management, self-management, handling conflicts, team leadership, etc.
- Understand the basics of entrepreneurship and develop business plans
- Apply the design thinking approach to leadership
- Appreciate the importance of ethics and moral values for making of a balanced personality.

UNIT I - Leadership Skills

Understanding Leadership and its Importance: What is leadership? Why Leadership required? Whom do you consider as an ideal leader? Traits and Models of Leadership Are leaders born or made? Key characteristics of an effective leader Leadership styles Perspectives of different leaders. Basic Leadership Skills. Motivation. Team work. Negotiation. Networking

UNIT II - Managerial Skills

Basic Managerial Skills: Planning for effective management. How to organise teams? Recruiting and retaining talent. Delegation of tasks. Learn to coordinate. Conflict management. Self-Management Skills. Understanding self-concept. Developing self-awareness. Self-examination. Self-regulation

UNIT III - Entrepreneurial Skills

Basics of Entrepreneurship: Meaning of entrepreneurship. Classification and types of entrepreneurships. Traits and competencies of entrepreneur. Creating Business Plan. Problem identification and idea generation. Idea validation. Pitch making

UNIT IV - Innovative Leadership and Design Thinking

Innovative Leadership: Concept of emotional and social intelligence. Synthesis of human and artificial intelligence. Why does culture matter for today's global leaders. Design

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Thinking. What is design thinking? Key elements of design thinking: Discovery - Interpretation, Ideation

Experimentation, Evolution. How to transform challenges into opportunities? How to develop human-centric solutions for creating social good?

UNIT V- Ethics and Integrity

Learning through Biographies: What makes an individual great? Understanding the persona of a leader for deriving holistic inspiration. Drawing insights for leadership. How leaders sail through difficult situations? Ethics and Conduct. Importance of ethics. Ethical decision making. Personal and professional moral codes of conduct. Creating a harmonious life

Reference Books

- Ashokan, M. S. (2015). *Karmayogi: A Biography of E. Sreedharan*. Penguin, UK.
- Brown, T. (2012). *Change by Design*. Harper Business
- Elkington, J. & Hartigan, P. (2008). *The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World*. Harvard Business Press.
- Goleman D. (1995). *Emotional Intelligence*. Bloomsbury Publishing India Private Limited
- Kalam A. A. (2003). *Ignited Minds: Unleashing the Power within India*. Penguin Books India
- Kelly T., Kelly D. (2014). *Creative Confidence: Unleashing the Creative Potential Within Us All*. William Collins
- Kurien V., & Salve G. (2012). *I Too Had a Dream*. Roli Books Private Limited
- Livermore D. A. (2010). *Leading with cultural intelligence: The New Secret to Success*. New York: American Management Association

GENERAL APTITUDE AND QUANTITATIVE ABILITY

Course Outcome:

- Understand and practice quantitative aptitude
- Understand and practice Logical reasoning
- Understand and practice verbal reasoning
- Understand different placement practice techniques

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UNIT-I

General Aptitude: Introduction, Introduction to Aptitude Tests, Diagnostic Tests, Introduction to Speed Maths. Quantitative Ability - Number Theory, Numbers, Properties of Numbers, Concept of Multiples and Factors, LCM and HCF, Factorial Concept, Last Digit Concept, Remainders Concept

UNIT-II

Quantitative Ability: – Arithmetic – 1 – Percentage, Ratio and Proportion, Simple Interest and Compound Interest, Profit Loss, Discount, Mixture and Allegation. Questions from Company Papers will be discussed. Quantitative Ability – Arithmetic – 2 - Speed Distance Time, Time and Work, Chain Rule, Clocks and Calendars, Averages, Questions from Company Papers will be discussed.

UNIT-III

Quantitative Ability – Algebra - Basic Terminologies in Algebra, Equations, Simple Equation Quadratic Equation, Cubic Equation, Functions, Graphs, Maxima and Minima, Questions from Company Papers will be discussed. Quantitative Ability – Modern Maths, Set Theory, Fundamental way of Counting - Permutations and Combinations, Probability, Questions from Company Papers will be discussed, Data Analysis, Data Sufficiency

UNIT-IV

Analytical and Logical Reasoning - Mono variate conditions, Multi variate conditions, Puzzles, Coding, Decoding, Family tree, Direction sense, Alpha numeric, Brain teasers, Deductive Reasoning, Visual Sequence, Mathematical Reasoning

UNIT-V

English Aptitude - Fill in the blanks, Comprehension, Odd man out, Phrases and Sentences, Sequencing, Basic Grammar, Meanings.

PROFESSIONAL SKILLS

Aim:

Course Objectives:

- The Objectives of the course are to help students/candidates:
- Acquire career skills and fully pursue to partake in a successful career pat Prepare a good resume, prepare for interviews and group discussions
- Explore desired career opportunities in the employment market in consideration of an individual SWOT.

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Course Outcomes:

At the end of this course the students will be able to:

- Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax
- Participate in a simulated interview
- Actively participate in group discussions towards gainful employment
- Capture a self - interview simulation video regarding the job role concerned
- Enlist the common errors generally made by candidates in an interview
- Perform appropriately and effectively in group discussions
- Explore sources (online/offline) of career opportunities
- Identify career opportunities in consideration of their own potential and aspirations
- Use the necessary components required to prepare for a career in an identified occupation (as a case study).

Unit I: Resume Skills

Resume Skills: Preparation and Presentation

Introduction of resume and its importance, Difference between a CV, Resume and Bio data. Essential components of a good resume, Resume skills ; common errors, Common errors people generally make in preparing their resume, Prepare a good resume of her/his considering all essential components.

Unit II: Interview Skills

Interview Skills: Preparation and Presentation, Meaning and types of interview (F2F, telephonic, video, etc.). Dress Code, Background Research, Do's and Don'ts, Situation, Task, Approach and Response (STAR Approach) for facing an interview, Interview procedure (opening, listening skills, closure, etc.). Important questions generally asked in a job interview (open and closed ended questions). Interview Skills: Simulation, Observation of exemplary interviews, Comment critically on simulated interviews. Interview Skills: Common Errors. Discuss the common errors generally candidates make in interview. Demonstrate an ideal interview

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Unit III: Group Discussion Skills

Meaning and methods of Group Discussion, Procedure of Group Discussion, Group Discussion- Simulation, Group Discussion - Common Errors

Unit IV: Exploring Career Opportunities

Knowing yourself - personal characteristics, Knowledge about the world of work, requirements of jobs including self-employment. Sources of career information, Preparing for a career based on their potentials and availability of opportunities

INTERVIEW SKILLS TRAINING AND MOCK TEST

Duration: (40 - Years)

Exclusive Pre-Placement Training – both General Aptitude and Technical Aptitude is carried out by External Training firms, Corporate Professionals for final year students - with a focus on the Corporate Selection Process during the Campus Hiring Visit

Mock Tests on Company Specific Aptitude Question papers are carried out along with Mock Interviews. Based on such companies face-to-face- Technical & HR - interviewing style and finally placement offer provide to the students.

COMMUNITY ENGAGEMENT

Course Objectives:

- To develop an appreciation of rural culture, life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

Course Outcomes:

After completing this course, students will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and the bonds of mutuality with the local community
- Appreciate significant contributions of local communities to Indian society and

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economy

- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio economic improvements

UNIT I - Appreciation of Rural Society

Rural lifestyle,rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of india lies in villages" (Gandhi), rural infrastructure.

UNIT II- Understanding rural economy & livelihood

Agriculture, farming, land ownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets

UNIT III Rural Institutions

Traditional rural organisations, Self-help Groups, Panchayati Raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration

UNIT IV Rural Development Programmes

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan,

Beti Bachao, Beti Padhao, Ayushman Bharat, Swatchh Bharat, PM AwaasYojana, Skill India,

Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

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VALUE ADDED COURSES

DIPLOMA COURSE ON ORGANIC FARMING

Aim:

To acquaint students with philosophy, objectives and principles of organic agriculture.

Course objective:

- To impart knowledge and proficiency in Organic production practices, Certification process and Marketing of organically raised agriculture products.
- To promote self-employment and income generation

Course Outcome:

- Understand the concept and the importance of organic farming
- Distinguish the different streams of Agriculture.
- Maintain and preserve existing ecosystems and promote the maintenance of the balance of the recommended farming system.
- Have relevant knowledge of agricultural technology for the fertilization of the land mobilization and composting.
- Have relevant knowledge of agricultural technology for composting methods in organic farming.
- Know legislation rules on livestock in OF.

Unit : I- Introduction: Farming, organic farming, concept and development of organic farming. Principles of organic farming & Need for organic farming. Agencies and institutions related to organic agriculture. Types of organic farming, Biodynamic farming, Benefits of organic farming. Conventional farming v/s organic farming.

Unit : II-Organic farming systems, Soil tillage, Choice of Varieties, crop notation multiple and cropping systems, intercropping in relation to maintaining soil productivity by Propagation-seed, planting materials and seed treatments. Water management , Green manuring, Composting- principles, stages, types and factors, Composting methods, Earthworm Vermicomposting. Bulky organic manures, Concentrated organic manures, Organic, Preparations, Organic amendments and sludges, biogas.

Unit : III- Plant protection- cultural, Plant protection – mechanical . Plant protection- botanical pesticides I,Plant protection- botanical pesticides II, Plant protection- botanical pesticides III. Plant protection- biopesticide. Plant protection- biocontrol agents. Plant protection- biocontrol agents.

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Unit : IVOrganic crop production methods- rice, coconut, cashew, vegetables. Livestock component in organic farming. Livestock Management in organic farming.

Unit : V- Farm economy: Basic concept of economics- Demand, supply, Economic Viability of a farm. Basic production principles, reducing expenses, ways to increase returns. Cost of production system. Benefit/ cost ratio. Marketing, Imports and exports. Policies and incentives of organic production, Farm inspection and certification. Organic Farming and National Economy Socio Economic Impacts.

REFERENCE:

1. Organic Farming: Theory and Practice - S.PPalaniappan and K.Annadurai
2. A Handbook of Organic Farming - A.K. Sharma
3. Hand book of Organic Farming and Biofertilizers - A.C.Gaur
4. Organic farming for sustainable Horticulture – P. Parvatha Reddy
5. Organic Agriculture – J.C. Tarafdar

CERTIFICATE COURSE ON VERMICOMPOST

Aim:

- To introduce students to vermin-composting for Agricultural uses.

Objectives:

- To inculcate concepts of vermicomposting.
- To understand techniques in Vermicomposting.
- To increase employability of the students.
- To improve the soil quality by promoting the biofertilizers.
- To educate about role of Earthworm
- To learn the importance of Earthworms and help to maintain a good soil structure.
- To educate about Recycling of wastes through vermicomposting.

Course Outcomes:

At the end of this unit, you will be able to:

- Identify correct species of earthworms
- Describe Process of Vermicomposting and Inoculation of earthworms
- Describe maintaining favorable condition in to vermi bed
- Describe preparation of feed and manage Vermicomposting unit

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Dean of Arts & Science
PRIST Deemed to be University
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- Describe control of predators, pest and disease attack 6. Describe harvest of Vermiwash

Unit I

Classification - different species of earthworms. Morphology, anatomy and Physiology of earthworms.

Unit II

Types of Vermicomposting – Role of earthworms in soil fertility - vermiculture – vermi-cast - vermi-technology and applications – Physical, chemical and biological properties of vermi-compost.

Unit III

Raw materials for composting – requirements of vermicomposting. Maintenance of composting – Collection of vermicompost – Efficiency of vermicomposting – General problems in production of vermi-composting.

Unit IV

Advantage of vermicomposting – Applications of vermicomposting – Vermicomposting of Agricultural and Urban Solid Wastes – Recycling of wastes through vermicomposting.

Unit V

Small Scale or Indoor vermicomposting - Large scale or outdoor vermicomposting. Effects of vermicompost on soil properties. Vermicompost – Quality & Economics. Prospects of vermi-culture as a self-employment venture.

Reference Books

1. R.K. Bhatnagar & R.K. Palta, "Earthworm Vermiculture and Vermicomposting", Kalyani Publishers, No. 1, Mahalakshmi Street, T. Nagar, Chennai -600 017.
2. P.K. Gupta, "Vermi Composting for Sustainable Agriculture", AGROBIOS (India), Agro House, Behind Nasrani Cinema, Chopasani Road, Jodhpur – 342 002.

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF PHYSICS
MINUTES OF THE MEETING OF THE BOARD OF STUDIES (BOS)

Board: Physics

The Meeting of Board of Studies (BOS) was held as given below:

Name of the Body	Board of Studies
Department	Physics
Meeting year	2020-21
Date and Time	11.05.2020 & 10:00 AM
Venue	Department of Physics
Members Attended	The details are given in the ANNEXURE-I

	AGENDA
1	Confirmation of the previous meeting minutes
2	Discussion about the revision of core and elective courses of UG curriculum
3	Discussion about the revision of core and elective courses of PG curriculum
4	Organizing industrial visit for students
5	Submission of project proposals to funding agencies and applying for funding to organize Faculty Development Programs, conference, seminar, workshop

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Minutes of the meeting of the Board of Studies (BoS)*

Board: Physics

The Board of Studies meeting was held on 11.05.2020. The Chairman of BOS welcomed all the panel members for the meeting. The item listed in the agenda were taken for discussion.

Agendum 1: Confirmation of the previous meeting minutes
Discussion: The minutes of the Board of Studies meeting held on 10.05.2019 were communicated to the members. The comments received have been incorporated and placed for confirmation. The same was approved by the Academic council. Resolution: The Board resolved to accept the same.

Agendum 2: Discussion about the revision of core and elective courses of UG curriculum

Discussion : The members discussed elaborately about the revision of existing curriculum of UG courses.

It was unanimously planned to revise the syllabi of UG and PG curricula of Physics based on the following aspects:

1. Specific mentioning should be made in the curriculum with respect to
   - Program outcomes
   - Program specific outcomes
   - Course objectives
   - Course outcomes
2. Develop curricula with relevance to
   - Domestic requirements
   - Regional requirements
   - National requirements
   - International requirements
3. Improving existing course with focus on
   - Employability
   - Entrepreneurship
   - Skill development
4. Enlightening existing course with focus on
   - Gender
   - Environment and sustainability
   - Human values and professional ethics

BoS members reviewed the syllabus of each and every course systematically. The followings are the proposed resolutions:

- ⊙ Adding course objectives and outcomes in the syllabus
- ⊙ Improving the content of syllabus with emerging fields

It was obvious that content of core courses was retained without any modification. We have modified the first two digits of course code from '19' to '20'. In addition, new elective course, Polymer Physics (20113DSC64A) was introduced in the semester-VI instead of Material

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Physics (19113DSC64B). BOS members also suggested to include 3 new value added courses while retaining 4 courses. Members have discussed about inclusion of program exit examination. **Resolution:** The board members recommended the above mentioned suggestions in UG curriculum

Agendum 3: Discussion about core and elective courses of PG curriculum Discussion : The members discussed elaborately about the existing curriculum of PG courses. It was decided that content of core courses was retained without any modification. We have modified the first two digits of course code from '19" to '20'. It was planned that content of core courses was retained without any modification. Nevertheless, 3 new elective courses were introduced in the semesters (I, II and III). BOS members also suggested to include 3 new value added courses while retaining 4 courses. New elective course, Computational Physics (20213DSC15A) was included instead of Digital Communication(19213DSC15A) in the semester – I. New elective course, Radiation Safety (20213DSC25A) was included instead of Atomic and Molecular Physics (19213DSC25A) in the semester – II. New elective course, Weather Forecasting (20213DSC34B) was included instead of Analysis of Crystal Structures (19213DSC34B) in the semester – III. Resolution: The board members approved the above suggestions in PG curriculum

Agendum 4: Organizing Industrial visit for students Discussion: External expert suggested that final year B.Sc. and M.Sc., students have to be allowed to go for industrial visit so that the students can get industrial exposure. External expert can also impart internship training to the students. Resolution: After the discussion, the members insisted that final year B.Sc., and M.Sc., students have to be taken to industries so as to get industrial exposure and for getting internships.

Agendum 5: Submission of project proposals to funding agencies and applying for funding to organize Faculty Development Programs, conference, seminar, workshop Discussion: The external members recommended that faculty members and students should also apply for these kinds for funding to enhance research output of the department. Resolution: Resolved to insist faculty members to submit proposals for Major-Minor research projects to different funding Agencies during academic year. Improvement of laboratory infrastructure using the funding from different funding agencies.

The chairman of Board of Studies (BOS) thanked all the members for their active participation and cordially invited them for the next meeting.

Date: 11.05.2020

M.Si

Signature
(Dr. M. Sivananthan)

BOS Chairman/HOD Seal

The Head, Department of Physics
PRIST Deemed to be University
Vallam, Thanjavur-613403
Tamilnadu, India.

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ATTENDANCE OF THE BOARD OF STUDIES MEETING

Board: Physics

Date: 11.05.2020

Time: 10:00 am

Venue: Department of Physics

The following members were present for the Board of Studies meeting

Chair: Dr. M. Sivanantham, M.Sc., M.Phil., Ph. D, Associate Professor & HOD

External Members

S.No.	Name/Degree/Designation	Institute/Organization/ Full address	Signature
1	Dr. K. Ravichandran, M.Sc., M. Phil., M.Ed., Ph.D., Associate Professor & HOD	Post Graduate & Research Department of Physics, AVVM Sri Pushpam College (Autonomous), Poondi-613503	
2	Wg Cdr M. Jeyakumar, M.A., PGDPRM, MBA, CEO, nRoot Consultancy	nRoot Consultancy, RS No.139/81, nRootHead quarters, MappilaiNayakkanpatti, Near Air force Station, Thanjavur - 613 403	

Internal Members

S.No.	Name/Degree/Designation	Department	Signature
1	Dr. M. Sivanantham M.Sc., M.Phil, Ph.D, HOD, Associate Professor	Physics	
2	Dr. L. Chinnappa, M.Sc., M. Phil, Ph.D., PGDCA., Dean & Professor, School of Arts and Science, PRIST Deemed to be University, Thanjavur	Dean & Professor, School of Arts and Science, PRIST Deemed to be University, Thanjavur	
3	Dr. S. Subashchandrabose,	Physics	

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	M.Sc., M.Phil., Ph.D., Professor		
4	Dr. Sutapa Ghosh M.Sc., Ph.D., Associate Professor	Physics	Sutapa
5	Dr. V. Vidhya M.Sc., M.Phil., Ph.D., Assistant Professor	Physics	V. Vi
6	Mr. K. Swaminathan, M.Sc., M.Phil., Assistant Professor	Physics	
7	Dr. K. Thirunavukarasu M.Sc., M.Phil., Ph.D., Assistant Professor	Physics	K. Thi

M. Siv

Date: 11.03.2020

Signature
(Dr. M. Sivanantham)

BOS Chairman/HOD Seal

Dean of Academic Courses
PRIST Deemed to be University
Thanjavur - 613 403, Tamilnadu.

The Head, Department of Physics
PRIST Deemed to be Univers
Vallam, Thanjavur-613403.
Tamilnadu, India.

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List of new courses

1. Polymer Physics
2. Computational Physics
3. Radiation Safety
4. Weather Forecasting

List of new value-added courses

1. Diploma course on Nano Science and Technology
2. Certificate course on microprocessor
3. Certificate course on Materials Characterization Techniques

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B.Sc., PHYSICS

COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
	THEORY				
20110AEC11 20111AEC11 20132AEC11 20135AEC11	Tamil-I Advanced English-I Hindi-I French-I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20113AEC13	Properties of Matter	5	1	0	4
20112AEC15A	Calculus and Fourier series	4	-	0	4
20112AEC16A	Algebra and Trigonometry	4	-	0	3
	PRACTICAL				
20113SEC14L	Properties of Matter Lab	0	0	3	2
	Total	21	1	3	17
	AUDIT COURSE				
201ACLSICN	Indian Constitution	-	-	-	2
201ACLSUHV	Universal Human Values	-	-	-	2

SEMESTER II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21 20111AEC21 20132AEC21 20135AEC21	Tamil-II Advanced English-II Hindi-II French-II	4	0	0	2
20111AEC22	English-II	4	0	0	2
20113AEC23	Mechanics And special theory of Relativity	6	1	0	4
20112AEC25A	ODE,PDE and Laplace Transform	5	0	0	4
20112AEC26A	Analytical Geometry in Vector Calculus	4	0	0	3
	PRACTICAL				
20113SEC24L	Mechanics Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20113RLC27	Research Led Seminar	-	-	-	1
	Total	23	1	3	18
	AUDIT COURSE				
201ACLSCOS	Communication Skills	-	-	-	2
201ACSSBBE	Basic Behavioral Etiquette	-	-	-	2

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SEMESTER III

Course Code	Course Title	L	T	P	C
	SEMESTER I				
	THEORY				
20110AEC11 20111AEC11 20132AEC11 20135AEC11	Tamil-I Advanced English-I Hindi-I French-I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20113AEC13	Properties of Matter	5	1	0	4
20112AEC15A	Calculus and Fourier series	4	-	0	4
20112AEC16A	Algebra and Trigonometry	4	-	0	3
	PRACTICAL				
20113SEC14L	Properties of Matter Lab	0	0	3	2
	Total	21	1	3	17
	AUDIT COURSE				
201ACLSICN	Indian Constitution	-	-	-	2
201ACLSUHV	Universal Human Values	-	-	-	2

SEMESTER IV

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC41 20111AEC41 20132AEC41 20135AEC41	Tamil-IV Advanced English-IV Hindi-IV French-IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20113AEC43	Optics	5	0	0	4
20114AEC45	Chemistry-II	6	0	0	5
201ENVTSTU	Environmental Studies	2	0	0	2
	PRACTICAL				
20113SEC44L	Optics Lab	0	0	3	2
20114SEC46L	Volumetric Analysis Lab -II	0	0	3	2
	TOTAL	21	0	3	19
	AUDIT COURSE				
201ACLSLMS	Leadership and Management Skills	-	-	-	2
201ACSSAQA	General Aptitude and Quantitative Ability	-	-	-	2

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SEMESTER V

Course Code	Course Title	L	T	P	C
	THEORY				
20113AEC51	Electricity and Magnetism	5	0	0	4
20113AEC52	Atomic Physics	4	1	0	3
20113AEC53	Basic Electronics	4	1	0	4
20113DSC56	Discipline Specific Elective – I	5	0	0	3
	RESEARCH SKILL BASED COURSE				
20113BRC57	Participation in Bounded research	-	-	-	1
	PRACTICAL				
20113SEC54L	Electricity and Magnetism Lab	0	0	3	2
20113SEC55L	Basic Electronics Lab	0	0	3	2
	TOTAL	18	2	6	19
	AUDIT COURSE				
201ACLSPSL	Professional Skills	-	-	-	2

SEMESTER VI

Course Code	Course Title	L	T	P	C
	THEORY				
20113AEC61	Digital Electronics & Microprocessor	4	1	0	4
20113AEC62	Elements of Theoretical Physics	5	0	0	5
20113DSC65	Discipline Specific Elective – II	5	0	0	5
201__OEC	Open Elective Course	4	0	0	3
	PRACTICAL				
20113SEC63L	Digital Electronics Lab	0	0	3	2
20113SEC64L	Microprocessor Lab	0	0	3	2
20113PRW66	Project Work	-	-	-	4
20113PEE	Programme Exit Examination	-	-	-	1
	TOTAL	18	1	6	23
	AUDIT COURSE				
201ACSSIST	Interview Skills Training and Mock Test	-	-	-	2
201ACLSCET	Community Engagement	-	-	-	1
	TOTAL CREDITS				115
	Total Credits – Audit Courses				19

Discipline Specific Electives

Semester	Discipline Specific Elective Courses -I
V	a) 20113DSC55A- Digital Photography b) 20113DSC55B- Laser Physics

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Semester	Discipline Specific Elective Courses - II
VI	a) 20113DSC64A-Polymer Physics b) 20113DSC64B- Numerical Methods and C Programming

General Electives

Semester	General Elective Courses
V	a) 20111GEC-Journalism b) 20112GEC-Development of Mathematical Skills c) 20114GEC-Food and Adulteration d) 20117GEC-Mushroom Technology e) 20120GEC-Web Technology f) 20122GEC-E-Commerce and its Application g) 20161GEC-Indirect Taxes

Skill based Electives

Semester	Skill based Elective Courses
I	a) 20120SEC01AL-Package Lab – I b) 20160SEC01B-Soft skill – I
II	a) 20120SEC02AL-Package Lab – II b) 20160SEC02B-Soft skill – II
III	a) 20120SEC03AL-Package Lab –III b) 20160SEC03B-Soft skill – III
IV	a) 20120SEC04AL-Package Lab –IV b) 20160SEC04B- Soft skil – IV
V	a) 20120SEC05AL-Package Lab –V b) 20160SEC05B-Soft skill - V
VI	a) 20120SEC06AL-Package Lab –VI b) 20160SEC06B-Soft skill – VI

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	NON CGP	Total
I	15	2	-	-	-	-	17
II	15	2	-	-	1	-	18
III	13	4	-	-	2	-	19
IV	13	4	-	-	-	2	19
V	11	4	3	-	1	-	19
VI	9	4	3	2	4	1	23
Total	76	20	6	2	8	3	115

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M.Sc., PHYSICS -SYLLABUS

COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20213AEC11	Advanced Mathematical Physics	6	1	0	5
20213AEC12	Classical and Statistical Mechanics	6	1	0	5
20213AEC13	Electronics and Communication	6	1	0	5
20213SEC14L	Spectroscopy and General Electronics Lab	0	0	4	2
20213DSC15_	Discipline Specific Elective – I	5	0	0	4
20213RLC16	Research Led seminar	-	-	-	1
	Total	23	3	4	21
	SEMESTER II				
20213AEC21	Microprocessor and Microcontroller	5	1	0	5
20213AEC22	Quantum Mechanics	5	1	0	5
20213AEC23	Condensed Matter Physics	5	0	0	4
20213SEC24L	Advanced General Experiments Lab	0	0	4	2
20213DSC25_	Discipline Specific Elective – II	5	0	0	4
20213RMC26	Research Methodology	3	0	0	2
20213BRC27	Participation in Bounded Research	-	-	-	2
	Total	23	2	4	24
	SEMESTER III				
20213AEC31	Electro Magnetic Theory	6	1	0	6
20213AEC32	Nuclear and Particle Physics	6	1	0	6
20213SEC33L	Advanced Electronics Lab	0	0	3	3
20213DSC34_	Discipline Specific Elective – III	5	0	0	4
202__OEC35_	Open Elective	4	0	0	3
20213SRC36	Participation in Scaffold Research (Societal Project)	-	-	-	2
	Total	21	2	5	24
	SEMESTER IV				
20213AEC41	Laser Physics And Non Linear Optics	6	1	0	6
20213AEC42	Numerical Methods and Computational Physics	6	1	0	6
20213SEC43L	Numerical Methods Lab with C++ Programming	0	0	5	3
20213DSC44_	Discipline Specific Elective – IV	5	0	0	4
20213PRW45	Project Work	0	0	0	6
20213PEE	Programme Exit Examination	-	-	-	2
	Total	17	2	5	27
	Total Credits for the Programme				96

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Discipline specific Electives

Semester	Discipline specific Elective Courses- I
I	a) 20213DSC15A - Computational Physics b)20213DSC15B- Crystal Growth Processes

Semester	Discipline specific Elective Courses -II
II	a) 20213DSC25A - Radiation Safety b)20213DSC25B- Radiation Physics

Semester	Discipline specific Elective Courses -III
III	a)20213DSC34A- Photonics Devices and Applications b)20213DSC34B- Weather Forecasting

Semester	Discipline specific Elective Courses -IV
IV	a)20213DSC43A- Nano Science and Technology b)20213DSC43B- Non-linear Dynamics

OPEN ELECTIVE COURSE

Semester	General Elective Courses
III	a) 202ENOEC-Writing for the Media b) 202MAOEC-Applicable Mathematics Techniques c) 202CHOEC– Green Chemistry d) 202BCOEC-Herbal Medicine e) 202CSOEC-M-Marketing f) 202CMOEC– Financial Services g) 202SOOEC – Counselling and Psychology

Credit Distribution:

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	14	2	4	-	1	-	21
II	14	2	4	-	4	-	24
III	12	3	4	3	2	-	24
IV	12	3	4	-	6	2	27
Total	52	10	16	3	13	2	96

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Course Code	
20213DSC25A	Radiation Safety

Course Objectives:

- To learn different radition hazards and basic principles of time, distance and shielding
- Learn about different kinds of radioactive packages and its transport
- Study on methods of radioactive waste disposal
- Understand administrative and legislative aspects of radiation protection.
- Learn on radiation facility designing.

1. Radiation Hazard : Radiation Hazard- external, internal hazard, Radiation Hazard Evaluation by Calculation and measurement. Calculation of specific gamma constant. RHM, RMM, Area monitoring, personal monitoring Internal Hazard Evaluation by Calculation and measurement – inhalation, ingestion, and Absorption, Physical Decay, Biological Decay. Bioassay, Whole Body counter. Internal Radiation hazard Evaluation and Control, contamination on work surfaces, person and samples – Internal radiation hazards – Radio toxicity of different radio nuclides and the classifications of laboratories – General requirements of class A, class B and class C laboratories – Basic Principles for control of contamination, -Methods of decontamination.

Effects of distance, time and shielding – Shielding calculations, Alpha, Beta, Neutron Shielding, Shielding thickness calculation, Narrow Beam/ good geometry, Broad beam geometry, HVT, TVT , relation between TVT and HVT (18 hours)

2. Transport of Radioactive Material: Introduction, Regulatory aspects, Objective of the regulations, Radioactive Material, Special form Radioactive Material, A1, A2 values, Determination of A1/ A2 values of radionuclides, Contamination, Exclusive Use, Low specific activity material, Surface Contaminated object, Shipment under special arrangement, Package- Excepted package, Industrial (IP-1, IP-2, IP-3) package, Type A package, Type B package, type B(U) /(M), Type C package. Contents limit for package, General requirements for all types of packages, Additional requirements for packages transported by Air, Requirements for Type A, B(U), B(M), C packages, Test Procedures: Test for special form radioactive material, Tests for different types of packages- Type A, Type B(U),B(M) and Type C. Approval and Administrative Requirements, Contamination level for packages, Categories of packages, Transport Index, Radiation level on Surface, Marking , Labeling and Placarding. Consignor's Responsibility, Emergency Response Requirements on transport accidents. **(16 hours)**

3. Radiation waste Disposal: Disposal of radioactive wastes,Sources of radioactive waste, Classification of wastes, Permissible levels and authorization, Disposal of liquid wastes, Treatment techniques, for solid, liquid and gaseous effluents, permissible limits for disposal of wastes, Sampling technique for water, air and solid, ecological considerations, general methods of disposal, management of radioactive waste in hospital and research establishments, Meteorological parameters. Emergency preparedness, emergency handling, graded approach, site emergency. Safe custody of sources- procedures for issue for

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applications - methods of eventual disposal.(14 hours)

4. Administrative and legislative aspects of radiation protection: Aims of Radiological Protection, need for protection, System of Radiological Protection, - Justification, Optimization, Dose Limit.Types Of Radiation Exposure- Fetus Dose, Radiation trainee Dose limit, external and internal exposure, additive risk model and multiplicative risk model, risk coefficients, Emergency/ Interventions, ICRP and AERB recommendations, Atomic Energy Act. Radiation Protection Rules (RPR). Applicable Safety Codes, Standards, Guides and Manuals. Regulatory Control – Licensing, Inspection And Enforcement. Responsibilities of Employers, Licensees, Radiological Safety Officers And Radiation Workers **(16 hours)**

5. Safety Concern on Therapy/Diagnostic/Brachytherpay Room Planning: Shielding materials, Site selection, Area requirements, Parameters used for shielding calculations, Use factor, work load, Occupancy Factor, TVT, HVT, Radiation dose- Permissible limits, Calculation of Shielding thickness for the walls and ceiling- primary wall, secondary wall, Maze wall and its importance. Width of Primary barrier, Calculation of secondary thickness, scattered radiation, leakage radiation, Radiation at Door level. Neutron dose shielding in high energy Linac. Workload of x-ray machine, Shielding calculation for diagnostic X-ray rooms, Dose due to primary, leakage, scattered radiations, Lead lining of the Door. Brachytherapy Room calculation for Manual after loading, Remote After loading and HDR. **(16 hours)**

STANDARD BOOKS FOR STUDY AND REFERENCES

1. NCRP, ICRP, ICRU, IAEA, AERB Publications.
2. S.P.Yaremanenko, "Radiobiology of Humans and Animals", MIR Publishers, Moscow, 1988.
3. R.F. Mold "Radiation Protection in Hospitals" Adam Hilger Ltd. Bristol, 1985.
4. A.Martin and S.A.Harbison, An Introduction to Radiation Protection, John Willey &Sons, Inc. New York, 1981.
5. Herman Cember, "Introduction to Health Physics"

Outcomes:.

- Able to handle different types of radioactive packages, classification of packages, labeling of radioactive packages for transport, transport index calculations.
- Trained on different methods using radioactive waste management, disposal of radioactive waste, emergency preparedness of handling of radioactive waste.
- Able to assess legal compliance of radiation protection of national and international regulatory authorities, role of AERB and atomic energy act.
- Able to design and implement room layout and wall thickness calculations of different radiation facilities like diagnostic x ray, radiotherapy and nuclear medicine.

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Course Code	
20213DSC65B	POLYMER PHYSICS

Objective: This course is aimed at equipping students with a basic level of knowledge of the terminology and mathematics involved in the physical understanding of polymers. Most of the topics deal with post 1970 concepts involving the statics and dynamics of polymeric materials. The course is intendedfor graduate students who would like to gain an understanding of modern approaches to polymer physics. The course will closely follow the recent book of Doi. Doi's intent is similar to that of this course, "..to present a framework to graduate students in a concise and self-contained manner..." Prerequisite is "...a knowledge of undergraduate-level statistical mechanics..." Introductory courses in polymers and thermodynamics would be a sufficient minimum preparation for the course.

1.) Properties of an isolated polymer molecule.
- Ideal chain
- Segmental distribution
- Non-ideal chains
- Scaling laws

2.) Concentrated solutions and melts
- Thermodynamics of polymer solutions
- Concentration fluctuations in polymer solutions
- Blends
- Block copolymers

3.) Polymer gels.
- Elasticity
- The stress optical law
- Interactions between partial chains
- Swelling of gels

4.) Molecular motion of polymers in dilute solution.
- Brownian motion
- Bead-spring model
- Dynamic light scattering

5.) Molecular motion in entangled polymer systems.
- Dynamics of concentration fluctuations
- Replation
- Viscoelasticity of polymers

Textbook:

1) "Introduction to Polymer Physics" M. Doi, Clarendon Press 1996.
2) Class Notes Posted on the Web at: http://www.eng.uc.edu/~gbeaucag/BeaucageResearchGroup.html
3) "Scaling concepts in polymer physics" P. G. de Gennes 1979.
4) "The theory of polymer dynamics" Oxford University Press, 1986.
5) "Principles of polymer chemistry." P. J. Flory, 1953.

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Course Code	WEATHER FORECASTING
20213DSC34B	

Course Objectives:

- To impart theoretical knowledge to the students and enable them to develop awareness and understanding regarding the causes and effects of different weather phenomenon.
- Study of Synoptic charts and weather reports.

Course Outcomes:

CO1: Acquire basic knowledge of the elements of the atmosphere, its composition at various heights, variation of pressure and temperature with height.

CO2: Analyze basic techniques to measure temperature and its relation with cyclones and anti-cyclones.

CO3: Know simple techniques to measure wind speed and its directions, humidity and rainfall.

CO4: Knowledge of global wind systems, jet streams, local thunderstorms, tropical cyclones, tornadoes and hurricanes.

MODULE I

INTRODUCTION TO ATMOSPHERE: Elementary idea of atmosphere: physical structure and composition; compositional layering of the atmosphere; variation of pressure and temperature with height; air temperature; requirements to measure air temperature; temperature sensors: types; atmospheric pressure: its measurement; cyclones and anticyclones: its characteristics.

MODULE II

MEASURING THE WEATHER: Wind; forces acting to produce wind; wind speed direction: units, its direction; measuring wind speed and direction; humidity, clouds and rainfall, radiation: absorption, emission and scattering in atmosphere; radiation laws.

MODULE III

WEATHER SYSTEMS: Global wind systems; air masses and fronts: classifications; jet streams; Local Thunder storms; tropical cyclones: classification; tornadoes; hurricanes.

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MODULE IV

CLIMATE AND CLIMATE CHANGE: Climate: its classification; causes of climate change; global warming and its outcomes; air pollution; aerosols, ozone depletion, acid rain, environmental issues related to climate.

MODULE V

BASICS OF WEATHER FORECASTING: Weather forecasting: analysis and its historical background; need of measuring weather; types of weather forecasting; weather forecasting methods; criteria of choosing weather station; basics of choosing site and exposure; satellites observations in weather forecasting; weather maps; uncertainty and predictability; probability forecasts.

Reference Books:-

1. Aviation Meteorology, I.C. Joshi, 3rd edition 2014, Himalayan Books
2. The weather Observers Hand book, Stephen Burt, 2012. Cambridge University Press.
3. Meteorology, S.R. Ghadekar, 2001, Agromet Publishers, Nagpur.
4. Text Book of Agrometeorology, S.R. Ghadekar, 2005, Agromet Publishers, Nagpur.
5. Why the weather, Charls Franklin Brooks, 1924, Chpraman& Hall, London.
6. Atmosphere and Ocean, John G. Harvey, 1995, The Artemis Press.

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Course Code	
20213DSC15A	Computational Physics

Aims of the course :

1. Learning basic methods, tools and techniques of computational physics.
2. Developing practical computational problem solving skills.

Introduction to computational physics, computer architecture overview, tools of computational physics

What is computational physics? Why do we need it?; *Computer hardware:* basic computer architecture, hierarchical memory, cache, latency and bandwidth; Moores law, power bottleneck; *Software:* compiled (Fortran, C) vs. interpreted languages (MATLAB, python); software management.

Machine representation, precision and errors

Representation on a computer: Integer representation; floating-point representation; *Machine precision; Errors:* round-off; aproximation errors; random errors; errors of the third kind;

Roots of equations

Real roots of single variable function: iterative approach; qualitative behavior of the function; *Closed domain methods (bracketing):* Bisection; False position method; *Open domain methods:* Newton-Raphson, Secant method; Muller's method; *Complications; Roots of polynomials, Roots of non-linear equations;*

Tools of the trade

Quadratic equations; Power series; Delicate numerical expressions; Dangerous subtractions; Preserving small numbers; Partial Fractions; Cubic equations; Sketching functions;

Quadrature

Direct fit polynomials; Quadrature methods on equal subintervals; Newton-Cotes formula; Romberg Extrapolation; Gaussian quadrature; Adaptive step size; Special cases;

Random numbers and Monte-Carlo

Random number generators; Monte-Carlo integration; Non-uniform distribution; Random Walk; Metropolis algorithm;

Fourier methods

Fast Fourier transform; Convolution; Correlation; Power spectrum;

Ordinary differential equations

Initial value problems: First order Euler method; Second order single point methods; Runge-

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Kutta methods; Multipoint methods; *Boundary value problems*: Shooting method; equilibrium boundary value method.

Numerical Linear algebra

Matrix Factorizations: QR Factorization; Gram-Schmidt Orthogonalization; Householder Triangularization; LU and Cholesky factorization; Schur factorization; *Direct elimination methods*: Gauss elimination (pivoting, scaling); Tri-diagonal systems; *Iterative methods*: Jacobi iteration; Conjugate Gradients; *Eigenvalue problems*: Rayleigh Quotient; Arnoldi and Lanczos methods;

Textbooks:

1. Mark Newman, *Computational Physics*, CreateSpace Independent Publishing Platform (2013).
2. Rubin H. Landau, Manuel J. Paez and Cristian Bordeianu, *Computational Physics, 3rd Ed Problem Solving with Python*, Wiley (2015).
3. A. Klein and A. Godunov, *Introductory Computational Physics*, Cambridge University Press (2006).
4. Forman Acton, *Real computing made real: Preventing Errors in Scientific and Engineering Calculations*, Dover Publications.
5. Lloyd N. Trefethen and David Bau, *Numerical Linear Algebra*, SIAM.

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Department of Physics

Subject Code	Subject Name
20513MCT	Certificate course on Materials Characterization Techniques

Total : 45 hours

Syllabus

COURSE OBJECTIVES:

- To make the students learn some important thermal analysis techniques namely TGA, DTA, DSC and TMA.
- To make the students understand the theory of image formation in an optical microscope and to introduce other specialized microscopic techniques.
- To make the students learn and understand the principle of working of electron microscopes and scanning probe microscopes.
- To make the students understand some important electrical and optical characterization techniques for semiconducting materials.
- To introduce the students, the basics of x-ray diffraction techniques and some important spectroscopic techniques.

Unit I

Introduction – thermogravimetric analysis (TGA) – instrumentation – determination of weight loss and decomposition products – differential thermal analysis (DTA)- cooling curves – differential scanning calorimetry (DSC) – instrumentation – specific heat capacity measurements – determination of thermomechanical parameters.

Unit II

Optical Microscopy: optical microscopy techniques – Bright field optical microscopy – Dark field optical microscopy – Dispersion staining microscopy - phase contrast microscopy –differential interference contrast microscopy - fluorescence microscopy - confocal microscopy - - digital holographic microscopy - oil immersion objectives - quantitative metallography - image analyzer.

Unit III

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SEM, EDAX, EPMA, TEM: working principle and Instrumentation – sample preparation –Data collection, processing and analysis- Scanning tunneling microscopy (STEM) - Atomic force microscopy (AFM) - Scanning new field optical microscopy.

Unit IV

Two probe and four probe methods- van der Pauw method – Hall probe and measurement scattering mechanism – C-V characteristics – Schottky barrier capacitance – impurity concentration electrochemical C-V profiling – limitations. Photoluminescence – light – matter interaction – instrumentation – electroluminescence – instrumentation – Applications.

Unit V

Principles and instrumentation for UV-Vis-IR, FTIR spectroscopy, Raman spectroscopy, ESR, NMR, NQR, XPS, AES and SIMS-proton induced X-ray Emission spectroscopy (PIXE) – Rutherford Back Scattering (RBS) analysis-application - Powder diffraction – Powder diffractometer -interpretation of diffraction patterns - indexing - phase identification - residual stress analysis - Particle size, texture studies – X-ray fluorescence spectroscopy - uses.

Course Outcomes

At the end of the course, trainees/students will be able to:

1. Describe the TGA, DTA, DSC and TMA thermal analysis techniques and make interpretation of the results.

2. The concept of image formation in Optical microscope, developments in other specialized microscopes and their applications.

3. The working principle and operation of SEM, TEM, STM and AFM.

4. Understood Hall measurement, four –probe resistivity measurement, C-V, I-V, Electrochemical, Photoluminescence and electroluminescence experimental techniques with necessary theory.

5. The theory and experimental procedure for x- ray diffraction and some important spectroscopic techniques and their applications.

REFERENCE BOOKS

1. Cullity, B.D., and Stock, R.S., "Elements of X-Ray Diffraction", Prentice-Hall, (2001).
2. Murphy, Douglas B, Fundamentals of Light Microscopy and Electronic Imaging, Wiley-Liss, Inc. USA, (2001).
3. Tyagi, A.K., Roy, Mainak, Kulshreshtha, S.K., and Banerjee, S., Advanced Techniques for Materials Characterization, Materials Science Foundations (monograph series), Volumes 49 – 51, (2009).Volumes 49 – 51, (2009).
4. Wendlandt, W.W., Thermal Analysis, John Wiley & Sons, (1986).

Wachtman, J.B., Kalman, Z.H., Characterization of Materials, ButterworthHeinemann, (1993)

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Department of Physics

Subject Code	Subject Name
20513NST	Diploma course on Nano Science and Technology

Total : 90 hours

Syllabus

Course Objectives:

The main objectives of this course are to:

- Physics of Nanoscience and Technology is concerned with the study, creation, manipulation and applications at nanometer scale.
- To provide the basic knowledge about nanoscience and technology.
- To learn the structures and properties of nanomaterials.
- To acquire the knowledge about synthesis methods and characterization techniques and its applications.

Unit 1

Fundamentals of NANO – Historical Perspective on Nanomaterial and Nanotechnology – Classification of Nanomaterials – Metal and Semiconductor Nanomaterials - 2D, 1D, 0D nanostructured materials - Quantum dots – Quantum wires – Quantum wells - Surface effects of nanomaterials.

Unit 2

Physical properties of Nanomaterials: Melting points, specific heat capacity, and lattice constant - Mechanical behavior: Elastic properties – strength - ductility - superplastic behavior - Optical properties: - Surface Plasmon Resonance – Quantum size effects - Electrical properties - Conductivity, Ferroelectrics and dielectrics - Magnetic properties – superparamagnetism – Diluted magnetic semiconductor (DMS).

Unit 3

Physical vapour deposition - Chemical vapour deposition - sol-gel – Wet deposition techniques - electrochemical deposition method – Plasma arching - Electrospinning method - ball milling technique - pulsed laser deposition - Nanolithography: photolithography – Nanomanipulator.

Unit 4

Powder X-ray diffraction – X-ray photoelectron spectroscopy (XPS) - UV-visible spectroscopy – Photoluminescence - Scanning electron microscopy (SEM) - Transmission electron microscopy

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(TEM) - Scanning probe microscopy (SPM) - Scanning tunneling microscopy (STM) - Vibrating sample Magnetometer.

Unit 5

Sensors: Nanosensors based on optical and physical properties - Electrochemical sensors – Nano-biosensors. Nano Electronics: Nanobots - display screens - GMR read/write heads - Carbon Nanotube Emitters – Photocatalytic application: Air purification, water purification - Medicine: Imaging of cancer cells – biological tags - drug delivery - photodynamic therapy - Energy: fuel cells - rechargeable batteries - supercapacitors - photovoltaics.

Course Outcomes

At the end of the course, trainees/students will be able to:

1. Understand the basic of nanoscience and explore the different types of nanomaterials and should comprehend the surface effects of the nanomaterials.
2. Explore various physical, mechanical, optical, electrical and magnetic properties nanomaterials.
3. Understand the process and mechanism of synthesis and fabrication of nanomaterials.
4. Analyze the various characterization of Nano-products through diffraction, spectroscopic, microscopic and other techniques.
5. Apply the concepts of nanoscience and technology in the field of sensors, robotics, purification of air and water and in the energy devices.

References

1. A textbook of Nanoscience and Nanotechnology, Pradeep T., Tata McGraw-Hill Publishing Co. (2012).
2. Principles of Nanoscience and Nanotechnology, M.A. Shah, Tokeer Ahmad, Narosa Publishing House Pvt Ltd., (2010).
3. Introduction to Nanoscience and Nanotechnology, K. K. Chattopadhyay and A.N. Banerjee, PHI Learning Pvt. Ltd., New Delhi, (2012).
4. Nanostructured Materials and Nanotechnology, Hari Singh Nalwa, Academic Press, (2002).
5. Nanotechnology and Nanoelectronics, D.P. Kothari, V. Velmurugan and Rajit Ram Singh, Narosa Publishing House Pvt. Ltd, New Delhi. (2018)

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Department of Physics

Subject Code	Subject Name
20513MP	Certificate course on microprocessor

Total : 45 hours

Syllabus

Course Objectives:

The main objectives of this course are to:

1. To learn basic principles of architecture and functioning of microprocessor and microcontroller and programming and interfacing aspects of them.
2. To provide fundamental operating concepts of microprocessors and microcontrollers.

UNIT – I: MICROPROCESSOR 8085

8085 Microprocessor – Bus Architecture – registers – Central processing unit – timing and control unit – Instruction and Data flow – System timings – Examples – Instruction set – Data transfer group – Logical group – Branch group – Stack and I/O control instructions – Addressing modes.

UNIT – II: ASSEMBLY LANGUAGE PROGRAMS (8085 ONLY)

Addition – Subtraction – Multiplication – Division – BCD arithmetic – Searching an array for a given number – Choosing the biggest and smallest numbers from a list – Ascending and Descending order – Square root of a number – Time Delay – Square wave generator.

UNIT – III: MICROPROCESSOR 8086

Organization of the 8086 Microprocessor – Memory organization – Register structure – Addressing modes in 8086 – Minimum mode and maximum mode – Exception handling in 4086 – Assembler and Multiprocessing – Assembler – Directives and operators – Data definition and storage allocation – Assigning names and expressions – Segment definition – Program definition – Alignment directives.

UNIT – IV: INTERFACING MEMORY AND I/O DEVICES

Interfacing memory and devices – I/O and memory mapped I/O – Types of interfacing devices – Data transfer schemes – Programmed and DMA data transfer schemes – Programmable Peripheral Interface (8255 A) – 8253 Timer Interface – DMA controller – Programmable Interrupt Controller (8259) – Programmable communication interface (8251).

UNIT – V: MICROCONTROLLER 8051

Introduction of Microprocessor and Micro controllers – Comparison of microprocessor and microcontrollers – 8051 architecture – internal memory – Input output pins, ports external memory – Addressing modes.

Instruction set of 8051 – Data transfer instruction – Arithmetic instruction – Branch instruction – Bit manipulation instruction.

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Course Outcomes

After learning the course the students should be able to:

1. Distinguish various types of processor architectures.
2. Describe architecture, memory organization of 8085, 8086 and 8051.

References

1. R. Goankar, Microprocessor Architecture, programming and applications (Wiley Eastern).
2. B. Ram, Fundamentals of Microprocessor and Microcomputers (Dhanapet Rai & Sons).
3. Introduction to Microprocessor – Aditya P. Mathur.
4. Microcomputer System 8086/8088 Family – Yuchngliv and clenn A Gibson Prentice Hall.
5. Microprocessors and Interfacing – Programming and Hardware Douglas V Hall.
6. The 8051 Microcontroller Architecture, Programming & Applications – Kenneth J. Ayla, Penram International Publishing (India).

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

MINUTES OF THE BOARD OF STUDIES MEETING 2020-2021

The Meeting of the Board of studies for the Department of Computer Science was held on 28.07.20 at 10.15 a.m Google Meet Video conferencing under the chairmanship of Dr.K.T.Senthil Kumar, All the staff members are requested to attend the meeting.

Link: http://meet.google.com/nod-wyh-sdg?

The following members were present:

1. Dr.L.Chinnappa - Dean of Arts and Science, PRIST Deemed University
2. Dr.K.T.Senthil Kumar -HOD/Asst.prof/ (Chairman), PRIST Deemed University
3. Dr.K.Saravanan - Prof. PRIST Deemed University, Member Internal
4. Dr.R.Maruthi - Prof. PRIST Deemed University, Member Internal
5. Dr.A.AyubKhan - Asso.prof. PRIST Deemed University, Member Internal
6. Dr.G.Preethi - Asst.prof. PRIST Deemed University, Member Internal
7. P.Karthik - Asst Prof. PRIST Deemed University, Member Internal
8. Mrs.M.Aarthi - Asst Prof, PRIST Deemed University, Member Internal
9. Dr.K.Rajiv Gandhi - Member External
   1. Prof. Alagappa University,
   2. Dept of Computer Science
   3. Karaikudi.
10. Mr. S.Ganapathy - Member External
    Associate Software Engineer,
    Sterling Software,
    Chennai.
11. S.Chandravarun - B.C.A Alumni
12. R Aarthy - B.Sc.(CS)Student

The Chairman of Board of Studies (BOS) in Computer Science welcomed the members and briefed about the programmes offered by the department and the existing Syllabi for B.Sc. Computer Science, M.Sc. Computer Science, M.Phil. Computer Science, BCA and MCA programmes.

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After thorough review of existing curriculum and syllabi for various programmes offered by the department and also the feedback on curriculum collected from various stakeholders during 2019-20, the members of the Board of studies have unanimously passed the following resolutions.

REVIEW OF CURRICULUM & SYLLABUS IN BSc COMPUTER SCIENCE-REGULATION 2020

1. **Resolved to introduce the following Audit Courses in the B.Sc. (Computer Science), BCA programmes curriculum with effect from 2020-21**

   Semester I: Universal Human Values

   Semester II: Communication Skills

   Semester III: Office automation

   Semester IV: Leadership and Management Skills

   Semester V: Professional Skills

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in **Annexure-I**

2. **Resolved to introduce the following Audit Courses on Soft Skills in the B.Sc. (Computer Science) programme curriculum with effect from 2020-21**

   Year I: Basic Behavioral Etiquette

   Year II: General Aptitude and Quantitative Ability

   Year III: Interview Skills Training and Mock Test

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses on Soft Skills as given in **Annexure-II**

3. **Resolved to introduce Audit Course on "Community Engagement" with one credit in the 3rd Year of B.Sc. (Computer Science), BCA programmes curriculum with effect from 2020-21**

4. **Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of B.Sc. (Computer Science) programme and BCA programme with effect from 2020-21.**

5. **The New Value Added Diploma and Certificate Courses were introduced in the Academic year 2020-2021.**

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Name of the course/programme	Course/programme Code	Year of offering
Diploma in R/WEKA Tool	20CCRW120	2020
Diploma in Web Designing and Hosting	20DPWP123	2020
Diploma in Software Testing using Selenium	20DPDE125	2020

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REVIEW OF CURRICULUM & SYLLABUS in M.Sc Computer Science - REGULATION 2020

Resolved to continue with the existing curriculum and syllabi for—— program without any change for the year 2020-2021in Annexure – III

REVIEW OF CURRICULUM & SYLLABUS in M. Phil Computer Science - REGULATION 2020

1. **Resolved to introduce a course on "Research and Publication Ethics" with 2 credits in the M.Phil. (Computer Science) programme curriculum with effect from 2020-21. Further resolved to approve the syllabus for the same as given in Annexure-IV**

Members of the Board updated the panel of examiners and submitted the same to the Academic Council for its approval.

Annexure 1	-	Revised Curriculum Structure Credits
Annexure 2	-	Revised Curriculum structure and Syllabus of UG
Annexure 3	-	Revised Curriculum structure and Syllabus of M.Sc
Annexure 4	-	Revised Curriculum structure and syllabus of M.Phil
Annexure 5	-	List of Examiners

Note: Annexure 1,2,3,4 and 5 are Signed by the Chairman of BOS
The Meeting concluded with thanks from Board of Studies Chairman.

Signature of the Chairman & Members

Dr.K.T.Senthil Kumar
Dr.L.Chinnappa
Dr.K.Saravanan
Dr.A.AyubKhar
Dr.G.Preethi
Dr.K.Raja
Mrs.M.Aarthi
Dr.K.Rajiv Gandhi
Mr. S.Ganapathy

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Annexure-V

LIST OF EXAMINERS -2020-2021

1. Dr.K.T.Senthil Kumar
2. Dr. L. Chinnappa
3. Dr. K. Saravanan
4. Dr. A. Ayub Khan
5. Dr. G. Preethi
6. Dr.K.Raja
7. Mrs. M. Aarthi
8. Dr. K. Rajiv Gandhi
9. Mr. S. Ganapathy



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Annexure – I

Revised Curriculum Structure Credits

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
BCA (BACHELOR OF COMPUTER APPLICATION)
REGULATION 2020-2021
COURSE STRUCTURE

SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
201/0AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami – I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English-I				
20123SEC13	Programming in C with C++	4	0	0	3
20117AEC14B	Classical algebra	5	1	0	4
20117AEC15B	Numerical and statistical Methods	4	1	0	3
		4	1	0	4
	PRACTICAL				
20123SEC16L	Programming in C with C++ Lab	0	0	3	2
	Total	21	3	3	17
	AUDIT COURSE				
20ILSCIC	Indian Constitution	-	-	-	2
20ILSCUV	Universal Human Values	-	-	-	2

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SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20 10AEC21/ 20 11AEC21/ 20 32AEC21/ 20 35AEC21	Tamil – II/ Advanced English-II/Hindi-II/ French – II	4	0	0	2
20 11AEC22	English-II	4	0	0	2
20 22SEC23	Data Structure and Algorithms	5	1	0	4
20 12AEC24B	Discrete Mathematics	4	1	0	4
20 12AEC25B	Operations Research	4	1	0	3
	PRACTICAL				
20 22SEC26L	Data Structure and Algorithms Lab	0	0	3	2
	RESEARCH/SKILL BASED COURSE				
20 22RLC27	Research Led Seminar	-	-	-	1
	Total	21	3	3	18
	AUDIT COURSES				
201LSCCS	Communication Skills	-	-	-	2
201SSCBE	Basic Behavioral Etiquette	-	-	-	2

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SEMESTER – III

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC31/ 20132AEC31/ 20111AEC31/ 20135AEC31	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
20111AEC32	English-III	4	0	0	2
20122SEC33	Internet and Java Programming	4	1	0	4
20161SEC34	Financial Accounting	4	1	0	4
20113AEC35A	Allied Physics –I	3	1	0	3
	PRACTICAL				
20122SEC36L	Internet and Java Programming Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20122RMC37	Research Methodology	2	0	0	2
	Total	21	3	3	19
	AUDIT COURSE				
20ACLSOAN	Office Automation	-	-	-	2

Pennalyal Ramaswami Institute of
Science & Technology (PRIST)
(Deemed to be University)
THANJAVUR

SEMESTER – IV

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 19135AEC41	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20122SEC43	Visual Programming	4	1	0	4
20113AEC44A	Allied Physics –II	5	1	0	5
20EVNSTU	Environmental Studies	2	0	0	2
	PRACTICAL				
20122SEC45L	Visual Programming Lab	0	0	3	2
20113AEC46A1	Allied Physics Lab -I	0	0	3	2
	Total	19	2	6	19
	AUDIT COURSE				
20LSCLS	Leadership and Management Skills	-	-	-	2
20SSCAQ	General Aptitude and Quantitative Ability				2

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
u/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU.

SEMESTER – V

Course Code	Course Title	L	T	P	C
	THEORY				
20122SEC51	Relational Database Management Systems	4	1	0	4
20122SEC52	.NET Programming	4	1	0	3
20122SEC53	Designing and supporting Computer Networks	4	1	0	4
20122DSC54_	Discipline Specific Elective -I	4	1	0	3
	PRACTICAL				
20122SEC55L	Oracle Lab	0	0	3	2
20122SEC56L	NET Programming Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20122BRC57	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
	AUDIT COURSE				
20AC_SPSL	Professional Skills	-	-	-	2

Registrar
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
U/s 3 of the UGC Act 1956
THANJAVUR - 613 403, TAMIL NADU.

SEMESTER – VI

Course Code	Course Title	L	T	P	C
	THEORY				
20122SEC61	Advanced Web Technology	4	1	0	4
20122SEC62	Operating System	4	1	0	5
20122DSC63_	Discipline Specific Elective –II	4	1	0	5
201__OEC(2 Digit Course Name)	Open Elective	4	0	0	2
	PRACTICAL				
20122SEC64L	Advanced Web Technology Lab	0	0	3	2
20122SEC65L	Operating System Lab	0	0	3	2
20122PRW66	Project Work	-	-	-	4
20122PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
	AUDIT COURSE				
201ESCCE	Community Engagement	-	-	-	2
201SSC3M	Interview Skills Training and Mock Test	-	-	-	2
Total Credits –Programme					**115**
Total Credits- Audit Courses					**20**

REGISTRAR
Ponnaiyah Ramajayam Institute of
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U/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU.

Discipline Specific Electives

Semester	Discipline Specific Elective Courses
V	a) 20122DSC54A - Computer Organization and Architecture b) 20122DSC54B - E-learning c)20121DSC54C- Enterprise Resource Planning
VI	a) 20122DSC63A - Software Project Management b) 20122DSC63B - Object Oriented Analysis and Design c) 20122DSC63C -Ethical Hacking

Open Electives

Semester	Open Elective Courses
VI	a) 201TAOEC-Tamil IlakkiyaVaralaru b) 201ENOEC-Journalism c) 201MAOEC-Development of Mathematical Skills d) 201PHOEC-Instrumentation e) 201CEOEC-Food and Adulteration f) 201MBOEC-Wildlife Conservation g) 201BTOEC-Museum Technology h) 201CSOEC-E-Learning i) 201CMOEC-Banking Service

Skill based Electives

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THANJAVUR - 613 403, TAMIL NADU.

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	11	6	-	-	-	-	17
II	11	6	-	-	1	-	18
III	7	10	-	-	2	-	19
IV	11	6	-	-	-	2	19
V		15	3	-	1	-	19
VI		13	3	2	4	1	23
TOTAL	44	52	6	2	8	3	115

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
u/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU.

PRIST
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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. - COMPUTER SCIENCE
REGULATION- 2020-2021
COURSE STRUCTURE

SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami – I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English-I	4	0	0	3
20120SEC13	Programming in C with C++	5	1	0	4
20112AEC14B	Classical algebra	4	1	0	3
20112AEC15B	Numerical and statistical Methods	4	1	0	4
	PRACTICAL				
20120SEC16L	Programming in C with C++ Lab	0	0	3	2
	Total	21	3	3	17
	AUDIT COURSE				
20ILSCIC	Indian Constitution	-	-	-	2
20ILSCUV	Universal Human Values	-	-	-	2

Science & Technology (PRIST)
(Institution Deemed to be University)
u/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU.

SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Tamil – II/ Advanced English-II/Hindi-II/ French – II	4	0	0	2
20111AEC22	English-II	4	0	0	2
20120SEC23	Internet and Java Programming	5	1	0	4
20112AEC24B	Discrete Mathematics	4	1	0	4
20112AEC25B	Operations Research	4	1	0	3
	PRACTICAL				
20120SEC26L	Internet and Java Programming Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20120RLC27	Research Led Seminar	-	-	-	1
	Total	21	3	3	18
	AUDIT COURSES				
20115CCS	Communication Skills	-	-	-	2
20115SCBE	Basic Behavioral Etiquette	-	-	-	2

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
u/s 3 of the UGC Act,1956
THANJAVUR - 613 403, TAMIL NADU

SEMESTER – III

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC31/ 20132AEC31/ 20111AEC31/ 20135AEC31	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
20111AEC32	English-III	4	0	0	2
20120SEC33	Visual Programming	4	1	0	4
20113AEC34A	Applied Physics -I	4	1	0	5
	PRACTICAL				
20120SEC35L	Visual Programming Lab	0	0	3	2
20113AEC36AL	Applied physics Lab – I	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20120RMC37	Research Methodology	2	0	0	2
	Total	18	2	6	19
	AUDIT COURSE				
20IACLSOAN	Office Automation	-	-	-	2

REGISTRAR
Pattaraiyar Ramasamy Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
u/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU.

SEMESTER – IV

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 19135AEC41	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20120SEC43	Active Server Programming	4	1	0	4
20113AEC44A	Applied Physics –II	5	1	0	5
20EVNSTU	Environmental Studies	2	0	0	2
	PRACTICAL				
20120SEC45L	Active Server Programming Lab	0	0	3	2
20113AEC46AL	Applied Physics Lab –II	0	0	3	2
	Total	19	2	6	19
	AUDIT COURSE				
20ELSCLS	Leadership and Management Skills	*	*	–	2
20ESSCAQ	General Aptitude and Quantitative Ability				2

REGISTRAR
Ponnaiyah Ramajayam Institute of
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u/s 3 of the UGC Act 1956
THANJAVUR - 613 403, TAMIL NADU.

SEMESTER – V

Course Code	Course Title	L	T	P	C
	THEORY				
20120SEC51	Data Communication and Networking	4	1	0	4
20123SEC52	Operating System	4	1	0	3
20120SEC53	Microprocessor and its Applications	4	1	0	4
20120DSC54_	Discipline Specific Elective -I	4	1	0	3
	PRACTICAL				
20120SEC55L	Microprocessor Lab	0	0	3	2
20120SEC56L	Operating System Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20120RSC57	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
	AUDIT COURSE				
20IACESPSL	Professional Skills	-	-	-	2

REGISTRAR
Ponnaiyah Ramajayam Institute of
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THANJAVUR - 613 403, TAMIL NADU.

SEMESTER – VI

Course Code	Course Title	L	T	P	C
THEORY					
20120SEC61	.NET Programming	4	1	0	4
20120SEC62	Relational Data Base Management System	4	1	0	5
20120DSC63_	Discipline Specific Elective – II	4	1	0	3
201__OEC(2 Digit Course Name)	Open Elective	4	0	0	2
PRACTICAL					
20120SEC64L	.NET Programming Lab	0	0	3	2
20120SEC65L	Oracle Lab	0	0	3	2
20120PRW66	Project Work	-	-	-	4
20120PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
AUDIT COURSE					
20HLSC61	Community Engagement	-	-	-	2
20ISSCIM	Interview Skills Training and Mock Test	-	-	-	2
Total Credits - Programme					115
Total Credits - Audit Courses					20

REGISTRAR
Periyar Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
U/s 3 of the UGC Act,1956
THANJAVUR - 613 403, TAMIL NADU.

Discipline Specific Electives

Semester	Discipline Specific Elective Courses
V	a)20120DSC56A- Cloud Computing b)20120DSC55B- Middleware Technology c)20120DSC56C- Enterprise Resource Planning
VI	a)20120DSC65A- Data Mining b)20120DSC65B-Artificial Intelligence and Expert System c)20120DSC65C-Ethical Hacking

Open Electives

Semester	Open Elective Courses
VI	a)201TAOEC-Tamil Thiraiyaivaralaru b)201ENOEC-journalism c)201MAOEC-Development of Mathematical d) Skills 201PHOEC-Instrumentation e)201CEOEC-Food and Adulteration f)201MHOEC-Wildlife Conservation g)201BTOEC-Mushroom Technology h)201CSOEC-Web Technology i)201CMOEC-Banking Service

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Ponnaiyah Ramajayam Institute of
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U/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU.

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	11	6	-	-	-	-	17
II	11	6	-	-	1	-	18
III	11	6	-	-	2	-	19
IV	11	6	-	-	-	2	19
V		15	3	-	1	-	19
VI		13	3	2	4	1	23
Total	44	52	6	2	8	3	115

REGISTRAR
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THANJAVUR - 613 403, TAMIL NADU

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

B.Sc.- COMPUTER SCIENCE REGULATION- 2020-2021
COURSE STRUCTURE

SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami – I Advanced English-I/Hindi-I/ French - I	4	0	0	3
20111AEC12	English-I	4	0	0	3
20120SEC13	Programming in C with C++	5	1	0	4
20112AEC14B	Classical algebra	4	1	0	3
20112AEC15B	Numerical and statistical Methods	4	1	0	4
	PRACTICAL				
20120SEC16L	Programming in C with C++ Lab	0	0	3	2
	Total	21	3	3	17
	AUDIT COURSE				
20ILSCIC	Indian Constitution	-	-	-	3
20ILSCUV	Universal Human Values	-	-	-	2

REGISTRAR
Ponnaiyah Ramajeyam Institute of
Science & Technology(PRIST)
(Institution Deemed to be University)
U/S 3 of the UGC Act 1956
THANJAVUR - 613 403, TAMIL Nadu

SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Tamil – II/ Advanced English-II/Hindi-II/ French – II	4	0	0	2
20111AEC22	English-II	4	0	0	2
20120SEC23	Internet and Java Programming	5	1	0	4
20112AEC24B	Discrete Mathematics	4	1	0	4
20112AEC25B	Operations Research	4	1	0	3
	PRACTICAL				
20120SEC26L	Internet and Java Programming Lab	0	0	5	2
	RESEARCH SKILL BASED COURSE				
20120RLC27	Research Led Seminar	-	-	-	1
	Total	21	5	5	18
	AUDIT COURSES				
20111SCCS	Communication Skills	-	-	-	2
20111SCBB	Basic Behavioral Etiquette	-	-	-	2

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
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THANJAVUR - 613 403, TAMIL NADU

SEMESTER – III

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC31/ 20132AEC31/ 20111AEC31/ 20135AEC31	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
20111AEC32	English-III	4	0	0	2
20120SEC33	Visual Programming	4	1	0	4
20113AEC34A	Applied Physics –I	4	1	0	3
	PRACTICAL				
20120SEC35L	Visual Programming Lab	0	0	3	2
20113AEC34AL	Applied physics Lab – I	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20120RMC37	Research Methodology	2	0	0	2
	Total	18	2	6	19
	AUDIT COURSE				
20IACLSOAN	Office Automation	-	-	-	2

REGISTRAR
Ponnaiyah Ramajayam Institute of
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THANJAVUR - 613 403, TAMIL NADU.

SEMESTER – IV

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 19135AEC41	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20120SEC43	Active Server Programming	4	1	0	4
20113AEC44A	Applied Physics –II	5	1	0	5
201EVNSTU	Environmental Studies	2	0	0	2
	PRACTICAL				
20120SEC45L	Active Server Programming Lab	0	0	3	2
20113AEC46AL	Applied Physics Lab -II	0	0	3	2
	Total	19	2	6	19
	AUDIT COURSE				
201LSCLS	Leadership and Management Skills	-	-	-	2
201SSCAQ	General Aptitude and Quantitative Ability				2

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be Univ
U/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL

SEMESTER – V

Course Code	Course Title	L	T	P	C
	THEORY				
20120SEC51	Data Communication and Networking	4	1	0	4
20120SEC52	Operating System	4	1	0	3
20120SEC53	Microprocessor and its Applications	4	1	0	4
20120DSC54	Discipline Specific Elective -I	4	1	0	3
	PRACTICAL				
20120SEC55L	Microprocessor Lab	0	0	3	2
20120SEC56L	Operating System Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20120BRCS7	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
	AUDIT COURSE				
20UACLSPSL	Professional Skills	-	-	-	2

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
U/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU, INDIA

SEMESTER – VI

Course Code	Course Title	L	T	P	C
	THEORY				
20120SEC61	.NET Programming	4	1	0	4
20120SEC62	Relational Data Base Management System	4	1	0	5
20120DSC63_	Discipline Specific Elective –II	4	1	0	3
201__OEC(2Digit Course Name)	Open Elective	4	0	0	2
	PRACTICAL				
20120SEC64L	.NET Programming Lab	0	0	3	2
20120SEC65L	Oracle Lab	0	0	3	2
20120PRW66	Project Work	-	-	-	4
20120PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
	AUDIT COURSE				
201LSCCE	Community Engagement	-	-	-	2
201SSCIM	Interview Skills Training and Mock Test	-	-	-	2
	Total Credits - Programme				115
	Total Credits + Audit Courses				20

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
U/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU

Discipline Specific Electives

Semester	Discipline Specific Elective Courses
V	a) 20120DSC56A- Cloud Computing b) 20120DSC56B- Middleware Technology c)20120DSC56C- Enterprise Resource Planning
VI	a) 20120DSC65A- Data Mining b) 20120DSC65B-Artificial Intelligence and Expert System c)20120DSC65C-Ethical Hacking

Open Electives

Semester	Open Elective Courses
VI	a)201TAOEC-Tamil Thakkiya Varalaru b)201ENOEC-Journalism c) 201MAOEC-Development of Mathematical d) Skills 201PHOEC-Instrumentation e)201CEOEC-Food and Adulteration f)201MBOEC-Wildlife Conservation g)201BTOEC-Mushroom Technology h)201CSOEC-Web Technology i)201CMOEC-Banking Service

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be Univ...
U/s 3 of the UGC Act 1956
THANJAVUR - 613 403, TAMIL...

Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	11	6	-	-	-	-	17
II	11	6	-	-	1	-	18
III	11	6	-	-	2	-	19
IV	11	6	-	-	-	2	19
V		13	3	-	1	-	19
VI		13	3	2	4	1	23
Total	**44**	**52**	**6**	**2**	**8**	**3**	**115**

REGISTRAR
Ponnaiyah Ramajayam Institute of
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(Institution Deemed to be University)
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THANJAVUR - 613 403, TAMIL NADU.

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THANJAVUR- 613 403 - TAMIL NADU

SCHOOL OF ARTS & SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
M.C.A.,
REGULATION 2020-2021
COURSE STRUCTURE - SEMESTER - I

Course Code	Course Title	L	T	P	C
20222SEC11	J2EE Programming	4	0	0	4
20222SEC12	Relational Data Base Management System.	4	0	0	4
20222SEC13	Routing and Switching in LAN	4	0	0	4
20212SEC14	Discrete Mathematics	4	0	0	4
20222SEC15L	J2EE Programming Lab	0	0	3	2
20222SEC16L	RDBMS Lab	0	0	3	2
20222DSC17_	Discipline Specific Elective - I	4	0	0	4
20222RLC18	Research Led Seminar	-	-	-	1
	Total	20	0	6	25

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
U/s 3 of the UGC Act, 1956
THANJAVUR - 613 403, TAMIL NADU.

Semester II

Course Code	Course Title	L	T	P	C
20222SEC21	Python Programming	4	0	0	4
20222SEC22	Cryptography Network security	4	1	0	3
20222SEC23	Open Source programming	4	0	0	3
20222SEC24	Web Service	4	0	0	3
20222SEC25L	Python Programming Lab	0	0	3	2
20222SEC26L	Open Source programming Lab	0	0	3	2
20222DSC27_	Discipline Specific Elective – II	5	0	0	4
20222RMC28	Research Methodology	3	0	0	2
20222BRC29	Participation in Bounded Research	0	0	0	2
	Total	24	1	6	25

Semester III

Course Code	Course Title	L	T	P	C
20222SEC31	Data mining and warehousing	5	1	0	5
20222SEC32	Grid and Cloud Computing	6	1	0	4
20222SEC33	.NET Programming	5	0	0	4
20222SEC34	Object Oriented System Design	5	0	0	4
20222SEC35L	.NET Programming Lab.	0	0	3	2
20222DSC36_	Discipline Specific Elective – III	5	0	0	4
20222SRC37	Societal project (Mini Project)	0	0	0	2
	Total	27	2	3	25

REGISTRAR
Pennaiyar Ramajayam Institute of
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(Institution Deemed to be University)
U/s 3 of the UGC Act 1956
THANJAVUR - 613 403, TAMIL NADU.

Semester IV

Course Code	Course Title	L	T	P	C
20222SEC41	Human Computer Interaction.	6	0	0	4
20222SEC42	Software Project Management	6	0	0	4
20222SEC43	Big Data	6	0	0	5
20222PRW44	Project work	0	0	15	10
20222PEE	Program Exit Examination	-	-	-	2
	Total	18	0	15	**25**
	Total Credits of the Programme				**100**

DISCIPLINE SPECIFIC ELECTIVE COURSES:

Semester	Discipline Specific Elective Courses
III	a) 20222DSC17A - Mobile Computing b) 20222DSC17B - Knowledge based decision support system
IV	a) 20222DSC27A - Game Programming b) 20222DSC27B - Multimedia and Graphics c) 20222DSC27C - Middleware Technology
V	a) 20222DSC 36A - Information Security b) 20222DSC36B - Internet of Things c) 20222DSC36C - M-Marketing

REGISTRAR
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University)
U/s 3 of the UGC Act.1956
THANJAVUR - 613 403, TAMIL NADU

Credit Distribution:

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	4	16	4		1		25
II		17	4		4		25
III		19	4		2		25
IV		13			10	2	25
TOTAL	4	65	12		17	2	100

REGISTRAR
Kumaraguru College of Technology
Coimbatore - 641 049

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SCHOOL OF ARTS & SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
M.Sc., (Computer Science)

REGULATION 2020-2021 – COURSE STRUCTURE

Semester I

Course Code	Course Title	L	T	P	C
	Semester I				
20220SEC11	J2EE Programming	6	0	0	4
20220SEC12	RDBMS	6	0	0	4
20212SEC13	Discrete Mathematics	6	0	0	4
20220SEC14L	J2EE programming Lab	0	0	3	2
20220SEC15L	RDBMS Lab	0	0	3	2
20220C5C16_	Discipline Specific Elective - I	6	0	0	4
20220RLC17	Research Led Seminar	-	-	-	1
	Total	**24**	**0**	**6**	**21**

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Semester II

Course Code	Course Title	L	T	P	C
20220SEC21	Python Programming	5	0	0	4
20220SEC22	Cryptography & Network Security	5	0	0	4
20220SEC23	Software Engineering	5	0	0	4
20220SEC24L	Python Programming Lab	0	0	3	2
20220SEC25L	UNIX Lab	0	0	3	2
20220DSC26_	Discipline Specific Elective – II	5	0	0	4
20220RMC27	Research Methodology	4	0	0	2
20220BRC28	Participation in Bounded Research	-	-	-	2
	Total	24	0	6	24

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Semester III

Course Code	Course Title	L	T	P	C
20220SEC31	Open Source programming	6	0	0	6
20220SEC32	Net Programming	6	0	0	5
20220SEC33L	Open Source programming Lab	0	0	3	2
20220SEC34L	Net Programming Lab	0	0	3	2
20220DSC35_	Discipline Specific Elective – III	5	0	0	4
202__ OEC	Open Elective Course	4	0	0	3
20220SRC37	Societal project (Min. Project)	0	0	0	2
	Total	21	0	6	24

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Semester IV

Course Code	Course Title	L	T	P	C
20220SEC41	Software Testing	5	0	0	5
20220SEC42	Human Computer Interaction	6	0	0	5
20220DSC43_	Discipline Specific Elective - IV	4	0	0	4
20220PRW44	Project work	9	0	0	10
20220PEE	Programme Exit Examination	-	-	-	2
	Total	14	0	0	27
	Total credits for the program				96

Discipline Specific Electives

Semester	Discipline Specific Elective Courses
I	a) 20EE0DSC16A - WAP and XML b) 20220DSC16B - Advanced Computer Architecture
II	a) 20220DSC26A - Artificial Intelligence b) 20220DSC26B - Distributed Operating System
III	a) 20220DSC35A - Real Time Operating Systems b) 20220DSC35B - Wireless Communication Network
IV	a) 20220DSC43A - Multimedia and its application b) 20220DSC43B - Middleware Technology

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Open Electives

Semester	Open Elective Courses
III	a) 202ENOEC – Writing for the Media b) 202MAOEC-Applicable Mathematics Techniques c) 202PHOEC-Bio-medical Instrumentation d) 202CHOEC-Green Chemistry e) 202BCOEC-Herbal Medicines f) 202CMOEC-Financial Service

CREDIT DISTRIBUTION

SEMESTER	AEC	SEC	DSC	OEC	RESEARCH	OTHERS	TOTAL
I	4	12	4		1		21
II		16	4		4		24
III		15	4	3	2		24
IV		11	4		0	2	27
TOTAL	4	59	12	2	15	2	96

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

M.Phil. COMPUTER SCIENCE

REGULATION 2020 - COURSE STRUCTURE

Semester I

Course Code	Course Title	L	T	P	C
203RMGC11	Research Methodology	6	0	0	4
203CSC12	Advanced Technologies in Computer Science	6	0	0	5
203CSC13_	A. Advanced Networking B. Big Data	6	0	0	5
203RPE14	Research and Publication Ethic	-	-	-	2
	Total	18	0	0	16

L – Lecture, T – Tutorial, P – Practical, C – Credit

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Semester II

Course Code	Course Title	L	T	P	C
203CSD21	**Dissertation - (Topic selected should be relevant to the topic of the In-depth paper**	-	-	-	10
	Total	0	0	0	10

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

NEW COURSE BCA-REGULATION 2020-2021

Course Code	Course Title	L	T	P	C
20ILSCUV	Universal Human Values	-	-	-	2

Course Objectives:

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realise one's potentials.

UNIT I:

Introduction to Computer Science and Human Values

- Overview of Computer Science: Fundamental concepts and applications.
- Importance of Human Values in Technology: Ethical considerations and social responsibilities.

Ethics in Computing

Privacy and Data Security: Understanding the implications of data collection, storage, and sharing.

- Ethical Programming Practices: Writing code responsibly and considering the impact on users.
- Case Studies: Analyzing real-world scenarios where ethical considerations were crucial.

UNIT II:

Social Impact of Technology

- Digital Divide: Addressing inequalities in technology access and usage.
- Technology and Society: How technology affects social structures and individual lives.
- Responsible Innovation: Balancing progress with potential social consequences.

Human-Centric Design and User Experience

- Inclusive Design: Creating technology that is accessible to diverse populations.
- User-Centered Design: Prioritizing user needs and feedback in development.
- Ethical User Experience: Avoiding manipulative practices and respecting user autonomy.

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UNIT III:

Artificial Intelligence and Ethical Considerations

- AI Bias and Fairness: Recognizing and mitigating biases in AI systems.
- Accountability in AI: Ensuring responsible use and decision-making in AI applications.
- Ethical AI Development: Guidelines for creating fair and transparent AI systems.

Environmental and Global Impacts

- Sustainable Computing: Understanding the environmental footprint of technology and ways to reduce it
- Global Perspectives: Considering the global implications of technology deployment and use.
- Ethics of Global Technology Access: Ensuring equitable access and addressing global disparities.

UNIT IV:

Legal and Regulatory Issues

- Tech Laws and Regulations: Understanding the legal landscape governing technology use and development
- Intellectual Property: Balancing innovation with the protection of intellectual property rights.
- Compliance and Ethics: Navigating legal requirements while upholding ethical standards.

UNIT V:

Philosophical and Theoretical Foundations

- Technology and Philosophy: Exploring philosophical questions related to technology and human values.
- Ethical Theories in Computing: Applying ethical frameworks to technological decision-making.

3. Practical Applications and Projects

- Ethical Hacking: Techniques for identifying and addressing security vulnerabilities responsibly.

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Course Code	Course Title	L	T	P	C
20ULSCCS	Communication Skills	-	-	-	2

Aim:

The goal of communication is to convey information—and the understanding of that information—from one person or group to another person or group.

Course Outcome :

By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

UNIT I

Techniques of effective listening - Listening and comprehension.- Probing questions - Barriers to listening.

UNIT II

Pronunciation - Enunciation - Vocabulary - Fluency - Common Errors

UNIT III

Techniques of effective reading – Gathering ideas and information from a given text - Identify the main claim of the text - Identify the purpose of the text - Identify the context of the text - Identify the concepts mentioned - Evaluating these ideas and information

UNIT IV

Clearly state the claims. - Avoid ambiguity, vagueness, unwanted generalizations and over simplification of issues - Provide background information.- Effectively argue the claim. - Provide evidence for the claims. - Use examples to explain concepts. - Follow convention - Be properly sequenced.- Use proper signposting techniques.- Be well structured

UNIT V

Role of Digital literacy in professional life.- Trends and opportunities in using digital technology in workplace. - Internet Basics.- Introduction to MS Office tools.

i. Paint.

ii.Office

iii.Excel.

iv.Powerpoint.

Reference:

1. SenMadhucchanda (2010). An Introduction to Critical Thinking. Pearson,Delhi
2. Silvia P. J. (2007), How to Read a Lot, American Psychological Association, Washington DC.

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Course Code	Course Title	L	T	P	C
2019SCBE	Basic Behavioral Etiquette	-	-	-	2

OBJECTIVES:

1. Basic etiquettes serve as the cornerstone of respectful and harmonious interactions.
2. Significance of basic etiquettes in various aspects of life, including social, professional, and personal contexts.
3. Fundamental principles of polite behaviour, individuals can foster positive relationships, navigate diverse environments with ease, and contribute to a more civilized and empathetic society.

Unit: I: Introduction

Definition of basic etiquettes-Importance of etiquettes in communication and social cohesion

Unit:II Basic Etiquettes in Social Interactions

Respect for others' feelings, opinions, and boundaries-Politeness, courtesy, and gratitude in everyday interactions. Active listening and empathy in conversations-Observing personal space and non- verbal cues.

Unit:III Basic Etiquettes in Professional Settings

Professionalism and respect in the workplace-Punctuality and reliability in meetings and appointments.Effective communication and collaboration with colleagues -Representing oneself and one's organization with integrity.

Unit IV Basic Etiquettes in Personal Life

Maintaining personal hygiene and grooming standards-Table manners and dining etiquette- Respecting cultural, religious, and social differences-Showing kindness and consideration in family and community settings

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Unit.V Challenges and Solutions:

Addressing challenges in practicing basic etiquettes in diverse environments-Strategies for overcoming barriers to etiquette adherence-Importance of continuous learning and adaptation in etiquette practices.

Course Outcome:

By the end of this program participants should have a clear understanding of

1. basic behaviour of interactions,
2. cultural manners, and
3. religious thoughts.

Book reference:

1. Garretson, J. (John) The school of manners, or, Rules for childrens behaviour : at church, at home, at table, in company, in discourse, at school, abroad, and among boys, with some other short and mixt precepts / by the author of, the English exercises London : Oregon Press Limited for the Victoria and Albert Museum, c1983

2. Haupt, Enid Annenberg, 1906-The Seventeen book of etiquette & entertaining Pub Info New York, D. McKay Co. [1953]

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Course Code	Course Title	L	T	P	C
201ACLSOAN	OFFICE AUTOMATION	-	-	-	2

Aim:

The purpose of office automation software is to improve and streamline office operations by automating repetitive tasks and making office work more efficient.

Course Objectives :

To provide an in-depth training in use of office automation, internet and internet tools.

The course also helps the candidates to get acquainted with IT.

Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL)

UNIT IV

Presentation (MS Power Point)

UNIT V

Internet & Advanced Communication

Reference:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of india
2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,cary N.Prague,Michael R.groh,Peter G.Aitken, and Lisa a.Buckl -Wiley India pvt.ltd.
3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.
4. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications

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Course Code	Course Title	L	T	P	C
20ILSCLS	Leadership and Management Skills	-	-	-	2

UNIT I- Leadership Skills

a. Understanding Leadership and its Importance

- What is leadership?
- Why Leadership required?
- Whom do you consider as an ideal leader?

b. Traits and Models of Leadership

- Are leaders born or made?
- Key characteristics of an effective leader
- Leadership styles

Perspectives of different leaders

c. Basic Leadership Skills

- Motivation
- Team work
- Negotiation
- Networking

UNIT II – Managerial Skills

a. Basic Managerial Skills

- Planning for effective management
- How to organise teams?

Recruiting and retaining talent

- Delegation of tasks
- Learn to coordinate
- Conflict management

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UNIT III - Entrepreneurial Skills

a. Basics of Entrepreneurship

- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

b. Creating Business Plan

- Problem identification and idea generation
- Idea validation
- Pitch making

UNIT IV - Innovative Leadership and Design Thinking

a.Innovative Leadership

- Concept of emotional and social intelligence
- Synthesis of human and artificial intelligence
- Why does culture matter for today's global leaders?

UNIT V- Ethics and Integrity

a.Learning through Biographies

- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration
- Drawing insights for leadership
- How leaders sail through difficult situations?

b.Ethics and Conduct

- Importance of ethics
- Ethical decision making
- Personal and professional moral codes of conduct
- Creating a harmonious life

Bibliography and Suggested Readings :

- Ashokan, M. S. (2015). Karmayogi: A Biography of E. Sreedharan. Penguin, UK.
- Brown, T. (2012). Change by Design. Harper Business

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Course Code	Course Title	L	T	P	C
20188CAQ	General Aptitude and Quantitative Ability	-	-	-	2

UNIT-I

- Introduction
- Introduction to Aptitude Tests
- Diagnostic Tests
- Introduction to Speed Maths
- Quantitative Ability – Number Theory
- Numbers
- Properties of Numbers
- Concept of Multiples and Factors
- LCM and HCF
- Factorial Concept
- Last Digit Concept
- Remainders Concept

UNIT-II Quantitative Ability – Arithmetic - 1

- Percentage
- Ratio and Proportion
- Simple Interest and Compound Interest
- Profit Loss
- Discount
- Mixture and Allegation
- Questions from Company Papers will be discussed

UNIT-III Quantitative Ability – Arithmetic - 2

- Speed Distance Time
- Time and Work
- Chain Rule
- Clocks and Calendars
- Averages
- Questions from Company Papers will be discussed

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UNIT-IV Quantitative Ability – Algebra

- Basic Terminologies in Algebra
- Equations
- Simple Equation
- Quadratic Equation
- Cubic Equation
- Functions
- Graphs
- Maxima and Minima
- Questions from Company Papers will be discussed

UNIT-V

1. Analytical and Logical Reasoning
   - Mono variate conditions
   - Multi variate conditions

Puzzles

- Coding
- Decoding
- Family tree
- Direction sense
- Alpha numeric
- Brain teasers
- Deductive Reasoning
- Visual Sequence
- Mathematical Reasoning

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Course Code	Course Title	L	T	P	C
201ACLSPSL	Professional Skills	-	-	-	2

Course Objectives:

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue to partake in a successful career path.
2. Prepare good resume, prepare for interviews and group discussions.
3. Explore desired career opportunities in the employment market in consideration of an individual SWOT.

UNIT I: Resume Skills

Resume Skills: Preparation and Presentation.

- Introduction of resume and its importance.
- Difference between a CV, Resume and Bio data.
- Essential components of a good resume.

ii. Resume skills: common errors.

- Common errors people generally make in preparing their resume.
- Prepare a good resume of her/his considering all essential components.

UNIT II: Interview Skills

- Interview Skills: Preparation and Presentation.
- Meaning and types of interview (F2F, telephonic, Video etc.).
- Dress Code, Background Research, Do's and Don'ts.
- Situation, Task, Approach and Response (STAR Approach) for facing an interview.
- Interview procedure (opening, listening skills, closure, etc.).
- Important questions generally asked in a job interview (open and closed ended questions).

UNIT-III Simulation & Common errors

Observation of exemplary interviews-Comment critically on simulated interviews : Common Errors.

-Discuss the common errors generally candidates make in interview-•Demonstrate an ideal interview.

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UNIT IV:Group Discussion Skills

Meaning and methods of Group Discussion-Procedure of Group Discussion-Group Discussion- Simulation. -Group Discussion - Common Errors.

UNIT V: Exploring Career Opportunities

Knowing yourself – personal Characteristics-Knowledge about the world of work, requirements of jobs including self- Employment-Sources of career Information-Preparing for a career based on their potentials and availability of opportunities.

Reference.

1. Alex, Dr. K. (2014). *Soft Skills* (1st edition) S Chand & Company.
2. Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ.* Bantam Books.
3. Kaul, Asha. (2009). *Business Communication* (2nd edition) PHI Learning.
4. Nelson-Jones, R. (1992). *Life skills, a handbook.* Trowbridge, Wilts: Detesios Ltd.
5. Panja, Shamistha et al. (2006). *Business English.* Pearson.
6. Sen, Madhucchanda (2010). *An Introduction to Critical Thinking.* Pearson. Delhi.
7. Tchovsky, Ian (2019). *Communication Skills Training* (2nd edition) Rupa Publication India.

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20ISSCIM	Interview Skills Training and Mock Test	-	-	-	2

COURSE OBJECTIVES

- Differentiate between Interview skills and techniques
- Know the skills required and carry out effective interviews
- Have a structured process of hiring the right candidate
- Plan and prepare for the interviews (self and the panel)
- Learn to set the right expectations with the candidates

UNIT-I: Introduction to Interview Skills and Techniques

What are Interview Skills and Techniques-Importance and benefits of Interview Skills and Techniques Difference between Interview Skills and Techniques-Differentiate between soft and technical skills Importance of Interview Techniques: Hiring the right fit for the organization-Promoting growth and success for an Employee-Understand the position you are hiring for-Understanding the role and responsibilities

UNIT-II: Types of Interviews

Structured Interview – To ask the questions set in advance-Semi-Structured interview – To ask questions based on candidate's response-Unstructured interview – Having a list of topics but no questions to ask Screening – Preliminary assessment of the candidate's profile-Initial Discussion and fact-finding: Exploring skills, experience, and cultural fit-Telephonic Connect – In the interest of time and resources telephonically connect with the candidate-Behavioural – Interview to assess behavioural competencies to match the job requirement-Individual / Face to Face interview – Upon initial screening and finding fitment- Group/ Panel interview – Basis initial confirmation schedule interview with stakeholders.

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UNIT-III:

Planning and Preparing for the interview

Gathering needs from the hiring manager or Department-Preparing job description-Analyzing the candidate profile Making repository of Questions-Collaborating with line Managers-Aligning interview questions with the competency required-Schedule time for the interview and stick to the timelines-Module 5: Managing and Conducting the Interview.

UNIT-IV: **Identifying Soft Skills**

Negotiation Skills-Communication Skills-Positive Attitude-Professionalism-Eye Contact-Building Rapport-Ability & willingness to perform the job.

UNIT-V **Skills Required for Interviewing a Candidate**

Assess the candidate's body Language-Maintaining appropriate tone while Interviewing-Being attentive and Displaying active Listening-Being unbiased during the Interview-Giving positive feedback Evaluation and Decision Making-Maintaining a record of the interview, reviewing Feedback-Using the scorecard during the Interview- considering competency and other Aspects-Referring Interview Notes-Making the Decision-Checking references

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Course Code	Course Title	L	T		P	C
201LSCCE	**Community Engagement**	-			-	1

UNIT I

Community and community engagement: concept, nature, types and approaches – Community Organization- concept, nature, objectives, values, scope, process and related concepts. community work, community development, community action-- Community organization as a method of social work intervention

UNIT II - **Appreciation of Rural Society**

Rural life style, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages" (Gandhi), rural infrastructure.

UNIT III- **Understanding rural economy & livelihood**

Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets

UNIT IV **Rural Institutions**

Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration

UNIT V **Rural Development Programmes**

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushmaan Bharat, Swatchh Bharat, PM Awas Yojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

1. Principles of Community Engagement, 2nd Edition, NIH Publication No. 11-7782, Printed June 2011
2. Kretzmann, J.P., & McKnight, J.L. (1993). Building communities from the inside out: A path towards mobilizing a community's assets. Chicago, IL: ACTA Publishers.

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Course Code	COURSE TITLE	L	T	P	C
20ITAOEC	Tamil Ilakkiya Varalaru	4	0	0	2

தமிழ் இலக்கிய வரலாறு

நோக்கம்

மாணவர்கள் பின் படைப்பாற்றலுடன் வெளிக் கொணரும் திறனை மேம்படுத்துதலும்

படைப்பின் இன்றியமையாமையை உணர்த்துதல்

1. படைப்பாளனின் பண்பு ஆராய்ந்து, இந்த நாளின் முக்கிய அறியச் செய்தல்
2. படைப்பாளர்களை அடையாளப்படுத்தி ஊக்குவித்தல்

அலகு :1

சங்கம் பற்றிய செய்திகள் -முச்சங்கங்கள்- சங்க இலக்கியங்கள்- பாணர் பாடல்களும் வாழ்வியலும்

அலகு :2

சங்கம் மருவிய காலம்- சங்கம் மருவிய கால இலக்கியங்கள் - இரட்டைக் காப்பியங்கள் - பதினெண் கீழ்க்கணக்கு நூல்கள் மற்றும் திருக்குறள்

அலகு 3

[illegible]

அலகு: 4

பக்தி இலக்கியங்கள்- சிற்றிலக்கியங்கள் -பிள்ளைத்தமிழ் -தூது- உலா, தூது -பாணி - தோற்றம்-தனிப்பாடல்கள்

அலகு :5

இக்கால இலக்கியங்கள் -மரபுக் கவிதை -புதுக்கவிதை -உரைநடை- சிறுகதை -நாவல்- நாடகம் - [illegible]

கைக்கூ- இலக்கியம்

விளைவுகள் :

1. தமிழ் மொழி அரசு பணிக்கு பயன் படும்
2. நூல் ஆராய்ச்சிக்கு உதவும்
3. தமிழை ஆசிரியர் பணிக்கு வசதியாக முடியும்
4. பன்முக ஆய்வுக்கு அடித்தளமாக இருப்பதை அறிய முடியும்
6. வேலை வாய்ப்பு வசதி நிறைவேற்ற வழி ஏற்படும்.

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பார்வை நூல்கள்

1. தமிழ் இலக்கிய வரலாறு - மு.வரதராசன் சோழர் அரசுக்கழகம் வெளியீடு
2. தமிழ் இலக்கிய வரலாறு - ச. சுபாஷ் சந்திர போஸ் இயல் பதிப்பகம்
3. தமிழ் இலக்கிய வரலாறு முதலாவர் போக்கியநூல் NCRH சென்னை
4. தமிழ் இலக்கிய வரலாறு - கா.ஆனந்தன் NCRHசென்னை

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Course Code	COURSE TITLE	L	T	P	C
201MBDEC	Wild Life Conservation	4	0	0	2

Objectives:

1. Maintenance of rare species in protected areas such as national parks, santuries etc., Establishment of specific biosphere reserves for endangered plants and animals.
2. Protection of wild life through legislation such as banning hunting etc.,
3. Imposing specific restrictions on export of endangered plants and animals or their products.

Course Outcome:

1. Protection of natural habitats of organisms through controlled exploitation.
2. Educating the public about the need to protect and preserve the environment as a long range goal for the welfare of future generations

UNIT I: Wildlife Management: Basic concepts and principles - Wildlife management before and after implementation of Wild Life (Protection) Act, 1972 – IUCN – CITES – NBA – IBA – Evaluation of Wildlife habitat: Define habitat – Forest habitat types - basic survey techniques of habitats – Vegetative analyses – Point centered quadrat, Quadrat, strip transect – Habitat manipulation: Food, Water, shade, impact and removal of invasive alien species.

UNIT II: Introduction to conservation biology, the origin of conservation biology, ethical and economical values of conservation biology, definition of biodiversity, types of biodiversity, threats to biodiversity, Scopes and importance of conservation methods –In-situ and Ex-situ conservation approaches of Indian animals. Captive breeding (Lion- tailed macaque, white tiger and vultures) and reintroduction (Tiger, rhinoceros, gaur).

UNIT III: Biodiversity: Definition and Importance - Biodiversity hotspots in India: Western Ghats, Eastern Himalayas. Mega diversity nations – an introduction. Landscape approach and people participation in biodiversity conservation.

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COURSE CODE	COURSE TITLE	L	T	P	C
201CMOEC	BANKING SERVICES	5	0	0	5

UNIT – I

Commercial Banking – An Overview: Banking-Classification- Banking system- Universal Banking- Commercial Banking- functions – Role of Banks in Economic Development

UNIT – II

E-banking –An Overview: Meaning-Service-E-banking and Financial Services –Benefits- Internet Banking – Internet Banking Vs Traditional Banking –Mechanics of Internet Banking- Services

UNIT – III

Mobile Banking and Telephone Banking –An Overview: Meaning-Features- Registration- Services – Security Issues –Banking Facilities- Telephone Banking System – Drawbacks- Call Centers

Unit – IV

ATM and Electronic Money: Concept of ATM-Features-Functions-Strategic importance of ATM- Electronic Money – Categories –Merits – E-Money and Monetary Policy-Policy Issues for the RBI

Unit-V

EFT System and INFINET: Meaning- Steps in EFT- RBI Guidelines-EFT Systems Vs Traditional System – ECS-Features-Factors- Benefits –Handicaps –Applications

REFERENCES:

1. Banking theory law and Practice
2. Banking Theory law and practice -Santhanam
3. Banking Awareness - N.K.Gupta
4. Management of Banking and financial Services-Padmalathasuresh,Justinpaul

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Course Code	Course Title	L	T	P	C
20ULSCUV	Universal Human Values	-	-	-	2

Course Objectives:

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realiseone's potentials.

Course Outcomes:

Unit I:

1

ntroduction: What is love? Formsoflove—for self, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living

- Love and compassion and inter-relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love.
- Narratives and anecdotes from history, literature including local folklore.

Unit II:

• Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honesty among others)

- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practice it?
- Learners' individual and/or group experience(s)
- Simulated situations
- Case studies

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Unit III

- Introduction: What is non-violence? Its need. Love, compassion, empathy sympathy for others as pre-requisites for non-violence
- Ahimsa as non-violence and non-killing
- Individuals and organizations that are known for their commitment to non- violence
- Narratives and anecdotes about non-violence from history, and literature including local folklore
- Practicing on-violence: What will learners learn/gain if they practice non- violence? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Case studies

Unit IV

- Introduction: What is righteousness?
- Righteousness and dharma, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

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Unit V

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organisations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulated situations
- Case studies

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Course Code	Course Title	L	T	P	C
20ILSCCS	Communication Skills	-	-	-	2

Aim:

The goal of communication is to convey information—and the understanding of that information—from one person or group to another person or group.

Course Objectives :

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learnersback
2. Identify what their non-verbal messages are communicating to others.
3. Understand role of communication in teaching-learning process.
4. Learning to communicate through the digital media.
5. Understand the importance of empathetic listening.
6. Explore communication beyond language.

Course Outcome:

Bythe end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

UNIT I

- Techniques of effective listening.
- Listening and comprehension
- Probing questions.
- Barriers to

listening. **UNIT II**

- Pronunciation.
- Enunciation.
- Vocabulary.
- Fluency.
- common Errors.

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UNIT III

- Techniques of effective reading.
- Gathering ideas and information from a given text.

i.Identify the main claim of the text.

ii. Identify the purpose of the text.

iii.Identify the context of the text.

iv.Identify the concepts mentioned.

- Evaluating these ideas and information.

UNIT IV

- Clearly state the claims.
- Avoid ambiguity, vagueness, unwanted generalisations and over simplification of issues.
- Provide background information.
- Effectively argue the claim.
- Provide evidence for the claims.
- Use examples to explain concepts.
- follow convention.

UNIT V

- Role of Digital literacy in professionalLife
- Trends and opportunities in using digital technology inworkplace
- InternetBasics
- Introduction to MS Officetools

i.Print

Office

iii.Excel

iv.Powerpoint

Reference;

1 SenMadhucchanda (2010). An Introduction to Critical Thinking, Pearson,Delhi

2 Silvia P. J. (2007). How to Read a Lot, American Psychological Association, Washington DC.

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Course Code	Course Title	L	T	P	C
20ISSCBE	Basic Behavioral Etiquette	-	-	-	2

AIM:

To underscore the enduring relevance of basic etiquettes in fostering positive relationships, promoting mutual respect, and enhancing the quality of interpersonal interactions in today's interconnected world.

OBJECTIVES:

1. Basic etiquettes serve as the cornerstone of respectful and harmonious interactions.
2. Significance of basic etiquettes in various aspects of life, including social, professional, and personal contexts. 3.Fundamental principles of polite behavior, individuals can foster positive relationships, navigate diverse environments with ease, and contribute to a more civilized and empathetic society.

Unit:I Introduction

Definition of basic etiquettes-Importance of etiquettes in communication and social cohesion.

Unit:II Basic Etiquettes in Social Interactions

Respect for others' feelings, opinions, and boundaries-Politeness, courtesy, and gratitude in everyday interactions.Active listening and empathy in conversations-Observing personal space and non-verbal cues

Unit:III Basic Etiquettes in Professional Settings

Professionalism and respect in the workplace-Punctuality and reliability in meetings and appointments. Effective communication and collaboration with colleagues -Representing oneself and one's organization with integrity

Unit:IV Basic Etiquettes in Personal Life

Maintaining personal hygiene and grooming standards-Table manners and dining etiquette-Respecting cultural, religious, and social differences-Showing kindness and consideration in family and community settings.

Unit:IV Challenges and Solutions,

Addressing challenges in practicing basic etiquettes in diverse environments-Strategies for overcoming barriers to etiquette adherence-Importance of continuous learning and adaptation in etiquette practices.

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Course Outcome:

By the end of this program participants should have a clear understanding of

1. basic behaviour of interactions,
2. cultural manners, and
3. religious thoughts.

Book reference:

1. Garretson, J. (John) The school of manners, or, Rules for childrens behaviour : at church, at home, at table, in company, in discourse, at school, abroad, and among boys, with some other short and mixt precepts / by the author of the English exercises London : Oregon Press Limited for the Victoria and Albert Museum, c1983

2. Haupt, Enid Annenberg, 1906-The Seventeen book of etiquette & entertaining Pub Info New York, D. McKay Co. [1963].

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Course Code	Course Title	L	T	P	C
201ACLSOAN	OFFICE AUTOMATION	-	-	-	2

Aim:

The purpose of office automation software is to improve and streamline office operations by automating repetitive tasks and making office work more efficient.

Course Objectives:

To provide an in-depth training in use of office automation, internet and internet tools.

The course also helps the candidates to get acquainted with IT.

Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL)

UNIT IV

Presentation (MS Power Point)

UNIT V

Internet & Advanced Communication

Reference:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of india
2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,cary N.Prague,Michael R.groh,Peter G.Aitken, and Lisa a.Bucki -Wiley India pvt.ltd.
3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.
4. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications

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Course Code	Course Title	L	T	P	C
20ILSCLS	Leadership and Management Skills	-	-	-	2

Course Outcomes :

Upon completion of the course students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
2. Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.
3. Understand the basics of entrepreneurship and develop businessplans
4. Apply the design thinking approach for leadership
5. Appreciate the importance of ethics and moral values for making of a balanced personality.

UNIT I- Leadership Skills

a. Understanding Leadership and its Importance

- What is leadership?
- Why Leadership required?
- Whom do you consider as an ideal leader?

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b. Traits and Models of Leadership

- Are leaders born or made?
- Key characteristics of an effective leader
- Leadership styles
- Perspectives of different

leaders

UNIT II - Managerial

Skills a.Basic Managerial

Skills

•Planning for effective management

- How o organise teams?
- Recruiting and retaining talent
- Delegation of tasks
- Learn to coordinate
- Conflict management

UNIT II - Entrepreneurial Skills

a.Basics of Entrepreneurship

- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

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UNIT IV - Innovative Leadership and Design Thinking

a. Innovative Leadership

- Concept of emotional and social intelligence
- Synthesis of human and artificial intelligence
- Why does culture matter for today's global leaders

desiga Thinking?

- What is design thinking?
- Key elements of design thinking:

-Discovery

-Interpretation

-Ideation

UNIT V- Ethics and Integrity

eLearning through Biographies

- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration
- Drawing insights for leadership
- How leaders sail through difficult situations?

Bibliography and Suggested Readings :

Books:

Ashokan, M. S. (2015). Karmayogi: A Bbiography of E. Sreedharan. Penguin, UK.

- Brown, T. (2012). Change by Design. Harper Business.
- Elkington, J., & Hartigan, P. (2008). The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World. Harvard Business Press.
- Goleman D. (1995). Emotional Intelligence. Bloomsbury Publishing India Private Limited.

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Course Code	Course Title	L	T	P	C
201SSCAQ	General Aptitude and Quantitative Ability	-	-	-	2

UNIT-I

- Introduction
- Introduction to Aptitude Tests
- Diagnostic Tests
- Introduction to Speed Maths
- Quantitative Ability – Number Theory
- Numbers
- Properties of Numbers
- Concept of Multiples and Factors
- LCM and HCF
- Factorial Concept
- Last Digit Concept
- Remainders Concept

UNIT-II Quantitative Ability – Arithmetic - 1

- Percentage
- Ratio and Proportion
- Simple Interest and Compound Interest
- Profit Loss
- Discount
- Mixture and Allegation
- Questions from Company Papers will be discussed

UNIT- III Quantitative Ability – Arithmetic – 2

- Speed Distance Time
- Time and Work
- Chain Rule
- Clocks and Calendars
- Averages
- Questions from Company Papers will be discussed

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Course Code	Course Title	L	T	P	C
20ISSCAQ	General Aptitude and Quantitative Ability	-	-	-	2

UNIT-I

- Introduction
- Introduction to Aptitude Tests
- Diagnostic Tests
- Introduction to Speed Maths
- Quantitative Ability – Number Theory
- Numbers
- Properties of Numbers
- Concept of Multiples and Factors
- LCM and HCF
- Factorial Concept
- Last Digit Concept
- Remainders Concept

UNIT-II Quantitative Ability – Arithmetic - 1

- Percentage
- Ratio and Proportion
- Simple Interest and Compound Interest
- Profit Loss
- Discount
- Mixture and Allegation

Questions from Company Papers will be discussed

UNIT-III Quantitative Ability – Arithmetic - 2

- Speed Distance Time
- Time and Work
- Chain Rule
- Clocks and Calendars
- Averages

Questions from Company Papers will be discussed

UNIT-IV Quantitative Ability – Modern Maths

- Set Theory
- Fundamental way of Counting
- Permutations and Combinations
- Probability

Questions from Company Papers will be discussed

- Data Analysis
- Data Sufficiency

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UNIT-V

1. Analytical and Logical Reasoning
   - Mono variate conditions
   - Multi variate conditions

Puzzles

- Coding
- Decoding
- Family tree
- Direction sense
- Alpha numeric
- Brain teasers
- Deductive Reasoning
- Visual Sequence
- Mathematical Reasoning

COURSE OUTCOMES:

At the end of the course,students will learn

1. To assess academic potential or career suitability and may be used to assess either mental or physical talent in a variety of domains.
2. To assess what a person is capable of doing or to predict what a person is able to learn or do given the right education and instruction.
3. It represents a person's level of competency to perform a certain type of task.

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Course Code	Course Title	L	T	P	C
201ACLSPSL	Professional Skills	-	-	-	2

1. Unit I: **Resume Skills**

Resume Skills: Preparation and Presentation.

- Introduction of resume and its importance.
- Difference between a CV, Resume and Bio data.
- Essential components of a good

resume. ii.Resume skills: common errors.

- Common errors people generally make in preparing their resume.
- Prepare a good resume of her/his considering all essential components

Unit II: **Interview Skills**

I. Interview Skills: Preperation and Presentation.

- Meaning and types of interview (F2F, telephonic, video, etc.).
- Dress Code, Background Research, Do's and Don'ts.
- Situation, Task, Approach and Response (STAR Approach) for facing an Interview,
- Interview procedure (opening, listening skills, closure, etc.).
- Important questions generally asked in a job interview (open and closed ended questions).

UNIT-III Simulation & Common errors

Observation of exemplary interviews-Comment critically on simulated interviews: Common Errors. Discuss the common errors generally candidates make in interview.-Demonstrate an ideal interview

Unit IV: **Group Discussion Skills**

Meaning and methods of Group Discussion-Procedure of Group Discussion-Group Discussion- Simulation. -Group Discussion - Common Errors.

Unit V: **Exploring Career Opportunities**

Knowing yourself – personal Characteristics-Knowledge about the world of work, requirements of jobs including self- Employment-Sources of career information-Preparing for a career based on their potentials and availability of opportunities

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21SSCIM	Interview Skills Training and Mock Test	-	-	-	2

UNIT-I: **Introduction to Interview Skills and Techniques**

What are Interview Skills and Techniques-Importance and benefits of Interview Skills and Techniques Difference between Interview Skills and Techniques-Differentiate between soft and technical skills Importance of Interview Techniques:Hiring the right fit for the organisation-Promoting growth and success for an employee-Understand the position you are hiring for-Understanding the role and responsibilities.

UNIT-II: **Types of Interviews**

Structured interview – To ask the questions set in advance-Semi-Structured interview – To ask questions based on candidate's response-Unstructured interview – Having a list of topics but no questions to ask; Screening – Preliminary assessment of the candidate's profile-Initial Discussion and fact-finding – Exploring skills, experience, and cultural fit-Telephonic Connect – To the interest of time and resources telephonically connect with the candidate-Behavioural – Interview to assess behavioural competencies to match the job requirement-Individual / Face to Face interview – Upon initial screening and finding fitment-Group Panel interview – Basis initial confirmation schedule interview with stakeholders.

UNIT-III: **Planning and Preparing for the Interview**

Gathering needs from the hiring manager or department-Preparing job description Analysing the candidate profile -Making repository of questions-Collaborating with line managers-Aligning interview questions with the competency required-Schedule time for the interview and stick to the timelines-Module 5: Managing and Conducting the Interview.

UNIT-IV: **Identifying Soft Skills**

Negotiation Skills-Communication skills-Positive attitude-Professionalism-Eye contact-Building Rapport-Ability & willingness to perform the job.

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UNIT-V Skills Required for Interviewing a Candidate

Assess the candidate's body Language-Maintaining appropriate tone while interviewing-Being attentive and displaying active listening-Being unbiased during the interview-Giving positive feedback. Evaluation and Decision Making-Maintaining a record of the interview, reviewing feedback-Using the scorecard during the interview- considering competency and other aspects-Referring interview notes-Making the decision-Checking references

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course Code	Course Title	L	T		P	C
201LSCCE	Community Engagement	-	-		-	1

Course Outcomes:

After completing this course, student will be able to

- Gain an understanding of rural life, culture and social realities.
- Develop a sense of empathy and bonds of mutuality with local community.
- Appreciate significant contributions of local communities to Indian society and economy.
- Learn to value the local knowledge and wisdom of the community.
- Identify opportunities for contributing to community's socio-economic improvements

UNIT-I: INTRODUCTION

Community and community engagement: concept, nature, types and approaches-- Community Organization- concept, nature, objectives, values, scope, process and related concepts: community work, community development, community action-- Community organization as a method of social work intervention.

UNIT II - Appreciation of Rural Society

Rural life style,rural society, caste and gender relations, rural values with respect to community, nature and resource elaboration of "soul of India lies in villages" (Gandhi), rural infrastructure.

UNIT III- Understanding rural economy & livelihood

Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets.

UNIT IV Rural Institutions

Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram panchayat, Stand Committees), local civil society, local administration

UNIT V Rural Development Programmes,

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swatchh Bharat, PM AwaasYojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

Books and References: -

1. Principles of Community Engagement, 2nd Edition, NIH Publication No. 11-7782, Printed June 2011.
2. Kretzmann, J.P., & McKnight, J.L. (1993). Building communities from the inside out: A path towards mobilizing a community's assets. Chicago, IL: ACTA Publishers.

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ourse Code	COURSE TITLE	L	T	P	C
201TAOEC	Tamil Ilakkiya Varalaru (open elective)	4	0	0	2

தமிழ் இலக்கிய வரலாறு தமிழ்

ற தோக்கம் ற

இலக்கிய வரலாறு

தோக்கம்

1.மாணவர் கின் படைப்புத்திறனை வளர்க்க வகைசெய் லும்.

நமம்படுத்தலும்

2 படைப்பின் இன்றியமையாமையை உணர்ந் ச்தல்

1 படைப்போளரின் பண் பு அரங்கம், திறமை நபோன்றவற்றை அறியச் செய்தல்

4 படைப்போர்க் டன் அடைத்Fப் பயிலரங்கம் நடத்தல்

அலகு :1

சங்கம் பற்றியசெய்திகள் -முச்சங்கங்கள்- சங்க இலக்கியங்கள்- தோற்றம் வதோடகமும்

அலகு :2

சங்கம் மருவிய தோற்றம்- சங்கம் மருவிய தோற்ற இலக்கியங்கள் - இரண்டாம் தோற்றியங்கள் - பதினெண் தோற்றங்களை நூல்கள் மற்றும் வரலாறு

அலகு 3

ஐம்பெருங் தோற்றியங் கள் -ஐஞ் சிறுங் தோற்றியங் கள் -கம்பரின் தோற்றியம் - வளியலிங்கனார் -ஒரு தோற்றியம் - தொல்காப்பியர் -தொல்காப்பியம்

அலகு 4

பதி இலக்கியங்கள்- சிற்றிலக்கியங்கள் -பிள்ளைத்தமிழ் -தூது- உலா தால் -பரணி - அ தோழி -குறவஞ் தோற்றம்

அலகு :5

இக்தோற்ற இலக்கியங்கள் -மரபு கவிதை -புதுக்கவிதை -உரை டை- சிறுகதை -புதினம் - தோற்றம் - ங்கம் -நாடகம்- இலக்கியம்

விளைவுகள் :

1 தமிழைத் தோடு அரசு பணிக்கு தயன் படும்
2 நூல் ஆராய்ச்சிக்கு உதவும்
3 தமிழைத் ஆசிரியர் பணிக்கு வசதியை முடியும்
4 வரலாற்று ஆராய்ச்சிக்கு வித்திடும்
5 பன் முக ஆய்வுக்கு அடித்தளமாக இருப்பதை அறிய முடியும்
6 யாத் வியக்குச் செயல்ற நவண் டுமென்ற அர்வம் ஏற்படும்

பார்வை நூல்கள்

1. தமிழ் இலக்கிய வரலாறு - மு.வரதராசன் சோதித்த அகோயி வளர்மீடு
2 தமிழ் இலக்கிய வரலாறு - ச. சுவாமிநாத் தர்தர நபோல் இயல்பதிப்பகம்

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3. தமிழ் இலக்கிய வரலாறு -புலவர் போத்தியாரும் NCBH வசன் டல

4. தமிழ் இலக்கிய வரலாறு -க.ஆனந்தன் NCBHவசன் டல

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Course Code	COURSE TITLE	L	T	P	C
20UMBOEC	Wild Life Conservation	4	0	0	2

Unit I: Wildlife Management: Basic concepts and principles - Wildlife management before and after implementation of Wild Life (Protection) Act, 1972 – IUCN – CITES – NBA – IBA – Evaluation of Wildlife habitat: Define habitat – Forest habitat types - basic survey techniques of habitats – Vegetative analyses – Point centered quadrat, Quadrat, strip transect – Habitat manipulation: Food, Water, shade, impact and removal of invasive alien species.

Unit II: Introduction to conservation biology, the origin of conservation biology, ethical and economical values of conservation biology, definition of biodiversity, types of biodiversity, threats to biodiversity. Scopes and importance of conservation methods – In-situ and Ex-situ conservation approaches of Indian animals. Captive breeding (Lion- tailed macaque, white tiger and vultures) and reintroduction (Tiger, rhinoceros, gaur).

Unit III: Biodiversity: Definition and importance - Biodiversity hotspots in India: Western Ghats, Eastern Himalayas. Mega diversity nations – an introduction. Landscape approach and people participation in biodiversity conservation.

Unit IV: Role of Government and Non-Government organizations in conservation – Government - Wildlife Institute of India, Ministry of Environment and Forests (MoEF), National Biodiversity Authority (NBA), Zoological Survey of India (ZSI), Botanical Survey of India (BSI), Salim Ali Centre for Ornithology and Natural History (SACON), Centre for Ecological Sciences (CES), NGOs. -Bombay Natural History Society (BNHS), World Wide Fund for Nature (WWF), Wildlife Trust of India (WTI), Nilgiri Wildlife and Environment Association (NWEA), Wildlife Conservation Society (WCS).

Unit V: Conservation Biology Tools - Biological Parks, Zoological Parks, Forest Research Institute, Agricultural Research Institutions, Gene Pools, Cryopreservation Centres, Interpretation Centres and role of Field Biologists.

References:

1. Anon, 1992. Conservation on biological diversity. Text and annexure – WWF-India.
2. Gaughley, G. and A. Gunn, 1995. Conservation Biology in Theory and practice. Blackwell Publishers.
3. Dobson, A.P. 1996. Conservation and biodiversity scientific American Library, New York, USA.

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COURSE CODE	COURSE TITLE	L	T	P	C
701CSOEC	Web Technology	4	0	0	2

AIM

To equip the students with basic programming skill in Web Technology.

OBJECTIVE

- To understand the concepts and architecture of the Worldwide Web.
- To understand and practice mark up languages
- To learn Style Sheet and Frames

UNIT I

Introduction to the Internet: networking- internet – email – Internet Technologies: modem internet addressing .

UNIT II

Internet browsers: Internet Explorer – Netscape navigator- Introduction to HTML: Html document – anchor tag – hyperlink.

UNIT III

Head and body sections: Header section – titles – links- colorful web page – sample html document – Designing the body section: paragraph – tab setting.

UNIT IV

Ordered and unordered lists: list – unordered list – heading in a list- order list- nested list.

UNIT V

Table handling: tables – table creation in html cell spanning multiple rows and columns- coloring cells- sample tables- frames frame set definition- nested frames set.

OUTCOMES:

- Acquire knowledge about functionalities of world wide web
- Explore markup languages features and create interactive web pages using them
- Learn and design Client side validation using scripting languages
- Acquire knowledge about Open source JavaScript libraries
- Able to design front end web page and connect to the back end databases.

REFERENCE BOOKS

1. World Wide Web design with HTML – C. Xavier – Tata McGraw – Hill – 2000.
Principles of web design – Joel Sklar – Vikas publishing house 2001.

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COURSE CODE	COURSE TITLE	L	T	P	C
20ILSCUV	BANKING SERVICES	5	0	0	5

AIM:

To Provide the Bank is financial institution which is involved in borrowing and lending money.

OBJECTIVE:

you should be able to

To provide a lending money to firms, customers and home buyers.

To provide keep money for customers

To provide offering financial advice and related financial services, such as insurance.

UNIT – I

Commercial Banking – An Overview: Banking-Classification- Banking system- Universal Banking- Commercial Banking- functions – Role of Banks in Economic Development

UNIT – II

E-banking – An Overview: Meaning-Service-E-banking and Financial Services –Benefits- Internet Banking – Internet Banking Vs Traditional Banking –Mechanics of Internet Banking- Services

UNIT – III

Mobile Banking and Telephone Banking –An Overview: Meaning-Features- Registration- Services – Security Issues –Banking Facilities- Telephone Banking System – Drawbacks- Call Centers

Unit – IV

ATM and Electronic Money: Concept of ATM-Features-Functions-Strategic Importance of ATM- Electronic Money – Categories –Merits – E-Money and Monetary Policy-Policy Issues for the RBI

Unit-V

EFT System and INFINET: Meaning- Steps in EFT- RBI Guidelines-EFT Systems Vs Traditional System - ECS-Features-Factors- Benefits –Handicaps -Applications

REFERENCES:

1. Banking theory law and Practice
2. Banking Theory law and practice -Sunthanam
3. Banking Awareness - N.K.Gupta
4. Management of Banking and financial Services-Padmalathisuresh,Justinpaul

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Course Code	Course Title	L	T	P	C
202BCOEC	Herbal Medicines		0	0	

Aim:

Be able to advise and educate effectively to create a comprehensive wellness plan incorporating herbal, dietary and lifestyle recommendations integrating self-awareness and lessons of nature

Unit I

Tribal medicine – methods of disease diagnosis and treatment – Plants in folk religion – Aegle marmelos, Ficus benghalensis, Curcuma domestica, Cynodon dactylon and Sesamum indicum.

Unit II

Traditional knowledge and utility of some medicinal plants in Tamilnadu – Solanum trilobatum, Cardiospermum halicacabum, Vitex negundo, Adathoda vasica, Azadirachta indica, Gloriosa superba, Eclipta alba, Aristolochia indica and Phyllanthus fraternus.

Unit III

Plants in day today life – Ocimum sanctum, Centella asiatica, Cassia auriculata, Aloe vera. Nutritive and medicinal value of some fruits (Guava, Sapota, Orange, Mango, Banana, Lemon, Pomegranate) and vegetables - Greens (Moringa, Solanum nigrum Cabbage).

Unit IV

Allergens – types – sources – active principles – Chemical nature – Cell modifiers – Lectins – mutagens, teratogens – Allergic reactions with known examples.

Unit V

Cardiovascular diseases – blood pressure – cardiac drugs of plant origins – alkaloids, anticoagulants – basic mechanism of action. Pulmonary / respiratory disorders – asthma – bronchitis – common cold – allergy – Remedy from plants.

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References

1. Tribal medicine – D.C. Pal & S.K. Jain Naya Prakash, 206, Bidhan Sarani, Calcutta., 1998

2. Con ribution to Indian ethnobotany – S.K. Jain, 3rd edition, Scientific publishers, B.No. 91, Jodhpur, India. 2001

3. A Manual of Ethnobotany – S.K.Jain, 2nd edition, 1995.

4. Kumar, N.C., An Introduction to Medical botany and Pharmacognosy. Emkay Publications, New Delhi. 1993.

5. Rao, A.P. Herbs that heal. Diamond Pocket Books (P) Ltd., New Delhi, 1999

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Course Code	Course Title	L	T	P	C
202CMOEC	FINANCIAL SERVICES		0	0	

UNIT – I

Introduction – Financial Market – Meaning and significance – Functions of Financial services – Evolution – Regulating Authorities – Features – Constitutions.

UNIT – II

Merchant Banking – Meaning – Registration- scope- Functions – Issue Management – Cost of Public Issues – SEBI guidelines on Merchant Banking

UNIT – III

Mutua: Fund – Evolution – Types – Financial Risk – Performance Measures – (Treynor, Sharpe, Jenson) – Organization – Advantages – Regulatory Aspects – Growth of Mutual Funds – UTI.

UNIT – IV

Leasing – Evaluation – Classification Accounting Treatment – Regulatory Authority – Advantages – Hire purchase – Features – Evolution – Sources of Law – Problems in Hire purchase Industry – Factoring – Meaning – Mechanism – Types – Financial Aspect – Advantages.

UNIT – V

Stock Markets – History – Organization and Management of Stock – exchanges – N.S.E – OTCEI – Share Market – indices – Investor protection – Credit Rating.

References:

1. D. Joseph Anbarasu – Financial Services
2. V.K.Bhoomirathan – Financia. Services
3. P. Manoharan – Financial Services
4. Gnanajaj - Financial Services

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Course Code	Course Title:
20CCRW120	R/ WEKA TOOL

Aim:

- To learn the basics of data analysis in R /Weka Tool.

Objectives:

- To know the fundamental concepts of data handling and analytics
- To learn fundamental data analysis using in R
- To study various analytics on stream data.

Course Outcomes:

MODULE -1

History and overview of R ,Install and configuration of R programming environment ,Basic language elements and data structures ,R+Knitr+Markdown+GitHub ,Data input/output

MODULE -2

Data storage formats ,Subsetting objects ,Vectorization,Control structures

MODULE -3

Functions ,Scoping Rules ,Loop functions ,Graphics and visualization ,Grammar of data manipulation (dplyr and related tools),Debugging/profiling , Statistical simulation

MODULE -4

Installation, Launching Explorer,Loading Data, File Formats

MODULE -5

Preprocessing the Data, Classifiers,Clustering,Association,Feature Selection

Course Outcomes:

- Convert real world problems to hypothesis and perform statistical analysis.
- Perform data analysis using in R.
- Design efficient modeling of huge data and work in big data platforms.

REFERENCE BOOKS

1. A First Course in Statistical Programming with R. W Braun.
2. Beyond Spreadsheets with R.
3. Data Mining: Practical Machine Learning Tools and Techniques
4. Programming Collective Intelligence
5. http://www.cs.waikato.ac.nz

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Course Code	Course Title:
20DPWP123	Diploma in Web Designing and Hosting

UNIT I:

Introduction to Web Design and Hosting

Overview of Web Design and Hosting - Evolution of the Web-Importance of Web Design and Hosting-Basic Terminology - Structure of HTML Documents - **HTML (HyperText Markup Language) - HTML Basics** - Structure of HTML Documents - Common Tags and Elements Attributes and Forms

UNIT II:

Web Design Principles

Design Fundamentals - Color Theory and Typography - Layout and Grid Systems - User Experience (UX) and User Interface (UI) Design - **Accessibility and Usability** - Web Content Accessibility Guidelines (WCAG) - Responsive Design Principles - Testing and User Feedback

UNIT III

Web Development Tools

Version Control Systems - Introduction to Git and GitHub - Development Environments - IDEs and Text Editors (e.g., Visual Studio Code, Sublime Text) - Browser Developer Tools - FTP and file management - Monitoring and performance optimization.

UNIT IV:

Introduction to Web Hosting

Hosting Basics - Types of Hosting (e.g., Shared, VPS, Dedicated, Cloud) - Domain Name System (DNS) - FTP and File Management - **Web Servers and Configuration** - Overview of Web Servers (e.g., Apache, Nginx) - Server Configuration Files - Security Basics (e.g., SSL/TLS) - **Deployment and Maintenance** - **Deployment Strategies** - Continuous Integration/Continuous Deployment (CI/CD)

UNIT V:

Emerging Trends and Future Directions

Progressive Web Apps (PWAs) – Web Assembly - Single Page Applications (SPAs) - Serverless Architectures - Design and Develop a Portfolio Site - Implement Responsive Design and Interactivity

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Course Code	Course Title:
20DPDE125	Software Testing using Selenium

Aim:

- **To learnt the basics of software testing using java environment.**

Course objective:

- To know the fundamental concepts of software testing
- To learn fundamental testing the application using selenium
- To study various inspect Web/HTML Elements

MODULE I:

Introduction to Software Testing

- **Overview of Software Testing:** Importance and objectives of testing.
- **Types of Testing:** Unit, integration, system, acceptance, and regression testing.
- **Testing Life Cycle:** Phases from planning to execution and maintenance.

Introduction to Selenium

- **What is Selenium?:** History and evolution of Selenium.
- **Components of Selenium:** Selenium WebDriver, Selenium IDE, Selenium Grid.
- **Advantages of Selenium:** Why use Selenium for automated testing.

MODULE II:

Setting Up the Selenium Environment

- **Installation and Configuration:** Installing Java, Maven, and Selenium WebDriver.
- **IDE Setup:** Setting up Eclipse or IntelliJ IDEA for Selenium development.
- **Browser Drivers:** Configuring drivers for Chrome, Firefox, Edge, etc.
- **Integration with Build Tools:** Maven or Gradle for dependency management.

Selenium WebDriver Basics

- **WebDriver Architecture:** Understanding how WebDriver interacts with browsers.
- **Locating Web Elements:** Using locators like ID, Name, Class Name, CSS Selector, XPath.
- **Basic WebDriver Commands:** Navigating, clicking, sending keys, and retrieving information.
- **Handling Browser Windows and Frames:** Switching between windows and frames.

MODULE III:

Advanced Selenium WebDriver Techniques

- **Synchronization:** Handling waits, including implicit and explicit waits.
- **Handling Alerts and Pop-ups:** Managing JavaScript alerts, confirmation, and prompt boxes.

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- **File Uploads and Downloads**: Automating file interactions.
- **Handling Dynamic Web Elements**: Dealing with elements that change dynamically.

Page Object Model (POM) Design Pattern

- **Introduction to POM**: Benefits of using the Page Object Model.
- **Implementing POM**: Creating page classes and methods.
- **Page Factory Pattern**: Using the Page Factory to initialize page elements.

MODULE IV:

Test Frameworks Integration

- **JUnit/TestNG**: Setting up and using JUnit or TestNG for test management.
- **Annotations**: Using annotations to manage test cases.
- **Data-Driven Testing**: Implementing data-driven tests using TestNG or JUnit.

Selenium Grid

- **Overview of Selenium Grid**: Understanding the concept and benefits.
- **Setting Up Grid**: Configuring and running Selenium Grid.
- **Parallel Test Execution**: Running tests in parallel across different environments.

MODULE V:

Integrating Selenium with CI/CD Tools

- **Continuous Integration**: Integrating Selenium tests with Jenkins, GitLab CI, or other CI tools.
- **Building Pipelines**: Configuring pipelines to run automated tests.
- **Reporting and Alerts**: Setting up test result reporting and notifications.

Handling Modern Web Applications

- **Ajax and Dynamic Content**: Strategies for testing asynchronous web content.
- **JavaScript Frameworks**: Testingapplications built with frameworks like Angular, React, or Vue.js.
- **Responsive Design**: Ensuring tests cover different screen sizes and resolution

Course Outcomes:

- Convert real world problems to testing the software in online.
- Perform the test cases using various inspect web and HTML elements.
- Design efficient application using selenium and generate the test report.

REFERENCE:

1. Guide to test automation using selenium by Garg and Aditya, McGraw Hill.
2. Software Testing by Naresh Chauhan, Oxford
3. https://www.selenium.dev/Selenium WebDriver

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School of Commerce and Business Management

Department of Commerce

Minutes of Board of Studies Meeting

There will be a Board of Studies Meeting on 29.07.2020 at 10.00 am Video Conference Media ZOOM, PRIST University, Thanjavur. All the staff members are requested to attend the meeting link

link

https://teams.microsoft.com/l/meetup-join/19%3ameeting_OWJhNmI1OTktNDY5NS00MWE2LWFiOGMtZ2NmM2NmYTY5yMzQ1%40thread.v2/0?context=%7b%22Tid%22%3a%2219b1214-bb5e-4b10-bedf-623e63e527d5%22%2c%22Oid%22%3a%224fef93d5-63eb-422b-954e-a02b62ac40dc%22%7d

The following members were present:

Dr.S.Rajendran (Chairperson/HoD /BOS Member)

Dr.R.Prakash Babu (External Expert-Academic /BOS Member)

M.Kumaravelu (External Expert- Industry/BOS Member)

Dr.R.Selvaraj (Professor /BOS Member)

Dr.S.Kumaraju (Professor/BOS Member)

Dr.G.Karthiga (Associate Professor/BOS Member)

Dr.V.SriDevi (Associate Professor/BOS Member)

Dr.R.Rajavarshini (Assistant Professor/BOS Member)

Dr.D.Shanbhagavalli (Assistant Professor/BOS Member)

Dr.T.J.Jayachitra (Special Invitee-Dean/BOS Member)

K.Surya (Special Invitee-Alumnus/Alumni)

S.Akash (Special Invitee -Current student)

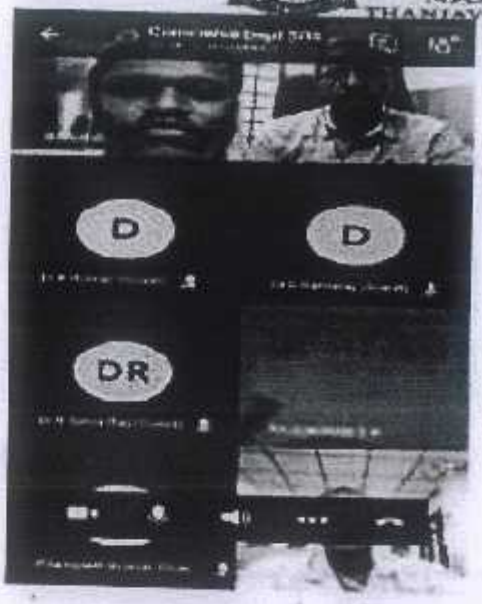
The Chairman (BOS) welcomed all the members and presented the feedbacks about existing curriculum receive from various Stack holders and also from the department academic advisory committee.

The members of the Board have unanimously discussed and carefully reviewed the existing syllabus for B Com , B.Com CA., M Com, M.Phil, in detail and made the necessary changes in upcoming(B.Com., B.Com CA., M.Com, M.Phil) as mentioned below.

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The following members were present:

Name	Signature
Dr.S.Rajeneran	
Dr.K.Prakash Babu	
M.Kumaravelu	
Dr.R.Selvaraj	
Dr.S.Kamaraju	
Dr.G.Karthiga	
Dr.V.Sridevi	
Dr.R.Rajavadhani	
Dr.D.Sitambaram	
Dr.T.Jayachelan	T.Jayachelan
K.Surya	
S.Akash	

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REVIEW OF CURRICULUM & SYLLABUS in B. Com

REGULATION 2020

REVIEW OF CURRICULUM & SYLLABUS IN B.Com Commerce -REGULATION 2020

1. ***Resolved to introduce the following Audit Courses in the B.Com. programme curriculum with effect from 2020-21***

   Semester I: Universal Human Values
   credits

   Semester II : Communication Skills- 2
   credits

   Semester III: Office automation- 2 credits

   Semester IV: Leadership and Management Skills- 2
   credits

   Semester V: Professional Skills- 2 credits

   Semester VI : Tally Prime – 2 Credits

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in

   Annexure-I

2. **Resolved to introduce the following Audit Courses on Soft Skills in the B.Com. programmecurriculum with effect from 2020-21**
   Year I: Basic Behavioral Etiquette: 2 Credits

   Year II : General Aptitude and Quantitative Ability: 2
   Credits

   Year III: Interview Skills Training and Mock Test: 2
   Credits

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses on soft skills as given in

   Annexure-II

Resolved to introduce Audit Course on "Community Engagement" with one credit in the 3rd year of B.Com. programmecurriculum with effect from 2020-21

3. **Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of B.Com. programme with effect from 2020-21.**
   The following changes have been recommended by the committee with regard to Commerce(B.Com- II year III semester)

1. "Essential of Business Communication /19161AEC36" syllabus content is modified UNIT I, II, III, IV & V (Annexure III)

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REVIEW OF CURRICULUM & SYLLABUS in B.Com CA (Computer Application) -REGULATION 2020

1. ***Resolved to introduce the following Audit Courses in the B.Com. programme curriculum with effectfrom 2020-21***

Semester I: Universal Human Values - 2 credits

Semester II : Communication Skills- 2 credits

Semester III: Office automation- 2 credits

Semester IV: Leadership and Management Skills- 2 credits

Semester V: Professional Skills- 2 credits

Semester VI : Tally Prime – 2 Credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in *Annexure-I*

Resolved to introduce the following Audit Courses on Soft Skills in the B.Com. programmecurriculum with effect from 2020-21

Year I: Basic Behavioral Etiquette: 2 Credits

Year II : General Aptitude and Quantitative Ability: 2 Credits

Year III: Interview Skills Training and Mock Test: 2 Credits

Further resolved to approve the syllabus copy for the above mentioned Audit Courses on soft skills asgiven in

Annexure-II

1. ***Resolved to introduce Audit Course on "Community Engagement" with one credit in the 3rd*** year of B.Com. programme curriculum witheffect from 2020-21

2. ***Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of B.Com. programme with effect from 2020-21.***

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REVIEW OF CURRICULUM & SYLLABUS in M.Com - Commerce - REGULATION 2020

The following changes have been recommended by the commitee with regard to Commerce (M.Com- II year III semester)

1. "Investment Management" this course is deleted

Brand Management this course is added (Annexure III)

The following changes have been recommended by the committee with regard to Commerce(M.Com- II year IV semester)

Information Technology – This Course is deleted
Customer Relationship Management- This course is added(Annexure III)

REVIEW OF CURRICULUM & SYLLABUS in M.Phil., - Commerce - REGULATION 2020

1. **Resolved to introduce a course on "Research and Publication Ethics" with 2 credits in the M.Phil.(Commerce) programme curriculum with effect from 2020-21. Further resolved to approve the syllabus for the same as given in Annexure-III**

Members of the Board updated the panel of examiners and submitted the same to the Academic Council for its approval

Annexure 1 -Revised Curriculum structure Credits Credits
Annexure 2 -Revised Curriculum structure and Syllabus of UG B.Com, B.Com CA
Annexure 3 -Revised Curriculum structure and Syllabus of M.Com
Annexure 4 -Revised Curriculum structure and syllabus of M.Phil
Annexure 5 -List of Examiners

Note: Annexure 1,2,3,4 and 5 are Signed by the Chairman of BOS
The Meeting concluded with thanks from Board of Studies Chairman

The following new courses (2020-2022f)

Name Of The Programme	Name Of The Course	Course Code	Year Of Introductio n
B. Com	Universal Human Values	201LSCUV	2020
B. Com	Communication Skills	201LSCCS	2020
B. Com	Basic Behavioral Etiquette	201SSCBE	2020
B. Com	Office automation	201LSCOA	2020
B. Com	Leadership and Management Skills	201LSCLS	2020
B. Com	General Aptitude andQuantitative Ability	201SSCAQ	2020
B. Com	Professional Skills	201ACLSPSL	2020
	Interview Skills Training and		2020

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B. Com	Mock Test	201SSCIM	
B. Com	Community Engagement	201LSCCE	2020
B. Com	Tally ERP 9	201TERP9	2020
B. Com	Inventory Management	20161DSC55B	2020
B. Com	Working Capital Management	20161DSC55C	2020
B. Com	Consumer Protection	20161DSC55D	2020
B. Com	Fundamentals of Investment	20161DSC55E	2020
B. Com	Services Marketing	20161DSC64B	2020
B. Com	Insurance Management	20161DSC64C	2020
B. Com	International Trade Export Management	20161DSC64D	2020
B. Com	Marketing Management	20161DSC64E	2020
B.Com CA	Indian Constitution	201LSCIC	2020
B.Com CA	Universal Human Values	201LSCUV	2020
B.Com CA	Communication Skills	201LSCCS	2020
B.Com CA	Basic Behavioral Etiquette	201SSCBE	2020
B.Com CA	Office automation	201LSCOA	2020
B.Com CA	Leadership and Management Skills	201LSCLS	2020
B.Com CA	General Aptitude and Quantitative Ability	201SSCAQ	2020
B.Com CA	Professional Skills	201ACLSPSL	2020
B.Com CA	Interview Skills Training andMock Test	201SSCIM	2020
B.Com CA	Community Engagement	201LSCCE	2020
B.Com CA	Tally ERP 9	201TERP9	2020
B.Com CA	Principles of Insurance	20198DSC55B	2020
B.Com CA	Business Organization	20198DSC55C	2020
B.Com CA	Software Project Management	20198DSC55D	2020
B.Com CA	Data Mining Warehousing	20198DSC55E	2020
B.Com CA	Consumerism	20198DSC64B	2020
B.Com CA	Business Communication	20198DSC64C	2020
B.Com CA	Cloud Computing	20198DSC64D	2020
B.Com CA	Internet Technologies	20198DSC64E	2020

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M. Com	Brand Management	20261SEC33	2020
M. Com	Customer Relationship Management	20261DSC44A	2020
M. Com	Business Environment	20261DSC15C	2020
M. Com	Computer Application in Business	20261DSC15D	2020
M. Com	Managerial Economics	20261DSC15E	2020
M. Com	Principles of Marketing	20261DSC15F	2020
M. Com	Elements of Insurance	20261DSC25C	2020
M. Com	Corporate Social Responsibility	20261DSC25D	2020
M. Com	Import and Export Management	20261DSC25E	2020
M. Com	Global Marketing	20261DSC25F	2020
M. Com	Principles of Management	20261DSC34B	2020
M. Com	Elements of Accounting	20261DSC34C	2020
M. Com	Elements of Business Law	20261DSC34D	2020
M. Com	E- Commerce	20261DSC34E	2020
M. Com	Corporate Law	20261DAC44B	2020
M. Com	Accounting for ManagerialDecision	20261DAC44C	2020
M. Com	Direct Tax	20261DAC44D	2020
M. Com	Bank Management	20261DAC44E	2020
M.Phil	Research and PublicationEthics	CPE RPE	2020

The following Value Added new dipioma and Certificate Course (2020-2021)

S.NO	COURSE TITLE	COURSE CODE
1	Diploma in leadership skills	2021LISK

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Signature of the Chairman & Members:

Name	Signature
Dr.S.Rajendran	
Dr.R.Prakash Babu	
M.Kumaravelu	
Dr.R.Selvaraj	
Dr.S.Kumaraju	
Dr.G.Karthiga	
Dr.V.Sridevi	
Dr.R.Rajavarathan	
Dr.D.Sivabalaraju	
Dr.T.Jayachelan	T.Jayachelan
K.Surya	
S.Akash	

(Dr.)
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School of Commerce and Business Management

Department of Commerce

B.COM -2020 REGULATION

SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tami– I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20161SEC13	Basic Accounting	4	1	0	4
20161SEC14	Business Environment	3	1	0	3
20161AEC15	Marketing	3	0	0	3
20161AEC16	Business Economics	3	1	3	3
	Total	21	3	3	17
	AUDIT COURSE				
20ILSCIC	Indian Constitution	-	-	-	2
20ILSCUV	Universal Human Values	-	-	-	2

SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Tamil – II/ Advanced English-II/Hindi-II/ French – II	4	0	0	2
20111AEC22	English-II	4	0	0	2

(The revision as approved by the academic council is incorporated)

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20161SEC23	Business Accounting	4	1	1	4
20161SEC24	Ethics in Business	3	1	1	3
20161AEC25	Business Statistics	3	1	1	3
20161SEC26	Business Organization and Management	3	0	0	3
	RESEARCH SKILL BASED COURSE				
20161RLC27	Research Led Seminar	-	-	-	1
	Total	**21**	**3**	**3**	**18**
	AUDIT COURSES				
20[illegible]SCC5	Communication Skills	-	-	-	0
20[illegible]SSOBE	Basic Behavioral Etiquette	-	-	-	0

SEMESTER – III

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC31/ 20132AEC31/ 20111AEC31/ 20135AEC31	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
20111AEC32	English-III	4	0	0	2
20161SEC33	Cost Accounting	2	1	2	4
20161SEC34	Banking Theory Law and Practice	2	1	1	3
20161AEC35	Business Law for Managers	2	0	2	3
20161AEC36	Essential of Business Communication	2	0	1	3
	RESEARCH SKILL BASED COURSE				
20161RMC37	Research Methodology	2	0	0	2
	Total	**18**	**2**	**6**	**19**
	AUDIT COURSE				
20[illegible]SCOA	Office Automation	-	-	-	0

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SEMESTER – IV

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 20135AEC41	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20161SEC43	Partnership Account	3	1	2	4
20161SEC44	Advertising and Sales Promotion	3	1	1	3
20161AEC45	Company Law and Secretarial Practice	3	0	1	3
20161AEC46	Office Management	3	0	1	2
20IENSTU47	Environmental Studies	2	0	1	3
	Total	19	2	6	19
	AUDIT COURSE				
20IEACLS	Leadership and Management Skills				
20IEGAO	General Aptitude and Quantitative Ability				

SEMESTER – V

Course Code	Course Title	L	T	P	C
	THEORY				
20161SEC51	Corporate Accounting	4	1	2	4
20161SEC52	Financial Management	3	1	1	4
20161SEC53	Financial Services	3	1	1	4
20161SEC54	Computer Application in Business	3	1	1	4
20161DSC55B/	Inventory Management				
20161DSC55C	Working Capital Management				
	RESEARCH SKILL				
	SKILLBASED COURSE				
20161BRC57	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
	AUDIT COURSE				
20IACLSPSL	Professional Skills				

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SEMESTER - VI

Course Code	Course Title	L	T	P	C
	THEORY				
20161SEC61	Management Accounting	3	1	2	5
20161SEC62	Entrepreneurship and Small Business Management	3	1	1	5
20161SEC63	Auditing	3	1	1	4
20161DSC64B / 20161DSC64C	Service Marketing / Insurance Management	3	0	2	3
201__OEC(2 Digit Course Name)	Open Elective	4	0	0	2
20161PRW66	Project Work	-	-	-	4
20161PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
	AUDIT COURSE				
201SSC6M	Interview Skills Training and Mock Test	-	-	-	-
201LSC6E	Community Engagement	-	-	-	-
201TERP9	Tally ERP 9	-	-	-	-
	Total Credits - Programme				115
	Total Credits - Audit Courses				21

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DISCIPLINE SPECIFIC ELECTIVE

SEMESTER	COURSE CODE	COURSE TITLE
V	20161DSC55A	Stock Exchange Practice
	20161DSC55B/	Cooperative Law and Practice
	[redacted]	Consumer Protection and Environment
	[redacted]	
	[redacted]	
VI	20161DSC64A	Income Tax Law and PracticeCo-Operation Theory
	20161DSC64B	[redacted]
	[redacted]	Marketing Management
	[redacted]	
	[redacted]	

OPEN ELECTIVE

SEMESTER	COURSE CODE	COURSE TITLE
VI	201TAOEC	Tamil Hakkiya Varalaru Journalism
	201ENOEC	Development of Mathematical Skills Instrumentation
	201MAOEC	Foodand Adulteration Wild
	201PHOEC	Life Conservation
	201CHOEC	Web Technology E-Learning
	201MBOEC	
	201CSOEC	
	201CAOEC	

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B.COM CREDIT DISTRIBUTION

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	10	06	-	-	-	01	17
II	10	07	-	-	01	-	18
III	10	07	-	-	02	-	19
IV	09	07	-	-	-	03	19
V	-	16	02	-	01	-	19
VI	-	16	02	02	-	03	23
Total	39	59	04	02	04	07	115

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School of Commerce and Business Management

Department of Commerce

B.Com. COMPUTER APPLICATION-
REGULATION 2020 COURSE STRUCTURE
SEMESTER – I

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tamil – I/Advanced English-I/Hindi-I/ French - I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20198SEC13	Financial Accounting	4	1	1	4
20198SEC14	Business Management	3	1	1	3
20198AEC15	Information Technology	3	1	1	4
20198AEC16	Operating System	3	0	0	2
	Total	21	3	3	17
	AUDIT COURSE				
20112SCIC	Indian Constitution	-	-	-	2
20112SCUV	Universal Human Values	-	-	-	2

(The revision as approved by the academic council is incorporated)

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SEMESTER – II

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Tamil – II/ Advanced English-II/Hindi-II/ French – II	4	0	0	2
20111AEC22	English-II	4	0	0	2
20198SEC23	Business Accounting	5	1	0	4
20198AEC24	Business Law	4	1	0	4
20198AEC25	Programming in C	4	1	0	4
	PRACTICAL				
20198SEC26L	Programming in C Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20198RLC27	Research Led Seminar	-	-	-	1
	Total	21	3	3	18
	AUDIT COURSES				
20ESOCS	Communication Skills				2
20ESSCDB	Basic Behavioral Etiquette				2

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SEMESTER – III

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC31/ 20132AEC31/ 20111AEC31/ 20133AEC31	Tamil – III/Hindi-III/Advanced English-III/ French – III	4	0	0	2
20111AEC32	English-III	4	0	0	2
20198SEC33	Cost Accounting	3	1	2	4
20198SEC34	Banking Theory Law and Practice	3	0	1	4
20198AEC35	Programming in C++	2	1	0	3
	PRACTICAL				
20198AEC36	Programming in C++ lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
201208MC37	Research Methodology	2	0	0	2
	Total	18	2	6	19
	AUDIT COURSE				
201USCOA	Office Automation				2

(The revision as approved by the academic council is incorporated)

SEMESTER – IV

Course Code	Course Title	L	T	P	C
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 19135AEC41	Tamil-IV/Advanced English-IV /Hindi-IV/ French – IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20198SEC43	Auditing	3	1	1	3
20198SEC44	Business Statistics	3	1	2	4
20198AEC45	Visual Basic Programming	3	0	0	4
201ENSTU47	Environmental Studies	2	0	0	2
	PRACTICAL				

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20198AEC46L	Visual Basic Programming Lab	0	0	3	2
	Total	19	2	6	19

AUDIT COURSE

20HLSCDS	Leadership and Management Skills	-	-	-	P
20ISSCAQ	General Aptitude and Quantitative Ability	-	-	-	P

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SEMESTER – V

Course Code	Course Title	L	T	P	C
THEORY					
20198SEC51	Corporate Accounting	4	1	3	4
20198SEC52	Business Economics	3	1	1	4
20198SEC53	Financial Management	3	1	2	4
20198SEC54	Software Engineering	3	1	0	4
20198DSC55A	Principles of Insurance/	3	0	1	2
20198DSC55C	Business Organization				
RESEARCH SKILL BASED COURSE					
20120BRC56	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
AUDIT COURSE					
20IACLSP5L	Professional Skills				

SEMESTER – VI

Course Code	Course Title	L	T	P	C
THEORY					
20198SEC61	Management Accounting	3	1	2	5
20198SEC62	Income Tax Law and Practice	3	1	1	5
20198SEC63	Database Management System	3	1	1	4
20198DSC64B/	Consumerism	3	0	2	3
20198DSC64C	Business Communication				
201__OEC62	Open Elective	4	0	0	2
20198PRW66	Project Work	-	-	-	4
20198PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
AUDITCOURSE					
201LSSCIM	Interview Skills Training and Aptitude Test				
201LSOCE	Community Engagement				
201TERP9	Tally ERP 9				
Total Credits -Programme					115
Total Credits - Audit Courses					21

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DISCIPLINE SPECIFIC ELECTIVE

SEMESTER	COURSE CODE	COURSE TITLE
V	20198DSC55A 20198DSC55B	Management Information System Stock Market Practice [redacted]
VI	20198DSC64A 20198DSC64B	E- Commerce Web Designing

OPEN ELECTIVE

SEMESTER	COURSE CODE	COURSE TITLE
VI	201TAOEC 201ENOEC 201MAOEC 201PHOEC 201CHOEC 201MBOEC 201CSOEC	Tamil Hakkiya Varalaru Journalism Development of Mathematical Skills Instrumentation Food and Adulteration Wild Life Conservation Web Technology

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B.Com – CA Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	10	06	-	-	-	01	17
II	10	07	-	-	01	-	18
III	10	07	-	-	02	-	19
IV	09	07	-	-	-	03	19
V	-	16	02	-	01	-	19
VI	-	16	02	02	-	03	23
Total	39	59	04	02	04	07	115

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M.Com, - REGULATION 2020COURSE STRUCTURE

SEMESTER – I

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20261SEC11	Marketing research and Consumer Behavior	6	0	0	4
20261SEC12	Human Resource management	6	0	0	4
20261SEC13	Services Marketing	5	0	0	4
20261SEC14	Advanced Cost Management	6	1	0	4
20261ESC15C 20261ESC15D	Business Environment Computer Application in Business	5	0	0	4
20261RLS16	Research Led Seminar	-	-	-	1
	Total	28	1	0	21

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	SEMESTER – II				
20261SEC21	Quantitative Techniques For Decision Making	5	1	0	4
20261SEC22	Total Quality Management	5	0	0	4
20261SEC23	Advanced Management Accounting	5	1	0	4
20261SEC24	Securities Analysis and Portfolio Management	5	0	0	4
20261DSC25C 20261DSC25D	Elements of Insurance Corporate Social Responsibility	5	0	0	5
20261RMC26	Research Methodology	3	0	0	2
20261BRC27	Participation in Bounded Research	-	-	-	2
	Total	**28**	**2**	**0**	**24**
	SEMESTER - III				
20261SEC31	Project Planning and Control	5	1	0	5
20261SEC32	Advanced Corporate Accounting	5	2	0	5
20261SEC33	Brand Management	5	2	0	5
20261DSC34B 20261DSC34C	Principles of Management Elements of Accounting	5	0	0	4
202[illegible]OEC35	Open Elective	4	0	0	3
20261SRC36	Participation in Scaffold Research (SocietalProject)	-	-	-	2
	Tota l	**24**	**5**	**0**	**24**
	SEMESTER - IV				
20261SEC41	Income Tax Law and Tax Planning	5	2	0	5
20261SEC42	International Business	5	1	0	5
20261SEC43	Co- Operation in India and Abroad	5	1	0	5
20261DSC44A	Customer Relationship Management	5	0	0	4
20261PRW45	Project Work	-	-	-	6
20261PEE	Program – Exit Examination				2
	Total	**20**	**4**	**0**	**27**
	Total Credit For the Programme	-	-		**96**

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DISCIPLINE SPECIFIC ELECTIVE COURSES

SEMESTER	COURSE CODE	COURSE TITLE
I	20261DSC15A 20261DSC15B [redacted]	Strategic Management Organizational Behavior [redacted]
II	20261DSC25A 20261DSC25B [redacted]	Corporate Legal Frame Work Retail Management [redacted]
III	20261DSC34A 20261DSC34B [redacted]	Indian Financial System International Marketing [redacted]
IV	[redacted] 20261DSC44B	[redacted] International Financial Management
V	[redacted]	[redacted]

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Open Electives

Semester	Open Elective Courses
III	1. Writing for the media 2. Applicable Mathematics Techniques 3. Bio-medical Instrumentation 4. Green Chemistry 5. Herbal Medicine 6. M-Marketing

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DEPARTMENT OF COMMERCE

M.Phil., - REGULATION 2020 COURSE STRUCTURE

SEMESTER - I					
COURSE CODE	COURSE TITLE	L	T	P	C
203COC11	Research Methodology	2	2	0	2
203COC12	Advanced Functional Management	2	2	0	2
203COC13_	Optional	2	2	0	2
CPE_RPE	Research and Publication Ethics				
	Total	06	06	-	08
SEMESTER - II					
203COC21	Project Work	-	-	-	02

OPTIONAL

SEMESTER	COURSE CODE	COURSE TITLE
I	203COC13A	Optional –I Marketing Management
	203COC13B	Optional –II Human Resource Management
	203COC13C	Optional – III Financial Management

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COURSE CODE	COURSE TITLE	L	T	P	C
2026/SEC13	Services Marketing	5	0	0	4

AIM

To focus the Organizations offering social services including health centres communication organizations, educational institutions

OBJECTIVES

I. To study the total quality management in maintaining and improving the quality of services.
II. To know the tourism and other service marketing activities.

UNIT – I

Introduction – Reasons for growth in service sector – Role of services in an economy – distinction between goods and services – Classification of services – Marketing Management process for Service marketing.

UNIT – II

Development of service marketing mix – Components in the mix – People – Process – Physical evidence in managing demand and supply.

UNIT – III

Managing service quality – Dimensions and measurement of service quality – gap analysis – Total Quality Management – Guidelines for managing service competition – Globalization of services- Challenges to global service marketers – Typical international services Barriers to international marketing services.

UNIT – IV

Marketing of Insurance Services – Users – Benefits – Formation of marketing mix for insurance products – Tourism – Marketing mix for tourism, Hotel – Market segmentation for hotels- Marketing mix for hotels.

UNIT – V

Hospitals: Marketing of Health care- Types of Hospitals- Marketing mix for health care. Personal care: Marketing mix for personal care. Education marketing-Literacy – The concept- Marketing mix for schools, elementary, secondary and higher education.

OUTCOME

- Focuses on services, service design, and service innovation, with the aim of developing empathy for customers and understanding the customer experience
- Strategies that support broader marketing decisions.
- Develop an understanding of the role of relationship marketing and customer service
- Demonstrate knowledge of the extended marketing mix for services.
- Exhibit the capability to work effectively within a team environment.
- Develop and justify marketing planning and Control Systems.

REFERENCE BOOKS

1. S.M.Jha – Services Marketing
2. Vasanth Venugopal- Services Marketing
3. S.Balaji – Services Marketing Furthermore Management

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SURI

INSURANCE MANAGEMENT
20161DSC64C

Aim:

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts

Objectives:

To make the students to understand the principles and practices of Insurance Management.

Unit – I

Introduction – Meaning – Definition – Features – Functions and principles of Insurance – Evolution ofinsurance – advantages and its importance – Insurance organization in India – Recent development of insurance sector

Unit – II

Legal dimensions of Insurance – LIC Act 1956 – IRDA 1999 – General Insurance Act 1972

Unit – III

Insurance agent – procedure for becoming agent – pre requisites for obtaining license – duration oflicense –suspension, revocation and termination of agent – functions of agent – remuneration to agent

– code of conduct and unfair practices Unit – IV

Life insurance – meaning – feature – principles and functions – merits and demerits – Types of life insurance – Claims (Death and Maturity) – Surrender Value. Fire insurance – Health Insurance.

Unit – V

Marine Insurance – meaning – kinds – principles – types of marine policy – procedure for effective marine insurance – settlement of claims in marine insurance – Motor insurance – – Rural Insurance – Crop Insurance – Natural calamities - Theft insurance.

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International Trade Export Management

20161DSC64D

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts

Objectives

- To make the students well aware about the formalities associated with International trade
- To make the students aware of the documentation of International Trade and
- To make the students aware of the FOREX Management and Export Promotion Schemes.

Unit – I

International Trade –Benefits – Basis of International Trade – Foreign Trade and Economic Growth –Balance of Trade – Balance of Payment – Current Trends in India – Barriers to International Trade – Indian EXIM Policy.

Unit - II

Export and Import Finance: Special need for Finance in International Trade – INCO Terms (FOB, CIF,etc.,) – Payment Terms – Letters of Credit – Pre Shipment and Post Shipment Finance – Fortfaiting – Deferred Payment Terms – EXIM Bank – ECGC and its schemes – Import Licensing – Financing methods for import of Capital goods.

Unit - III

Foreign Exchange Markets – Spot Prices and Forward Prices – Factors influencing Exchange rates – The effects of Exchange rates in Foreign Trade – Tools for hedging against Exchange rate variations –Forward, Futures and Currency options – FEMA – Determination of Foreign Exchange rate and Forecasting – Law of one price – PPP theory – Interest Rate Parity – Exchange rate Forecasting.

Unit – IV

Export Trade Documents: Financial Documents – Bill of Exchange – Type – Commercial Documents

– Proforma, Commercial, Consular, Customs, Legalized Invoice, Certificate of Origin Certificate Value, Packing List, Weight Certificate, Certificate of Analysis and Quality, Certificate of Inspection, Health certificate, Transport Documents - Bill of Lading, Airway Bill, Postal Receipt, Multimodal Transport Document. Risk Covering Document: Insurance Policy, Insurance Cover Note. Official Document: Export Declaration Forms, GR Form, PP From, COD Form, Softer Forms, Export Certification, GSPS – UPCDC Norms.

Unit - V

Export Promotion Schemes – Government Organizations Promoting Exports – Export Incentives: Duty Exemption – IT Concession – Marketing Assistance - EPCG, DEPB – Advance License – Other efforts

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Marketing Management
20161DSC64E

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts

Objectives

- To familiarize with the basic concepts, and techniques of marketing management
- To understand the behavior of consumers
- To create awareness of marketing mix elements, and
- To analyse and solve marketing problems in the complex and fast changing business environment. UNIT-I

Introduction to Marketing and Marketing Management, Marketing Concepts - Marketing Process Marketing mix - Marketing environment. - Consumer Markets and buying behaviour - Market segmentation and targeting and positioning.

UNIT-II Product Decisions - concept of a Product - Product mix decisions - Brand Decision - New Product Development – Sources of New Product idea - Steps in Product Development - Product Life Cycle strategies- Stages in Product Life Cycle.

UNIT-III

Price Decisions - Pricing objectives - Pricing polices and constraints - Different pricing method - Newprocuct pricing, Product Mix pricing strategies and Price adjustment strategy.

UNIT-IV

Channel Decision - Nature of Marketing Channels – Types of Channel flows - Channel functions - Functions of Distribution Channel - Structure and Design of Marketing Channels - Channel co- operation, conflict and competition – Retailers and wholesalers.

UNIT – V

Promotion Decision - Promotion mix - Advertising Decision, Advertising objectives - Advertising and Sales Promotion – Developing Advertising Programme – Role of Media in Advertising - Advertisement effectiveness -- Sales force Decision

REFERENCE K.S. Chandrasekar, MARKETING MANAGEMENT TEXT AND CASES, Tata McGraw-Hill Publication, New Delhi 2010 Govindarajan,

MARKETING MANAGEMENT CONCEPTS, CASES, CHHALLENGES AND TRENDS, Prentice Hall of India, New Delhi, 2009.

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B.COM CA-Regulation

Indian Constitution

20ILSCIC

Course
Objective

To create an awareness on the Constitution of India. To understand the function wings of the Government, fundamental rights and duties of citizens, analyses the powers of central, state, and localgovernment, and strengthen constitutional institutions.

Course Outcomes

Describe historical background of the constitution making and its importance for building a democratic India. Explain the functioning of three wings of the government i.e., executive, legislative and judiciary. Explain the value of the fundamental rights and duties for becoming good citizen of India. Analyze thedecentralization of power between central, state and local self-government.

UNIT-I:

Introduction to Indian Constitution Constitution meaning of the term - The making of the Indian Constitution - Sources and constitutional history – Philosophy of Constituent Assembly - Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.

UNIT-II:

The Union: Executive, Legislative and Judiciary Union Government and its Administration Structure: President and Vice President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, LokSabha, RajyaSabha, The Supreme Court and High Court, Powers and Functions.

UNIT-III:

The States and The Union Territories State Government and its Administration: Governor - Role and Position - CM and Council of ministers, State Secretariat: Organization, Structure and Functions – Relation between the Union and the States.

UNIT-IV:

Local Administration District's Administration Head - Role and Importance, Municipalities - Mayor and role of Elected Representative – Panchayat Raj: Functions PRI: Zilla Panchayat, Elected officials andtheir roles - Block level Organizational Hierarchy, Village level - Role of Elected and Appointed officials – Importance of grass-root democracy

UNIT-V:

Emergency Provisions and Election Commission Emergency: Proclamation of Emergency, types of emergency - Election Commission: Role of Chief Election Commissioner - State Election Commission - Functions of Commissions for thewelfare of SC/ST/OBC and women.

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B.COM CA

Aim: Universal Human Values201LSCUV

This course aims at making learners conscious about universal human values in an integral manner, without ignoring other aspects that are needed for learner's personality development.

Course Objectives:

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realize one's potentials

Course Outcomes:

By the end of the course the learners will be able to: 1. Know about universal human values and understand the importance of values in individual, social circles, career path, and national life. 2. Learn from case studies of lives of great and successful people who followed and practiced human values andachieved self-actualization. 3. Become conscious practitioners of human values. 4. Realize their potential as human beings and conduct themselves properly in the ways of the world.

Unit I

- Introduction: What is love? Forms of love for self, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living
- Love and compassion and inter-relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love.
- Narratives and anecdotes from history, literature including local folklore
- Practicing love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion?
- Sharing learner's individual and/or group experience(s)
- Simulated Situations
- Case studies

Unit II

- Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honestyamong others)
- Individuals who are remembered in history for practicing this value
- Narratives and anecdotes from history, literature including local folklore
- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if theydon't practice it?
- Learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Unit III

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- Introduction: What is non-violence? Its need. Love, compassion, empathy, sympathy for others as pre-requisites for non-violence
- Ahimsa as non-violence and non-killing
- Individuals and organisations that are known for their commitment to nonviolence
- Narratives ananecdotes about non-violence from history,and literature including local folklore

- Practicing non-violence: What will learners learn/gain if they practice nonviolence?What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Case

studiesUnit

IV

- Introduction: What is righteousness?
- Righteousness and dharma, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What willlearners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations

Case

- studies

Unit V

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organizations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulated situations

Case studiesUnit

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• VI

Introduction: What is service? Forms of service for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress or disaster.

• Individuals who are remembered in history for practicing this value.
• Narratives and anecdotes dealing with instances of service from history, literature including local folklore
• Practicing service: What will learners learn/gain gain if they practice service? What will learners loseif they don't practice it?
• Sharing learners' individual and/or group experience(s) regarding service
• Simulated situations
• Case
studies Unit
VII
• Introduction: What is renunciation? Renunciation and sacrifice. Self-restrain and Ways of overcominggreed. Renunciation with action as true renunciation
• Individuals who are remembered in history for practicing this value.
• Narratives and anecdotes from history and literature, including local folklore about individuals whoare remembered for their sacrifice and renunciation.
• Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation andsacrifice? What will learners lose if they don't practice it?
• Sharing learners' individual and/or group experience(s)
• Simulated situations
• Case studies

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B.COM CA

Communication Skills

201LSCCS

objectives:

1. Identify common communication problems that may be holding learners back
2. Identify what their non-verbal messages are communicating to others
3. Understand role of communication in teaching-learning process
4. Learning to communicate through the digital media
5. Understand the importance of empathetic listening
6. Explore communication beyond language.

Course Outcome:

By the end of this program, participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Unit I

- Techniques of effective listening
- Listening and comprehension
- Probing questions
- Barriers to listening

Unit II

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- Common Errors

Unit III

- Techniques of effective reading
- Gathering ideas and information from a given text

xi. Identify the main claim of the text

xii. Identify the purpose of the text

xiii. Identify the context of the text

xiv. Identify the concepts mentioned

xv. Evaluating these ideas and information

xvi. Identify the arguments employed in the text ii. Identify the theories employed or assumed in the text

xvii. Interpret the text

xviii. To understand what a text says

xix. To understand what a text does

xx. To understanc what a text means

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Unit IV

- Clearly state the claims
- Avoid ambiguity, vagueness, unwanted generalizations and oversimplification of issues
- Provide background information
- Effectively argue the claim
- Provide evidence for the claims
- Use examples to explain concepts
- Follow convention
- Be properly sequenced
- Use proper signposting techniques
- Be well structured

viii. Well-knit logical sequence

ix. Narrative sequence

x. Category groupings

xi. Different modes of Writingi. E-mails

xii. Proposal writing for Higher Studies

xiii. Recoding the proceedings of meetings

xiv. Any other mode of writing relevant for learners

Unit V

- Role of Digital literacy in professional life
- Trends and opportunities in using digital technology in the workplace
- Internet Basics
- Introduction to MS Office tools

v. Paint

vi Office

vii. Excel

viii. Power point

Reference:

1. Ser Madhucchanda (2010), An Introduction to Critical Thinking, Pearson,Delhi

2. Silvia P. J. (2007), How to Read a Lot. American Psychological Association. Washington DC

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B.COM CA
Basic Behavioral
Etiquette201SSCBE

AIM:

To underscore the enduring relevance of basic etiquettes in fostering positive relationships, promoting mutual respect, and enhancing the quality of interpersonal interactions in today's interconnected world.

Course Outcome:

By the end of this program participants should have a clear understanding of basic behavior of interactions, cultural manners, and religious thoughts

OBJECTIVES:

1. Basic etiquettes serve as the cornerstone of respectful and harmonious interactions.
2. Significance of basic etiquettes in various aspects of life, including social, professional, and personal contexts.
3. Fundamental principles of polite behavior, individuals can foster positive relationships, navigate diverse environments with ease, and contribute to a more civilized and empathetic society.

Unit I:

Introduction Definition of basic etiquettes-Importance of etiquettes in communication and social cohesion.

Unit:II

Basic Etiquettes in Social Interactions Respect for others' feelings, opinions, and boundaries-Politeness, courtesy, and gratitude in everyday interactions. Active listening and empathy in conversations-Observing personal space and non-verbal cues

Unit:III

Basic Etiquettes in Professional Settings Professionalism and respect in the workplace-Punctuality and reliability in meetings and appointments Effective communication and collaboration with colleagues -Representing oneself and one's organization with integrity

Unit:IV

Basic Etiquettes in Personal Life Maintaining personal hygiene and grooming standards-Table manners and dining etiquette-Respecting cultural, religious, and social differences-Showing kindness and consideration in family and community settings.

Unit: IV

Challenges and Solutions.

Addressing challenges in practicing basic etiquettes in diverse environments-Strategies for overcoming barriers to etiquette adherence-Importance of continuous learning and adaptation in etiquette practices.

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B.COM CA

Office automation

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts

Course Objectives :

To provide an in-depth training in use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL)

UNIT IV

Presentation (MS Power Point)

UNIT V

Internet & Advanced Communication

Reference:

1.Fundamentals of computers - V.Rajaraman - Prentice- Hall of india
2.Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,cary N.Prague,Michael R.groh,Peter G.Aitken, and Lisa a.Bucki - Wiley India pvt.ltd.
3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.

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Leadership and Management Skills

20IACLSLMS

Course Objective:

The Module is designed to:

Help students to develop essential skills to influence and motivate others

Inculcate emotional and social Intelligence, and integrative thinking for effective leadership

Create and maintain an effective and motivated team to work for the society

Nurture a creative and entreprencurial mindset

Make students understand the personal values and apply ethical principles in professional and social contexts.

Course Outcomes:

Upon completion of the course, students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that effect their own leadership style and can create their leadership vision

2. Learn and demonstrate set of practical skills such as time management, self-management, handling conflicts, team leadership, etc.

3. Understand the basics of entrepreneurship and develop business plans

4. Apply the design thinking approach to leadership

5. Appreciate the importance of ethics and moral values for making of a balanced personality.

UNIT I-Leadership Skills

Understanding Leadership and its Importance

- What is leadership?
- Why Leadership required?
- Whom do you consider as an ideal leader?

b. Traits and Models of Leadership

- Are leaders born or made?
- Key characteristics of an effective leader
- Leadership styles
- Perspectives of different leaders

c. Basic Leadership Skills

- Motivation
- Teamwork
- Negotiation
- Networking

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UNIT II

-Managerial Skills a. Basic Managerial Skills

- Planning for effective management
- How to organiseteams?
- Recruiting and retaining talent
- Delegation of tasks
- Learn to coordinate
- Conflict management

b. Self Management Skills

- Understanding self-concept
- Developing self-awareness
- Self-examination
- Self-regulation

UNIT III

Entrepreneurial Skills

a. Basics of Entrepreneurship

- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

b. Creating Business Plan

- Problem identification and idea generation
- Idea validation
- Pitch making

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UNIT IV

Innovative Leadership and Design Thinking

i. Innovative Leadership

j. Concept of emotional and social intelligence

k. Synthesis of human and artificial intelligence

l. Why does culture matter for today's global leaders

b. Design Thinking

m. What is design thinking?

n. • Key elements of design thinking: - Discovery - Interpretation - Ideation - Experimentation - Evolution.

o. • How to transform challenges into opportunities?

p. • How to develop human-centric solutions for creating social good?

UNIT V-

Ethics and Integrity

k. Learning through Biographies

l. • What makes an individual great?

m. • Understanding the persona of a leader for deriving holistic inspiration

n. • Drawing insights for leadership

o. • How leaders sail through difficult situations?

p. b. Ethics and Conduct

q. • Importance of ethics

r. • Ethical decision-making

s. • Personal and professional moral codes of conduct

t. • Creating a harmonious life

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General Aptitude and Quantitative Ability

AIM: 2015SCAQ

1. An aptitude test is designed to assess what a person is capable of doing or to predict what a person is able to learn or do given the right education and instruction.
2. It represents a person's level of competency to perform a certain type of task.
3. Helps them to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.

COURSE OUTCOMES:

At the end of the course, students will learn

1. To assess academic potential or career suitability and may be used to assess either mental or physical talent in a variety of domains.
2. To assess what a person is capable of doing or to predict what a person is able to learn or do given the right education and instruction.
3. It represents a person's level of competency to perform a certain type of task.

UNIT-I

- Introduction
- Introduction to Aptitude Tests
- Diagnostic Tests
- Introduction to Speed Maths
- Quantitative Ability – Number Theory
- Numbers
- Properties of Numbers
- Concept of Multiples and Factors
- LCM and HCF
- Factorial Concept
- Last Digit Concept
- Remainders Concept

UNIT-II Quantitative Ability – Arithmetic - 1

- Percentage
- Ratio and Proportion
- Simple Interest and Compound Interest
- Profit Loss
- Discount
- Mixture and Allegation
- Questions from Company Papers will be discussed

UNIT-II Quantitative Ability – Arithmetic - 2

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- Speed Distance Time
- Time and Work
- Chain Rule
- Clocks and Calendars
- Averages
- Questions from Company Papers will be discussed

UNIT-III Quantitative Ability – Algebra

- Basic Terminologies in Algebra
- Equations
- Simple Equation
- Quadratic Equation
- Cubic Equation
- Functions
- Graphs
- Maxima and Minima
- Questions from Company Papers will be discussed

UNIT-IV Quantitative Ability – Modern Maths

- Set Theory
- Fundamental way of Counting
- Permutations and Combinations
- Probability
- Questions from Company Papers will be discussed
- Data Analysis
- Data Sufficiency

UNIT-V

1. Analytical and Logical Reasoning
   - Mono variate conditions
   - Multi variate conditions

   Puzzles
   - Coding
   - Decoding
   - Family tree
   - Direction sense
   - Alpha numeric
   - Brain teasers
   - Deductive Reasoning
   - Visual Sequence
   - Mathematical Reasoning

2. English Aptitude
   - Fill in the blanks
   - Comprehension
   - Odd man out
   - Phrases and Sentences
   - Sequencing
   - Basic Grammar
   - Meanings

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B.COM CA

Professional Skills

COURSE CODE
:201ACLSPSL

Course Objectives :

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue to partake in a successful career path
2. Prepare a good resume, prepare for interviews and group discussions
3. Explore desired career opportunities in the employment market in consideration of an individualSWOT

Course Outcomes :

At the end of this course the students will be able to:

1. Prepare their resume in an appropriate template without grammatical and other errors and usingproper syntax
2. Participate in a simulated interview
3. Actively participate in group discussions towards gainful employment
4. Capture a self - interview simulation video regarding the job role concerned
5. Enlist the common errors generally made by candidates in an interview

Unit I:

Resume Skills :

Preparation and Presentation

- Introduction of resume and its importance
- Difference between a CV, Resume and Bio data
- Essential components of a good resume ii. Resume skills : common errors
- Common errors people generally make in preparing their resume
- Prepare a good resume of her/his considering all essential componert

Unit II:

Interview Skills i. Interview Skills :

Preparation and Presentation

- Meaning and types of interview (F2F, telephonic, video, etc.)
- Dress Code, Background Research, Do's and Don'ts
- Situation, Task, Approach and Response (STAR Approach) for facing an interview
- Interview procedure (opening, listening skills, closure, etc.)
- Important questions generally asked in a job interview (open and closed ended questions) ii.Interview Skills : Simulation
- Observation of exemplary interviews
- Comment critically on simulated interviews

iii. Interview Skills :

Common Errors

- Discuss the common errors generally candidates make in interview
- Demonstrate an ideal interview

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Unit III:

Group Discussion Skills Meaning and methods of Group Discussion

- Procedure of Group Discussion
- Group Discussion- Simulation
- Group Discussion - Common Errors Unit IV: Exploring Career Opportunities Knowing yourself –personal characteristics
- Knowledge about the world of work, requirements of jobs including self-employment.
- Sources of career information
- Preparing for a career based on their potentials and availability of opportunities

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Interview Skills Training and Mock Test
201SSCIM

AIM:

The participants of this course will be able to know the meaning of interview skills in line with their organization and industry & acknowledge the importance and benefits of interview skills and techniques

COURSE OBJECTIVES

- Differentiate between Interview skills and techniques.
- Know the skills required and carry out effective interviews
- Have a structured process of hiring the right candidate
- Plan and prepare for the interviews (self and the panel)
- Learn to set the right expectations with the candidates

UNIT-I: Introduction to Interview Skills and Techniques

What are Interview Skills and Techniques-Importance and benefits of Interview Skills and Techniques Difference between Interview Skills and Techniques-Differentiate between soft and technical skills Importance of Interview Techniques: Hiring the right fit for the organization-Promoting growth and success for an employee-Understand the position you are hiring for-Understanding the role and responsibilities.

UNIT-II: Types of Interviews

Structured Interview – To ask the questions set in advance-Semi-Structured interview – To ask questions based on candidate's response-Unstructured interview – Having a list of topics but no questions to ask Screening – Preliminary assessment of the candidate's profile-Initial Discussion and fact-finding – Exploring skills, experience, and cultural fit-Telephonic Connect – In the interest of time and resources telephonically connect with the candidate-Behavioural – Interview to assess behavioural competencies to match the job requirement-Individual / Face to Face interview – Upon initial screening and finding fitment- Group/ Panel interview – Basis initial confirmation schedule interview with stakeholders.

UNIT-III: Planning and Preparing for the interview

Gathering needs from the hiring manager or department-Preparing job description-Analysing the candidate profile Making repository of questions-Collaborating with line managers-Aligning interview questions with the competency required-Schedule time for the interview and stick to the timelines-Module 5: Managing and Conducting the Interview.

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UNIT-IV :

Identifying Soft Skills

Negotiation skills-Communication skills-Positive attitude-Professionalism-Eye contact Building Rapport-Ability & willingness to perform the job.

UNIT-V

Skills Required for Interviewing a Candidate Assess the candidate's body language-Maintaining appropriate tone while interviewing-Being attentive and displaying active listening-Being unbiased during the interview-Giving positive feedback Evaluation and Decision Making-Maintaining a record of the interview. reviewing feedback-Using the scorecard during the interview- considering competency and other aspects-Referring interview notes-Making the decision-Checking references

COURSE OUTCOMES:

1. Gain the confidence to ask relevant questions – prepare, practice and update the process.
2. Gain access to the most competent talent in the market and hire them.
2. Reach the desired goal of success and maintain the position by reinforcing the right practices

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Community Engagement

201ACLSCET

Course Objectives:

- To develop an appreciation of rural culture, life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- Toapplyclassroomknowledgeofcoursestofieldrealitiesandthereby improvequalityoflearning

UNIT-I

Appreciation of Rural Society Rural lifestyle society, rural, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages"(Gandhi),rural infrastructure.

UNITII-Understanding rural economy &livelihood Agriculture, farming, landownership, water management, animal husbandry, non farm Ell hoods and art is as rural entrepreneurs, rural markets

UNIT-III

Rural Institutions Traditional rural organizations, Self-help Groups,Panchayati Raj institutions(Gram Sabha,GramPanchayat,StandingCommittees),localcivilsociety,localadministration

UNIT-IV

Rural Development Programmes History of rural development in India, current national programmes: Sarva Shisha Abhiyan, BetiBachao, BetiPadhao, AyushmanBharat, SwatchhBharat, PMAwaasYojana, Skill India ,Gram Panchayat Decentralized Planning, NRLM,MN REGA,etc

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TALLY ERP 9

20ITERP9

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts.

OBJECTIVES

To impart practical knowledge in TALLY and ensures that finance for the company is always in order and is correct at all given points of time.

UNIT – I

TALLY – Introduction to Tally Prime–Difference between Tally Prime and Tally ERP9 – New Features in Tally Prime

UNIT – II

Company Creation – Chart of Accounts

UNIT – III

Inventory Master and Inventory Vouchers in Tally

UNIT – IV

Payroll Master in Tally

UNIT – V

Reports in Tally

OUTCOME

Students are able to get placements in different offices as well as companies in Accounts departments.

REFERENCE BOOKS

1. Learn Tally Prime – Gaurav Agarwal

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Principles of Insurance
20198DSC55B

AIM

To develop the knowledge regarding the concepts of Principles of Insurance in students that is used for learning to maintain Insurance process.

OBJECTIVES

To impart practical knowledge in Principles of Insurance and ensures that finance for the company is always in order and is correct at all given points of time.

UNIT I:

RISK MANAGEMENT AND INSURANCE & INSURANCE TERMINOLOGY: (8 Hours)

Risk Management –Types of Risks

Actual and Consequential Losses

Management of Risk by Individuals and Insurers

Different Classes of Insurance

importance of Insurance

Insurance terminology-Fixing of Premiums- - Rider Premiums, Surrender value , Paid up value.

Reinsurance

Role of Insurance in Economic Development and Social Security

UNIT II:

INSURANCE CONTRACT AND INSURANCE PRODUCTS: (6 Hours)

Insurance Contract Terms

History of insurance

Principles of Insurance: Principle of Insurable Interest,

Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant **Information Disclosure,**

Principle of utmost Good Faith, Relevance of Proximate Cause

Types of Insurance (Personal, Commercial, Health, Life,etc)

Types of Insurance companies- Insurance Life Cycle (Underwriting, Policy Servicing,Claims, etc.)

UNIT-III:

INTRODUCTION TO LIFE INSURANCE POLICIES AND ANNUITY:

Meaning and evolution, growth, and principles of Life Insurance

Life Insurance Organizations in India

Competition and Regulation of Life Insurance

Types of Life Insurance Policies – Term, Whole Life, Endowment, Unit Linked and withor without Profit Policies

Insight into Annuity-Concept of Annuity - Types of Annuities– Fixed Annuity, Fixed IndexAnnuity, Variable Annuity

Insight into Group Insurance

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NON LIFE INSURANCE

Concept of Non-Life Insurance

Types of Non-Life Insurance products

Non-life policies features and Benefits

working of Healthcare Insurance

Key Challenges of Healthcare Industry

Difference Between Life Insurance and Non-Life Insurance

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Business Organization
20198DSC55C

AIM To develop the knowledge regarding the concepts of Business Organization

Students that is used for learning to organization structure

Objectives

The course aims to familiarize the students with the forms of business organization and contemporary issues.

Outcomes of this course are as follows:

1. examine the dynamics of the most suitable form of business organization in different situations
2. Evaluate the various elements affecting the business environment.
3. Analyses business models for different organizations.
4. Record and report emerging issues and challenges of business organizations.
5. Evaluate changes in the working pattern of modern organizations

Unit 1:

Introduction (12 hours) Business – Concept, nature and scope, business as a system, business objectives, business and environment interface, distinction between business, commerce and trade. Business ethics, social responsibilities of Business

Unit 2:

Business Enterprises (12 hours) Forms of Business Organization: Sole Proprietorship, Partnership firm, Joint Stock Company, One Person Company, Cooperative society, Limited Liability Partnership; Multinational Corporations; Choice of Form of Organization; Business Combination: Need and Objectives, Forms: Mergers, Takeovers and Acquisitions.

Unit 3:

Business Environment (12 hours) Meaning and significance of Business environment, Internal and external environment, Dimensions of Business Environment; Uncertainty and business; Environmental Analysis and Diagnosis, Environment scanning techniques: SWOT and ETOP.

Unit 4:

Entrepreneurship: Founding the Business (12 hours) Entrepreneur-Entrepreneurship-Enterprise; entrepreneurial ideas and opportunities in the contemporary business environment, Process of entrepreneurship; Forms of entrepreneurship; Skill India, Start-up India, Make in India, Globalization.

Unit 5: Contemporary Issues of Business Organizations (12 hours) Emerging Issues and Challenges; Innovation in Organizational Design; Learning Organizations, Workforce Diversity, Franchising, Outsourcing, and E-commerce; Government and business interface; Sustainability; Digitalization and Technological innovations

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Software Project Management
20198DSC55D

COURSE OBJECTIVES

To understand the fundamental principles of software project management. To have a good knowledge of responsibilities of project manager. To be familiar with the different methods and techniques used for project management.

UNIT 1 INTRODUCTION

Defining of Software Development Process - Process - Tailoring the Process - Improving the process discipline - Need for implementing discipline. Software Production Process - Identify the Software Model - Software Process Models : Waterfall Model, Prototyping Model, RAD Model, Incremental Model, Spiral Model, Component Assembly Model - Software Life Cycle.

UNIT 2 SOFTWARE DEVELOPMENT

Software Development Team - Three Vital Aspects of Software Project Management - The Team -Meaning of Leadership - Communicating in Harmony - Personality traits - Project Organizations. Project Planning: Top-Down and Bottom-Up Planning - Types of Activity - Project Duration : Schedule Monitoring Tools - Gantt Chart, PERT Chart, Critical Path.

UNIT 3 PROJECT REVIEW

Tracking Meetings - Recovery plans - Schedule Work & Escalation Meetings. Project Engineering:Product Requirements - Understanding the Customer Problem to solve - Initial Investigation. Strategies for determining information requirements, Information gathering Tools - Product Objectives.

UNIT 4 PROBLEM SOLVING

Product Specifications - Defining the Final Product - Data Flow Diagram, Data Dictionary, Structured English, Decision Trees, Decision Tables - Feasibility Study. Software Testing : Test Plan - Development Testing : Verification and Validation - General Testing Methods : White Box and Black Box Testing - Unit Testing - System Integration Testing - Validation Testing - System testing.

UNIT 5 SOFTWARE QUALITY

Software Quality - Quality Measures - FURPS - Software Quality Assurance - Software Reviews - Formal Technical Review (FTR) Formal Approaches to SQA - Software Reliability - Introduction to SQA - The Software Quality Assurance Plan - Formal approaches to SQA - Clean room Methodology.

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Data Mining Warehousing
20198DSC55E

COURSE OBJECTIVES:

1. To teach the basic principles, concepts and applications of data warehousing and data mining
2. To introduce the task of data mining as an important phase of knowledge recovery process
3. To familiarize Conceptual, Logical, and Physical design of Data Warehouses OLAP applicationsand OLAP deployment
4. To impart knowledge of the fundamental concepts that provide the foundation of data mining

UNIT - I

INTRODUCTION TO DATA MINING: Motivation, Importance, Definition of Data Mining, Kind of Data,Data Mining Functionalities, Kinds of Patterns, Classification of Data Mining Systems, Data Mining Task Primitives, Integration of A Data Mining System With A Database or Data Warehouse System, Major Issues In Data Mining, Types of Data Sets and Attribute Values, Basic Statistical Descriptions of Data, Data Visualization, Measuring Data Similarity. PREPROCESSING: Data Quality, Major Tasks in Data Preprocessing, Data Reduction, Data Transformation and Data Discretization, Data Cleaning and Data Integration.

UNIT - II

DATA WAREHOUSING AND ON-LINE ANALYTICAL PROCESSING: Data Warehouse basic

concepts, Data Warehouse Modeling - Data Cube and OLAP, Data Warehouse Design and Usage, Data Warehouse Implementation, Data Generalization by Attribute-Oriented Induction. DATA CUBE TECHNOLOGY: Efficient Methods for Data Cube Computation, Exploration and Discovery in Multidimensional Databases.

UNIT – III

MINING FREQUENT PATTERNS, ASSOCIATIONS AND CORRELATIONS: Basic Concepts,

Efficient and Scalable Frequent Item set Mining Methods, Are All the Pattern Interesting, Pattern Evaluation Methods, Applications of frequent pattern and associations. FREQUENT PATTERN AND ASSOCIATION MINING: A Road Map, Mining Various Kinds of Association Rules, Constraint- Based Frequent Pattern Mining, Extended Applications of Frequent Patterns.

UNIT - IV

CLASSIFICATION: Basic Concepts, Decision Tree Induction, Bayesian Classification Methods, Rule-Based Classification, Model Evaluation and Selection, Techniques to Improve Classification Accuracy: Ensemble Methods, Handling Different Kinds of Cases in Classification, Bayesian Belief Networks, Classification by Neural Networks, Support Vector Machines, Pattern-Based Classification, Lazy Learners (or Learning from Your Neighbors), Other Classification Methods.

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UNIT – V

CLUSTER ANALYSIS: Basic Concepts of Cluster Analysis, Clustering structures, Major ClusteringApproaches, Partitioning Methods, Hierarchical Methods, Density-Based Methods, ModelBased Clustering - The Expectation-Maximization Method, Other Clustering Techniques, Clustering High-Dimensional Data, Constraint-Based and User-Guided Cluster Analysis, Link-Based Cluster Analysis, Semi-Supervised Clustering and Classification, Bi-Clustering, Collaborative Clustering.

OUTLIER ANALYSIS: Why outlier analysis, Identifying and handling of outliers, DistributionBasedOutlier Detection: A Statistics-Based Approach, Classification-Based Outlier Detection, Clustering-Based Outlier Detection, Deviation-Based Outlier Detection, Isolation-Based Method: From Isolation Tree to Isolation Forest.

TEXT BOOKS: 1. Jiawei Han, MichelineKamber, Jian Pei (2012), Data Mining: Concepts and Techniques, 3 rdedition, Elsevier, United States of America.

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B.COM-Regulation

Universal Human
Values201ACLSUHV

Aim

This course aims at making learners conscious about universal human values in an integral manner, without ignoring other aspects that are needed for learner's personality development.

Course Objectives :
The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realize one's poteatials

Course Outcomes :
By the end of the course the learners will be able to: 1. Know about universal human values and understand the importance of values in individual, social circles, career path, and national life. 2. Learn from case studies of lives of great and successful people who followed and practiced human values andachieved self-actualization. 3. Become conscious practitioners of human values. 4. Realize their potential as human beings and conduct themselves properly in the ways of the world.

Unit I

• Introduction: What is love? Forms of love for self, parents, family, friend, spouse, community, nation,humanity and other beings, both for living and non-living
• Love and compassion and inter-relatedness
• Love, compassion, empathy, sympathy and non-violence
• Individuals who are remembered in history for practicing compassion and love.
• Narratives and anecdotes from history, literature including local folklore
• Practicing love and compassion: What will learners learn/ gain if they practice love and compassion?What will learners lose if they don't practice love and compassion?
• Sharing learner's individual and/or group experience(s)
• Simulated Situations
• Case studies

Unit II

• Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity, sincerity, honestyamong others)
• Individuals who are remembered in history for practicing this value
• Narratives and anecdotes from history, literature including local folklore
• Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if theydon't practice it?
• Learners' individual and/or group experience(s)
• Simulated situations
• Case studies

Unit III

• Introduction: What is non-violence? Its need. Love, compassion, empathy, sympathy for others as pre-requisites for non-violence
• Ahimsa as non-violence and non-killing
• Individuals and organisations that are known for their commitment to nonviolence

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- Narratives and anecdotes about non-violence from history,and literature including local folklore
- Practicing non-violence: What will learners learn/gain if they practice nonviolence?What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Case studies

Unit IV

- Introduction: What is righteousness?
- Righteousness and dharma, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What willlearners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

Unit V

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organizations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if theydon't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulated situations
- Case studies

Unit VI

Introduction: What is service? Forms of service for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress or disaster.

- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes dealing with instances of service from history, literature including localfolklore
- Practicing service: What will learners learn/gain gain if they practice service? What will learners loseif they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations

Case studies

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Unit VII

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restrain and Ways of overcoming greed. Renunciation with action as true renunciation
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature, including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Case studies

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Communication Skills

Course Code - 201ACLSCOS

objectives:

1. Identify common communication problems that may be holding learners back
2. Identify what their non-verbal messages are communicating to others
3. Understand role of communication in teaching-learning process
4. Learning to communicate through the digital media
5. Understand the importance of empathetic listening
6. Explore communication beyond language.

Course Outcome:

By the end of this program, participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Unit I

- Techniques of effective listening
- Listening and comprehension
- Probing questions
- Barriers to listening

Unit II

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- Common Errors

Unit III

- Techniques of effective reading
- Gathering ideas and information from a given text
  - i. Identify the main claim of the text
  - ii. Identify the purpose of the text
  - iii. Identify the context of the text
  - iv. Identify the concepts mentioned
  - v. Evaluating these ideas and information
  - vi. Identify the arguments employed in the text ii. Identify the theories employed or assumed in the text
  - vii. Interpret the text

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viii. To understand what a text says

ix. To understand what a text does

x. To understand what a text means

Unit IV

- Clearly state the claims
- Avoid ambiguity, vagueness, unwanted generalizations and oversimplification of issues
- Provide background information
- Effectively argue the claim
- Provide evidence for the claims
- Use examples to explain concepts
- Follow convention
- Be properly sequenced
- Use proper signposting techniques
- Be well structured

i. Well-knit logical sequence

ii. Narrative sequence

iii. Category groupings

iv. Different modes of Writing: E-mails

v. Proposal writing for Higher Studies

vi. Recording the proceedings of meetings

vii. Any other mode of writing relevant for learners

Unit V

- Role of Digital literacy in professional life
- Trends and opportunities in using digital technology in the workplace
- Internet Basics
- Introduction to MS Office tools

i. Paint

ii. Office

iii. Excel

iv. Power point

Reference:

1. Sen Madhucchanda (2010), An Introduction to Critical Thinking, Pearson.Delhi

2. Silvia P. J. (2007), How to Read a Lot, American Psychological Association, Washington DC

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OFFICE AUTOMATION

201ACLSOAN

Course Objectives :

To provide an in-depth training in the use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with the internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL)

UNIT IV

Presentation (MS Power Point)

UNIT V

Communicating with Internet

Reference:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of India

2. Microsoft Office 2007 Bible - John Walkenbach, Herb Tyson, Faithe Wempen, cary N. Prague,Michael R groh, Peter G.Aitken, and Lisa a.Bucki -Wiley India pvt. ltd.

3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013

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Leadership and Management Skills

201ACLSLMS

Course Objective:

The Module is designed to:

Help students to develop essential skills to influence and motivate others

Inculcate emotional and social intelligence, and integrative thinking for effective leadership

Create and maintain an effective and motivated team to work for the society

Nurture a creative and entrepreneurial mindset

Make students understand the personal values and apply ethical principles in professional and social contexts.

Course Outcomes:

Upon completion of the course, students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision

2. Learn and demonstrate set of practical skills such as time management, self-management, handling conflicts, team leadership, etc.

3. Understand the basics of entrepreneurship and develop business plans

4. Apply the design thinking approach to leadership

5. Appreciate the importance of ethics and moral values for making of a balanced personality.

UNIT I-Leadership Skills

Understanding Leadership and its Importance

- What is leadership?
- Why Leadership required?
- Whom do you consider as an ideal leader?

b. Traits and Models of Leadership

- Are leaders born or made?
- Key characteristics of an effective leader
- Leadership styles
- Perspectives of different leaders

c. Basic Leadership Skills

- Motivation
- Teamwork
- Negotiation
- Networking

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UNIT II

-Managerial Skills a. Basic Managerial Skills

- Planning for effective management
- How to organiseteams?
- Recruiting and retaining talent
- Delegation of tasks
- Learn to coordinate
- Conflict management

b. Self Management Skills

- Understanding self-concept
- Developing self-awareness
- Self-examination
- Self-regulation

UNIT III

Entrepreneurial Skills

a. Basics of Entrepreneurship

- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

b. Creating Business Plan

- Problem identification and idea generation
- Idea validation
- Pitch making

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UNIT IV

Innovative Leadership and Design Thinking

a. Innovative Leadership

b. Concept of emotional and social intelligence

c. Synthesis of human and artificial intelligence

d. Why does culture matter for today's global leaders

b. Design Thinking

c. What is design thinking?

f. • Key elements of design thinking: - Discovery - Interpretation - Ideation - Experimentation - Evolution.

g. • How to transform challenges into opportunities?

h. • How to develop human-centric solutions for creating social good?

UNIT V-

Ethics and Integrity

a. Learning through Biographies

b. • What makes an individual great?

c. • Understanding the persons of a leader for deriving holistic inspiration

d. • Drawing insights for leadership

e. • How leaders sail through difficult situations?

f. b. Ethics and Conduct

g. • Importance of ethics

h. • Ethical decision-making

i. • Personal and professional moral codes of conduct

j. • Creating a harmonious life

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Professional Skills:

20IACLSPSL

Course Objectives :

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue to partake in a successful career path
2. Prepare a good resume, prepare for interviews and group discussions
3. Explore desired career opportunities in the employment market in consideration of an individualSWOT

Course Outcomes :

At the end of this course the students will be able to:

1. Prepare their resume in an eppropriate template without grammatical and other errors and using proper syntax
2. Participate in a simulated interview
3. Actively participate in group discussions towards gainful employment
4. Capture a self - interview simulation video regarding the job role concerned
5. Enlist the common errors generally made by candidates in an interview

Unit I:

Resume Skills :

Preparation and Presentation

- Introduction of resume and its importance
- Difference between a CV, Resume and Bio data
- Essential components of a good resume ii. Resume skills : common errors
- Common errors people generally make in preparing their resume
- Prepare a good resume of her/his consicering all essential component

Unit II:

Interview Skills i. Interview Skills :

Preparation and Presentation

- Meaning and types of interview (F2F, telephonic, video, etc.)
- Dress Code, Background Research, Do's and Don'ts
- Situation, Task, Approach and Response (STAR Approach) for facing an interview
- Interview procedure (opening, listening skills, closure, etc.)
- Important questions generally asked in a job interview (open and closed ended questions) ii.Interview Skills : Simulation
- Observation of exemplary interviews
- Comment critically on simulated interviews

iii. Interview Skills :

Common Errors

- Discuss the common errors generally candidates make in interview
- Demonstrate an ideal interview

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Unit III:

Group Discussion Skills Meaning and methods of Group Discussion

- Procedure of Group Discussion
- Group Discussion- Simulation
- Group Discussion - Common Errors Unit IV: Exploring Career Opportunities Knowing yourself –personal characteristics
- Knowledge about the world of work, requirements of jobs including self-employment.
- Sources of career information
- Preparing for a career based on their potentials and availability of opportunities

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Community Engagement

20IACLSCET

Course Objectives:

- To develop an appreciation of rural cultural life-style and wisdom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

Course Outcomes:

After completing this course, students will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and the bond so mutuality with the local community

UNIT I

Appreciation of Rural Society Rural lifestyle, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages" (Gandhi), rural infrastructure

UNIT II

Understanding rural economy & livelihood Agriculture, farming, land ownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets

UNIT III

Rural Institutions Traditional rural organizations, Self-help Groups, Panchayat Raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration

UNIT IV

-Rural Development Programmes History of rural development in India, current national programmes, Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swachh Bharat, PM AwaasYojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

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TALLY ERP 9
201TERP9

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts.

OBJECTIVES

To impart practical knowledge in TALLY and ensures that finance for the company is always in order and is correct at all given points of time.

UNIT – I

TALLY – Introduction to Tally Prime –Difference between Tally Prime and Tally ERP 9 – New Features in Tally Prime

UNIT – II

Company Creation – Chart of Accounts

UNIT – III

Inventory Master and Inventory Vouchers in Tally

UNIT – IV

Payroll Master in Tally

UNIT –V

Reports in Tally

OUTCOME

Students are able to get placements in different offices as well as companies in Accounts departments.

REFERENCE BOOKS

1. Learn Tally Prime – Gaurav Agarwal

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Inventory Management

20161DSC55B

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts.

OBJECTIVES

To impart practical knowledge in inventory management and ensures that finance for the company is always in order and is correct at all given points of time.

- **Unit I :** Inventory Management:
- Concept, Meaning, Inventory Management Process, Why inventory management important? Principles of Inventory Management, How to improve inventory management, perpetual inventory system, what are inventory costs, Role of Inventory Management, Methods of Inventory Management, Benefits of good Inventory Management.
- Unit II

Concept and Valuation of Inventory : Concept and Objectives of Inventory, Need for holding Inventory, Planning and controlling Inventory levels, Effects of excess inventory on business, Product Classification, Product Coding, Lead Time, Replenishment Methods

- Unit III :

Management of Working Capital : Concept, Meaning, Classification, Factors determining Working Capital requirements, Sources of Working Capital, Need of Working Capital, Working Capital Ratio–current ratio, quick ratio, absolute liquid ratio, cash ratio and working capital turnover ratio.

- **Unit IV** : Inventory Control : Concept and Meaning of Inventory Control, Objectives and Importance and Essentials of Inventory Control, Types of Inventory, Techniques of Inventory Control–EOQ, ROP, ABC, VED, JIT, Determination of Inventory levels, Impact of Inventory Inaccuracy, Disposal of Obsolete and Scrap items, Reasons for Obsolescence, Control of Obsolescence, Control of Scrap.

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Working capital management20161DSC55C

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts.

OBJECTIVES

To impart practical knowledge in working capital management and ensures that finance for the company is always in order and is correct at all given points of time.

UNIT – I

Principles of Working capital: Introduction to Working capital, Concept of Working Capital.

UNIT – II

Need for Working capital, Concepts and its determinants, estimation of working capital needs.

UNIT – III

Accounts Receivables Management and Factoring: Credit Policy, Nature and Goals, credit evaluationof individual accounts and its monitoring receivables, factoring: types and benefits.

UNIT – IV

Inventory Management: Nature of Inventories, Need to hold inventories, objectives of inventory management, inventory Management techniques, inventory management process.

UNIT – V

Cash Management: Facets of Cash Management, Motive for holding cash, managing cash collectionand disbursements, investing surplus, cash in marketable securities, cash budgeting

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Consumer Protection

20161DSC55D

AIM

To develop the knowledge regarding the concepts of financial accounting in students that is used for learning to maintain accounts.

OBJECTIVES

To impart practical knowledge in consumer protection and ensures that finance for the company is always in order and is correct at all given points of time.

Objective:

This paper seeks to familiarize the students with of their rights as a consumer, the social framework ofconsumer rights and legal framework of protecting consumer rights. It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards. The student should be able to comprehend the business firms' interface with consumers and the consumer related regulatory and business environment.

Unit 1:

Conceptual Framework

Consumer and Markets: Concept of Consumer, Nature of markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP) and Local Taxes, Fair Price, labeling and packaging Experiencing and Voicing Dissatisfaction: Consumer Satisfaction/dissatisfaction-Grievances- complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Internal and External Complaint handling: Corporate Redress Systems and Public Redress Systems

Unit 2:

The Consumer Protection Act, 1986 (CPA) 13 Lecture Objectives and Basic Concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods and services, unfair trade practice, restrictive trade practice. Organizational set-up under the Consumer Protection Act: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels, Basic Consumer Rights; Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial). Role of Supreme Court under the CPA

Unit 3:

Grievance Redress Mechanism under the Consumer Protection Act, 1986: Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy to be provided; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties, Seven Leading Cases decided under Consumer Protection Act: Medical Negligence; Banking; Insurance; Housing & Real Estate; Electricity, Water and Telecom Services; Education; Defective Product; Unfair Trade Practice.

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Unit 4:

Industry Regulators and Consumer Complaint Redress Mechanism 13 Lectures i. ii. iii. iv. v. vi. Banking: RBI and Banking Ombudsman Insurance: IRDA and Insurance Ombudsman Telecommunication: TRAI Food Products: FSSAI (an overview) Electricity Supply: Electricity Regulatory Commission Advertising: ASCI

Unit 5: Consumerism in India Consumer Movement in India: Evolution of Consumer Movement in India, Formation of consumer organizations and their role in consumer protection, recent developments in Consumer Protection in India, National Consumer Helpline, Citizens Charter, Product testing. Quality and Standardization: Voluntary and Mandatory standards, Role of BIS, Indian Standards Mark(ISI), Agmark, Hallmarking, Licensing and Surveillance: ISO: An overview.

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Fundamentals of Investment
20161DSC55E

AIM To develop the knowledge regarding the concepts of financial accounting is students that is used for learning to maintain accounts

Objective:

To familiarize the students with different investment alternatives, introduce them to the framework oftheir analysis and valuation and highlight the role of investor protection.

Unit I Investment Environment

The investmen decision process, Types of Investments – Commodities, Real Estate and Financial Assets (Equity, Mutual funds, Debt), the Indian securities market, the market participants (Stock exchanges, Stock brokers, Clearing House, Depositories, Depository Participants, FIIs, Domestic institutional investors, Individual investors), Online and offline trading in securities, security market indices, sources of financial information, Concept of return and risk, Impact of Taxes and Inflation on returns.

Unit II Analysis of Equity and Debt Instruments

(a) Fixed Income Securities Bond features, types of bonds, estimating bond yields, Bond Pricing, typesof bond risks, default risk and credit rating, Bond market indices.
(b) Approaches to Equity Analysis Introduction to Fundamental Analysis, Technical Analysis, dividend capitalisation models, and price-earnings multiple approach to equity valuation, Intrinsic value, Price to Book value ratio.

Unit III Portfolio Analysis and Financial Derivatives

Portfolio and Diversification, Portfolio Risk and Return; Mutual Funds; Introduction to Financial Derivatives; Financial Derivatives Markets in India

Unit IV: Investor Protection

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, Insider trading, Investor awareness and activism.

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Consumerism
20198DSC64B

Objectives The primary objectives are to protect consumers from unfair trade practices, ensure the availability of accurate information, provide quick and accessible remedies for consumer disputes, and promote consumer awareness.

Technology-driven Consumer Behaviour

- The marketing concept
- Exchange between consumers and marketers
- Customer value, satisfaction and retention
- The role of consumer behaviour and consumer decision-making

Segmentation, Targeting and Positioning

- Market segmentation and effective targeting
- Bases for market segmentation, including demographics, social class, social status, benefit, behavioural targeting, product usage and location
- Implementing segmentation strategies

Consumer Motivation and Personality

- Dynamics of motivation
- System of needs
- Goals
- Measurement of motives
- Nature and theories of personality
- Personality traits and consumer behaviour
- Self and self-image

Consumer Perception

- The elements of perception
- Perceptual selection
- Perceptual interpretation: stereotyping
- Consumer imagery
- Perceived quality and perceived risk

Consumer Learning

- Elements of consumer learning
- Behavioural learning theories
- Observational learning
- Cognitive learning theories
- Consumer involvement

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Business Communication
20198DSC64C

Course Objectives:

1. To develop awareness of the complexity of the communication process
2. To develop effective listening skills in students so as to enable them to comprehend instructions andbecome a critical listener.

UNIT I

Introduction – Definition, Characteristics and need for communication – Importance of effective communication – Process, Principles of Communication - Barriers of communication. UNIT II

Means of communication – Oral and Written Communication – Flow of Communication –Types of Communication – Non Verbal Communication.

UNIT III

Introduction to Business Correspondence – Structure Layout – Leters of Enquiries, Offers, Quotations and Tenders – Orders , its execution and Cancellation Letters – Sales Letters.

UNIT IV

Bank Correspondence – Letter between banker and customer. Letter between Head office and Branch Office. Letter between Customer and banker. Insurance Correspondence – Fire, Marine, General and Life Insurance. Export and Import Correspondence.

UNIT V

Reports - Structure and Layout – Business Report Writing – Reports by Individuals, Committees, Press Reports, Market Reports – Proposal Writing. Technology – Aided Business Communication – Internet, E-Mail, Web-based Communication. IT Trends in Communication.

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Cloud Computing
20198DSC64D

AIM:

To provide a strong foundation in Developing Cloud Services.

OBJECTIVES:

- To understand the concept of Cloud Computing.
- To get an idea about Sharing Files.

UNIT I

Understanding Cloud Computing: An introduction to Cloud Computing – Computing in the Cloud – Developing Cloud Services.

UNIT II

Cloud Computing for the Family – Cloud Computing for the Community – Cloud Computing for the Corporation.

UNIT III

Collaborating on Calendars, Schedules and Task Management – On Event Management – On Contact Management – On Project Management – On Word Processing – On Spreadsheets – On Databases – On Presentations

UNIT IV

Storing and Sharing Files and other online content – Sharing Digital Photographs – Controlling it all with Web-Based Desktops.

UNIT V

Introduction to VMWare Simulator

Basics of VMWare, advantages of VMware virtualization, using VMware workstation, creating virtual machines-understanding virtual machines, create a new virtual machine on local host, cloning virtual machines, virtualize a physical machine, starting and stopping a virtual.

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Internet Technologies
20198DSC64E

Objectives:

IT goals generally fit into the following categories: Automation and integration: To improve efficiency,productivity, and how tools and platforms work together. Business processes and communication: To improve workflows and collaboration.

Unit 1

Introduction: Network address translation, Subnet Masking. Difference between Intranet and Internet, Working of Internet, Dynamic and Static Routing. Domain Name Server , networking tools – ipconfig, ping, net stat, trace route.

Unit 2

Introduction to Internet Protocols: HTTP, HTTPS, FTP, SMTP, IMAP, POP3, VoIP.

Unit 3

Web Servers: Introduction, Working, Configuring, Hosting and Managing a Web server, **Proxy Servers:** Introduction, Working, Type of Proxies, setting up and managing a proxy server Client-side Technologies, Server-side Technologies and hybrid technologies.

Unit 4

Javascript, jQuery, JSON, NODE.js, BOOTSTRAP. Introduction to forums, blogging, portfolio, developing a responsive website, Combining Web Applications and Mobile Applications.

Unit 5

Search Engines – components, working, optimization, Crawling, BOTS.

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M.COM-Regulation

Brand Management
20261SEC33

AIMS:

The aim of branding a product or service is the same everywhere in the world.

OBJECTIVE :

I. Create identification and brand awareness.
II. Guarantee a certain level of quality, quantity, and satisfaction of a product or service.
III. Help in the promotion of the product.

UNIT I

Brand- concept – Evolution, perspectives, anatomy, types of brand names, brand name associations, Brands Vs Products, Advantages of Brands to consumers & firms. Brand elements: Components & choosing brand elements. Branding challenges & opportunities.

UNIT II

Brand positioning – Basic concepts – alternatives – risks – Brands & customers – Strategies for positioning the brand for competitive advantage – Points of parity – Points of difference.

Buying decision perspectives on consumer behaviour. Building a strong brand – Method & implementation.

UNIT III

Brand Image, image dimensions, brand associations & image. Brand identity – perspectives, levels, and primer. Managing Brand image – stages – functional, symbolic & experiential brands. Brand Equity – Sources of Equity. Brand Equity models. Brand audit. Brand Loyalty & sub brands.

UNIT IV

Leveraging Brands – Brand extensions, extendibility, merits & demerits, Line extensions, line trap – Co-branding & Licensing Brands. Reinforcing and Revitalization of Brands – need.

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methods. Brand Architecture – product, line, range, umbrella & source endorsed brands. Brand Portfolio Management.

UNIT V

Brand valuation – Methods of valuation, implications for buying & selling brands. Applications – Branding industrial products, services and Retailers – Building Brands online. Indianisation of Foreign brands & taking Indian brands global – Issues & Challenges.

OUTCOMES:

I. Understand key principles of branding.
II. Explain branding concepts and ideas in their own words.
III. Understand and conduct the measurement of brand equity and brand performance.
IV. Practically develop a brand, including positioning and communication.

REFERENCE BOOKS:

1. Kevin Lane Keller, Strategic Brand Management, PHI Pearson, New Delhi

2. Kapferer, Strategic Brand Management, Kogan Page, New Delhi.

3. Harsh Verma, Brand Management, Excell Books, New Delhi.

4. Majumdar, Product Management in India, PHI

5. Seetapan, Brand Positioning, Tata McGraw Hill

6. Rameshkumar, Managing Indian Brands, Vikas

7. Chandrasekar, Product Management, Himalaya

8. A Ananda&Prasanna Mohan Raj – Brand Management – Vijay Nicole Imprints Pvt. Ltd., Chennai

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Customer Relationship Management
20261DSC44A

COURSE OBJECTIVE:

The paper is designed to impart the skill based knowledge of Customer Relationship Management. The purpose of the syllabus is to not just make the students aware of the concepts and practices of CRM in modern businesses but also enable them to design suitable practices and programs for the company they would be working.

UNIT I

INTRODUCTION Definitions – Concepts and Context of relationship Management – Evolution - Transactional Vs Relationship Approach – CRM as a strategic marketing tool – CRM significance to the stakeholders.

UNIT II UNDERSTANDING CUSTOMERS Customer information Database – Customer Profile Analysis- Customer perception, Expectations analysis – Customer behavior in relationship perspectives; individual and group customer's - Customer life time value – Selection of Profitable customer segments.

UNIT III CRM STRUCTURES Elements of CRM – CRM Process – Strategies for Customer acquisition –Retention and Prevention of defection – Models of CRM – CRM road map for business applications.

UNIT IV Mechanics of CRM Strategic CRM planning process – Implementation issues – CRM Tools-Analytical CRM – Operational CRM – Call center management – Role of CRM Managers - e CRMSolutions – Data Warehousing – Data mining for CRM – an introduction to CRM software packages.

UNIT -V

Managing Networks for CRM Business Networks, Network Position, SupplierNetworks,Distribution Networks, Management of Networks, Supplier Relationships, Product Development, SupplierAccreditation Programmes, Process Alignment, E Procurement, Partners in Value Creation, BenchmarkingPartners, Customer Advocacy Groups, Sponsors, Partners in Value Delivery

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Business Environment
20261DSC15C

Course Code	Course Title	L	T	P	C
20190AEC25	BUSINESS ENVIRONMENT	4	0	0	4

AIM: To enable the learner to understand the various business and economic environments in a changing business scenario.

UNIT-I

Business environment- concept- significance- factors- environmental influence on business.

UNIT-II

Social and cultural environment- demographic trend- Indian social structure- impact on business- interplay of various systems.

UNIT-III

Political environment- directive principles of state policy-centre- state relations- impact on business- economic environment- sectors of economy and their significance- agriculture, industry- service- multinational corporations- meaning- importance- advantages- weakness.

UNIT-IV

Technological environment- choice of technology- problems in selecting appropriate technology- importance to business- social responsibility- meaning- importance- responsibility towards various interest groups.

UNIT-V

Economic planning and development- government and planning- industrial policies and promotion schemes- government policy and SSI.

References:

- Francis Cherunilam- "Business Environment".
- Aswathappa K, "Essentials of Business Environment".
- Garg VK, "Economic Environment of Business".
- Ahuja Girat D, Government and Business.

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Computer Application in Business

AIM: 20261DSC15D

To apply the computer techniques for the various business activities.

OBJECTIVES:

I. To study the fundamental of the computers.
II. To understand data processing techniques, concepts of programming languages.

UNIT –I

Introduction to Computer – Generation of computer – Characteristic of computer – Area of Applications – Components of Computer.

UNIT- II

Objectives of windows – introduction to logging of desktop and task bar – Creation of file and folder –windows explorer – find option – shortcut – briefcase running applications – customization.

UNIT – III

Word – Objectives – introduction to word – creating word – document – creating business letters – formatting documents –word count – thesaurus – Mail merge – Excel – Objectives – Introduction to Spreadsheet – creating worksheet – Editing work sheet – charts – applications of financial and statistical functions – Shorting data – filtering data.

UNIT – IV

Tally – introduction – objectives – fundamentals of computerized accounting – principal of accounting – Computerized accounting vs. Manual accounting – Tally advances – introduction to inventory.

UNIT – V

Introduction to E- Commerce – scope – Issues and impact of E- Commerce classification of E-Commerce applications and benefit of E-Commerce – Advantages & Disadvantages of E-commerce – technology and framework of E-Commerce – E-Payment –EFT- Banking applications.

OUTCOME:

- Study the development of computers and their components in each stage.
- Develop an idea of software, programming language and operating system.
- Study the concept of developing database and its maintenance using computers in a business Concern
- Analyze the importance of management information system and networking in a business.

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Managerial Economics
20261DSC15E

AIM: Economics is inevitable to business and hence to teach basic of economics tostudents of Business Administration

COURSE OBJECTIVES

1. To ecucate the students to understand the fundamentals of economics
2. To understand the application of economics in business decisions
3. To familiarize the Students with economic tools for business analysis.

UNIT I

Introduction – Natural & Scope of Managerial Economics – Significance of Managerial Economics.

UNIT II

Demand Analysis – Basic Concepts and Tools for Analysis of Demand – Demand forecasting.

UNIT III

Cost Concepts and Cost Analysis – Production Function - Cost Price – Output Relations.

UNIT IV

Price and Output Decisions under different Market Structures Perfect

Competition – Monopoly – Monopolistic Competition – Oligopoly – Pricing Policy –Pricing Methods and Approaches – Product Line Pricing – Price Forecasting.

UNIT V

National Income-definition, measurement – Factors – difficulties in measurement. GDP-NDP-Business cycle- phases – Inflation- types and controlmeasures. Managerial Economics in the Context of Globalization.

TEXT BOOK

1. Dr. Sankaran S., "Managerial Economics", Margham Publications, 2099.References:

1. Varshney & Maheswari, "Managerial Economics", Sultan Chand & Sons, 2007. 2. Victor J. Mote & Samuel Paul, "Managerial economics", Tata McGraw-Hill Education,2077

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Principles of Marketing
20261DSCI5F

OBJECTIVES

- To know the concept and functions of marketing
- To understand the importance of market segmentation
- To examine the stages of new product development
- To gain knowledge on the various advertising medias
- To analyse the global market environment

UNIT – I

Introduction to Marketing

Meaning–Definition and Functions of Marketing– Evolution of Marketing Concepts– Marketing Orientation–Innovations in Modern Marketing, Marketing Management: Definitions–Functions – Role and Importance of Marketing - Classification of Markets - Niche Marketing - Characteristics of Niche Marketing – Local Marketing – Green Marketing.

UNIT – II - Market Segmentation

Concept – Benefits –Types– Geographic – Demographic – Psychographic – Behavioural - Marketing Mix – Definition – 4 P's of Marketing Mix – Introduction to Consumer Behavior – Purchase Decision – Post Purchase Behaviour – Consumer Buying Decision Process – Motives & Needs, Freud's Theory of Motivation

UNIT III - Product & Price

Definition – Product Mix – Introduction to Stages of New Product Development – Product Life Cycle – Sales Forecasting – Methods –Criteria for a Good Forecasting – Pricing–Objectives – Factors Influencing Pricing – Kinds of Pricing – Resale Price Maintenance

UNIT IV - Promotions and Distributions

Communication Mix – Communication Process –Advertising–Media–Kinds of–Advertising Media– Sales Promotion – Personal Selling–Classification of Salesmanship - Channel Members– Types–Channel of Distribution for Consumer Goods – Channels of Distribution for Industrial Goods.

UNIT V - Competitive Analysis and Strategies

Balancing Customer and Competitor Orientations–Global Market Environment–Social Responsibility and Marketing Ethics, Citizen and Publications to Regulate Marketing –Recent Trends in Marketing– A Basic Understanding of E–Marketing–E-Tailing–Consumerism– Market Research–MIS and Marketing Regulation

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Elements of Insurance
20261DSC25C

OBJECTIVES

- To highlight the importance of insurance and its basic concepts.
- To make the students aware of various insurance and to impact of economic development
- To enable the students to prepare procedure regarding settlement of policy claims
- To understand the students various Principles of life Insurance, marine, fire, Medical insurance etc.
- To aware the students know Principles of life insurance and various kinds

UNIT – I

INTRODUCTION TO INSURANCE :

Introduction to insurance: purpose and need of insurance – insurance as a social security tool – Insurance and economic development – types of insurance.

UNIT – II

LICENSE FOR AGENT :

Procedure for becoming an agent: Pre-requisite for obtaining a license – duration of license – cancellation of license – revocation or suspension/termination of agent appointment – code of conduct – unfair practices.

UNIT - III

REGULATIONS FOR AGENT :

Fundamentals of agency - definition of an agent – agents regulations – insurance intermediaries – agents' compensation – IRDA

UNIT - IV

FUNCTIONS OF AGENT :

Functions of the agent: proposal form and other forms for grant of cover – financial and medical underwriting – material information – nomination and assignment – procedure regarding settlement of policy claims.

UNIT -V

TYPES OF INSURANCE :

Fundamentals/Principles of life insurance/marine/fire/medical/general insurance Contracts of various kinds – insurable interest – Actuarial science.

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Corporate Social Responsibility
20261DSC25D

Objectives:

- To facilitate the student to the gain in depth knowledge in the concepts and models of Corporate Social Responsibility (CSR) and the role of business in sustainable development
- To impart knowledge on various provisions of Companies Act 2013 related to CSR in India and highlight the significance of CSR.

UNIT I

Introduction to CSR: Meaning and Definition- History of CSR- Concepts of Charity- Corporate philanthropy- Corporate Citizenship- Sustainability and Stakeholder Management- CSR through triple bottom line and Sustainable Business- relation between CSR and Corporate governance -Environmental aspect of CSR Chronological evolution and Models of CSR in India- Carroll's model Major codes on CSR Initiatives in India.

UNIT 2

International Framework for Corporate Social Responsibility: Millennium Development Goals. Sustainable Development Goals- Relationship between CSR and MDGs. United Nations (UN) Global Compact 2011 - UN guiding principles on business and human rights - OECD CSR policy tool - ILO tri-partite declaration of principles on multinational enterprises and social policy.

UNIT 3

CSR-Legislation in India : Section 135 of Companies Act 2013-Steps for CSR Activities under Schedule VII- Appointment of Independent Directors on the Board - Computation of Net Profit's Implementing Process in India.

UNIT 4 - The Drivers of CSR in India: Market based pressure and incentives- civil society pressure, the regulatory environment in India Counter trends- Review of current trends and opportunities in CSR- Review of successful corporate initiatives and challenges of CSR.

UNIT 5 - Identifying key Stakeholders of CSR: Role of Public Sector in Corporate, government programs- Nonprofit and Local Self Governance in implementing CSR-Global Compact Self-Assessment Tool- National Voluntary Guidelines by Govt. of India- Roles and responsibilities of corporate foundations.

Reference Books:

1. William B. Werther Jr. and David Chandler, Strategic Corporate Social Responsibility: Stakeholders in a Global Environment, Second Edition, Sage Publications, 2011
2. Sanjay K Agarwal, Corporate Social Responsibility in India, Sage Publications, 2008

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Import and Export Management

Objectives: 20261DSC25E

To acquaint students with knowledge of export–import procedures
To train students in export and import documentation

To expose knowledge of World Logistics.

UNIT-1

Export Offer and Documents, Export Contract and Negotiation with Commercial Banksf or Availing Export Finance and Methods of Export Finance Export Order – Processing of Export Order – EXIM Documentation – International Business Contracts – Dispute – Methods of Financing Experts – Letter of Credit – Other Methods of Payment for Export –

Packing and Post Shipment Finance – Other Long-term Methods of Payment – Discrepancies in Export Documents – Negotiations of Documents with Commercial Banks –Uniform custom and practices(UCP).

UNIT-2

Insurance, Foreign Exchange Risk and Forwarding Agents Business Risk – Cargo and Foreign Exchange Risk, Foreign Exchange – Cargo Insurance, ECGC – Foreign Exchange Regulations

– Quality Control, Inspection and

UNIT-3

Cargo Shipment, Custom Clearance, Export-Import Licenses and Other Export Incentives Shipment of Export Cargo, Excise and customs clearance of cargo, Custom Clearance of Import Cargo, Procedures for availing export incentives – Duty draw backs - Export

license –Import License and other export incentives from goverement of India and from Institutions.

UNIT-4

World Shipping, Structure, Liners, and Tramps, ConferenceSystemandFreight Containerization-Container Corporation of India-Conferences on Sea Transport.

UNIT-5

Indian Shipping, Concept o Dry Port, Air Transport, Freight rate structure ExportProceduresinAirportandSeaPort –TariffandNon-tariffforexporters.

References Books:

Bhalla, V.K.andS.Ramu, InternationalBusinessEnvironmentandManagement, 5thed., Anmol Pub(P) Ltd., New Delhi,2001.

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Global Marketing
20261DSC25F

Course Objective:

To impart knowledge on the opportunities in global markets, to make the students familiarise with the global marketing plan.

Course Outcomes:

CO 1:- To examine the scope of global marketing, to analyse the future of global marketing.
CO 2:- To analyse the various environmental factors affecting global marketer.

MODULE I :INTRODUCTION AND OVERVIEW

Introduction to global marketing- definition- Scope of global marketing- Domestic marketing- International marketing- Global marketing-differences between them- Factors responsible for globalization- future of global marketing.

MODULE II: THE GLOBAL MARKETING ENVIRONMENT

Global environment- Economic environment- political environment - legal environment- Multi- lateral Geographical groups- Global cultural environment

MODULE III: ANALYZING AND TARGETING GLOBAL MARKET OPPORTUNITIES

Understanding the global consume market- Assessing international market opportunities- Globally-Marketing Information systems- Marketing Research-Segmentation- Targeting- Positioning.

MODULE IV : GLOBAL MARKETING STRATEGIES

Market entry strategies- Export- Joint ventures- Direct Investments- Expansion strategies- Competitive analysis strategy.

MODULE V: GLOBAL MARKETING PROGRAMME

Global product management - standardization – differentiation- Marketing of services globally- Global pricing decisions- Global marketing channels- Global marketing communications decisions- Direct marketing- internet and data base marketing.

Suggested Readings:

1. Warren, J. Keegan- Global marketing management , Pearson Education
2. Kotabe and Helson –Global Marketing management , wilsey publications

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Principles of Management
20261DSC34B

OUTCOME

- To understand the basic management concepts and functions.
- To know the various techniques of planning and decision making

UNIT – I

Introduction to Management Meaning- Definitions – Nature and Scope - Levels of Management – Importance - Management Vs. Administration – Management: Science or Art –Evolution of Management Thoughts – F. W. Tayler, Henry Fayol, Peter F. Drucker, Elton Mayo - Functions of Management - Trends and Challenges of Management, Managers – Qualification – Duties & Responsibilities

UNIT – II

Planning.

Planning – Meaning – Definitions – Nature – Scope and Functions – Importance and Elements of Planning – Types – Planning Process - Tools and Techniques of Planning – Management by Objective (MBO). Decision Making: Meaning – Characteristics – Types - Steps in Decision Making – Forecasting.

UNIT – III

Organizing

Meaning - Definitions - Nature and Scope – Characteristics – Importance – Types - Formal and Informal Organization – Organization Chart – Organization Structure: Meaning and Types - Departmentalization- Authority and Responsibility – Centralization and Decentralization – Span of Management

UNIT – IV

Staffing

Introduction - Concept of Staffing- Staffing Process – Recruitment – Sources of Recruitment – Modern Recruitment Methods - Selection Procedure – Test- Interview– Training: Need - Types– Promotion –Management Games – Performance Appraisal - Meaning and Methods – 360 Performance Appraisal – Work from Home - Managing Work from Home [WFH].

UNIT – V

Directing

Motivation –Meaning - Theories – Communication – Types - Barriers to Communications – Measures to Overcome the Barriers. Leadership – Nature - Types and Theories of Leadership – Styles of Leadership - Qualities of a Good Leader – Successful Women Leaders. SupervisionCo-ordination and Control Co-ordination – Meaning - Techniques of Co-ordination. Control - Characteristics - Importance – Stages in the Control Process - Requisites of Effective Control and Controlling Techniques – Management by Exception [MBE]

Reference Books

K Sundhar, Principles Of Management, Vijay Nichole Imprints Limited, Chennai

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Elements of Accounting
20261D5C34C

Objective: The main objective of this paper is to enable the students to understand the fundamentalprinciples and to develop skills of preparing and maintaining simple books of accounts from givendetails

Outcomes

- Identify the need of Book Keeping.
- Understand the Objectives of Book Keeping

Unit 1: Introduction to Book keeping and Accounting

Introduction to Book Keeping and Accounting : Need, objectives, advantages

Unit 2: Accounting Equation Effects

Accounting Equation effects: Business entity Concept, dual aspect of transaction and the accountingequation, effect of transactions on accounting equation.

Unit 3: Nature of Accounts and Rules of Debit and Credit

Nature of Accounts and Rules of debit and credit : Classification of accounts, rules debit and credit, preparation of accounting vouchers and supporting documents (Bills, cash memo, debit note, creditnote)

Unit 4: Journal

Journal : Need for journal, journal entries (no compound entries), subsidiary books (Cash book, purchase book, sales book, purchase return book, sales return book and journal proper)

Unit 5: Ledger

Ledger : Definition and importance, relation between journal and ledger. Meaning of posting, gudingrules procedure of posting transactions from journal to ledger and balancing of accounts.

Recording and Posting of Cash Transactions

Recording and posting of cash transactions : Necessity of cash book and its preparation. Simple cashbook and cash book with cash and discount column. Petty cash book with imprest system.

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Elements of Business Law
20261DSC34D

Objective: The objective of the course is to impart basic knowledge of the important business lawsalong with relevant case laws.

Unit I: The Indian Contract Act, 1872

1. Contract – meaning, characteristics and kinds, Essentials of a valid contract
2. Offer and acceptance (Definition, Rules, Communication and Revocation of offer and acceptance)
3. Consideration (Definition, Elements, Types, Rules), "No Consideration No Contract" and itsexceptions; Capacity to Parties (Definition and Types)
4. Consent, Free consent, Coercion, Undue Influence, Fraud, Misrepresentation, Mistake
5. Legality of objects and Consideration
6. Void and Voidable agreements – Definition, Types and Distinction Discharge of a contract –Modes of discharge, Breach and Remedies against breach of contract
7. Specific Contracts - Contingent contracts, Quasi, Contract of Indemnity, Guarantee, Bailment, Pledges

Unit II:

The Sale of Goods Act, 1930

1. Contract of sale, meaning and difference between sale and agreement to sell
2. Conditions and warranties
3. Transfer of ownership in goods including sale by a non-owner
4. Unpaid seller – meaning, rights of an unpaid seller against the goods and the buyerUnit III:

Partnership Laws A. The Partnership Act, 1932

a. Definition – Partner, Partnership
b. Nature and Characteristics of Partnership
c. Types of Partners
d. Registration of a Partnership Firms and consequences of non-registration
e. Rights and Duties of Partners f. Dissolution of firms – meaning and grounds

Unit IV: The Negotiable Instruments Act 1881

a. Definition, Features, Types, Parties of Negotiable Instruments: Promissory Note, bill of exchange, Cheque (Definition and Types)
b. Endorsement: Meaning and Types of Endorsement
c. Holder and Holder in Due Course, Privileges of Holder in Due Course.
d. Dishonour of Negotiable Instruments: Modes, Consequences, Notice of Dishonour, Noting and Protesting

Learning Outcomes:
The students would be able to deal with the legal aspect of different business situations.

Text Books Recommended 1. Business Law, Garg K.C., Saareen, Sharma, Kalyani Publishers 2. Kumar, R Legal Aspects of Business, Cengage Learning.

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E- Commerce
20261DSC34E

AIM

To reach out to a larger audience since Internet access is becoming a main stream.OBJECTIVES

1. This course provides an introduction to information systems for business and management.
2. It is designed to familiarize students with organizational and managerial foundations of systems ,thetechnical foundation for understanding information system.

Unit I: ECommerceandE-Business-Introduction–technologicalAdvancements–Ecommerce defined–Ecomaierce.

Unit-II: Business Models for E-Commerce
EBusinessModelsBasedontherelationshipofTransactionparties–B2c–BusinesstoBusiness–Customer toCustomer–Consumer to–Business

Unit-III: E-Marketing – Traditional Marketing – Meeting the needs of Website visitors – E-Marketingvalue chain–Maintain website–Online Marketing.

UNIT-IV

e-Payment Systems: MainConcernsinInternetBanking–Digital Payment Requirements – – Properties ofElectronic Cash – Cheque Payment Systems on the Internet – Risk and payment Systems– Designing -payment Systems–Online Financial Services in India Online Stock Trading.

UNIT-V

Information systems for Mobile Commerce: What is Mobile Commerce? – Wireless Applications – CellularNetwork–WirelessSpectrum–TechnologiesforMobileCommerce–WirelessTechnologies – Different Generations in Wireless Communication.

OUTCOMES:

Analyze the impact of E-commerce on business models and strategy

- Describe the infrastructure for E-commerce
- Discuss legal issues and privacy in E-Commerce Assesse electronic payment systems

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Corporate Law
20261DAC44B

AIM
:

To understand all the important aspects of company management and secretarial practice, right fromthe incorporation of a company to its winding up.

OBJECTIVES:

I. To study the laws, practices and procedure related to company secretarial work.
II. II. To focus on the role of the company secretary

Unit - I: Corporate Incorporation and Management 1. (i) Certificate of Incorporation (ii) Memorandum and Articles of Association (iii) Doctrine of Ultra Vires (iv) Doctrine of IndoorManagement

Unit -2 : Oppression & Mismanagement and Investigation (Sections 397 to 408; Sections 235 to 251)

1. (i) Rule in Foss v. Harbottle

(ii) Prevention of Oppression
(iii) Prevention of Mismanagement
(iv) Role & Powers of the Company Law Board
(v. Role & Powers of Central Government

Unit – 3:

Corporate Liquidation 1.

(i). Winding up of Companies
(ii). Mode of winding up of the companies
(iii). Compulsory Winding up under the Order of the Tribunal(iv). Voluntary winding up
(v). Contributories
(vi). Payment of liabilities

Unit -4 : Corporate Governance and Social Responsibility 1.

(i) Importance of Corporate Governance
(ii) Different system of Corporate Governance
(iii) Impact of Legal Traditions and the Rule of Law on Corporate Governance
(iv) Legal Reforms of Corporate Governance in India
(v) Reports of the various Committees on Corporate Governance
(vi) Emerging Trend based on the recommendation of the Committees in the Companies Act 1956 and the Listing Agreement with Special reference to Clause49.

Text Books: 1. Saleem Sheikh & William Rees, Corporate Governance & Corporate Control. Cavendish Publishing Ltd., 1995 2. Taxmann, Companies Act 2013 3; Taxmann, A ComparativeStudy of Companies Act 2013 and Companies Act 1956

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Accounting for Managerial Decision
20261DAC44C

Objectives

- To enable students to learn basic concepts in income tax and determine residential status and scope of total income of an individual.
- To enable students to understand, differentiate and calculate income under various heads of income.

UNIT-1

Role of Financial Accounting and cost accounting for Management in decision making. Management Accounting and Cost Accounting as internal control tools.

UNIT-2

Concept of Marginal Costing, Concept of contribution and its usages, Cost, Volume, Profit analysis, P/V ratio, analysis and implications, Breakeven point and concept of safety margin, Usage of CVP analysis in decision- making like single product pricing, multi product pricing, replacement, sales etc. Differential Costing and incremental costing.

UNIT-3

Concept of Budget, Types of Budget, Static and Flexible Budgeting, , Sales Budget, Production Budget, Materials Budget, Cash Budget, Capital Expenditure Budget and Master Budget, Budgeting and Budgetary Control Advantages and Limitations of Budgetary Control.

UNIT-4

Concept of Responsibility Accounting, Various approaches to responsibility accounting Investment center, Cost center, Profit center and Responsibility center and their managerial implications, Transfer Prking, and Types of transfer Prking, Cost of Quality and Time.

UNIT-5

Concept and distinct features of Activity Based Costing, Cost Drivers, Cost of Activities, Cost objects such as product/service, Cost Management.

Reference books :

1. Borngren et al: Introduction to Management Accounting:
Pearson, New Delhi.
2. 2) Khan and Jain: Management Accounting: Tata McGraw-Hill, New Delhi
3. Bhattacharyya S K and Dearden J-: Accounting for Management:
Vikas Publishing Pvt. Ltd. New Delhi

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Direct Tax
20261DAC44D

UNIT-1

Definitions and Basis of Charge -

- Definitions: Person, Assessee, Income

- Basis of Charge: Previous Year, Assessment Year, ResidentialStatus, Scope of Total Income, Deemed Income

UNIT-2

Heads of Income

- Income from Salary
- Income from House Property
- Profits and Gains from Business and Profession
- Income from Capital Gains
- Income from Other Sources

UNIT-3

Deductions u/s 80 and Exclusions from the Total Income -

- Deductions: 80C, 80CCF, 80D, 80DD, 80DDB, 80E, 80U,80G, 80TTA
- Exclusions: Exemptions related to Specific Heads of Income to be Covered with Relevant Provisions,Agricultural Income, Sums Received from HUF by a Member, Share of Profit from

Firm, Income from Minor Child, Dividend, Basics concepts about tax planning and ethics in taxation

UNIT-4

Computation of Income and Tax of Individual, Firm andCompany (Excluding MAT)

and Provisions for Filing Return of Income - Sec 139(1) andSec 139(5) -

- Computation of Income & Tax of Individual and PartnershipFirm

Suggested Readings and References:

- Direct Taxes Law & Practice by V.K. Singhania - Taxman
- Systematic Approach to Direct Tax by Ahuja & Gupta - Bharat Law House
- Income Tax Ready Reckoner by Dr .V.K. Singhania - Taxman

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Bank Management
20261DAC44E

Objectives
:

This course aims at enabling the students to understand and to contribute to the strategic operationalpolicies and practices of commercial bank management in a competitive environment.

Unit 1 : Introduction – Scheduled and non-scheduled banks – Origin & Development-Evolution and growth of banking system in India – Present Structure -Recommendations of Narasimham Committee –Challenges before Indian commercial banks – Opportunities for Indian commercial banks Strengths and weaknesses of Indian commercial banks – Banking sector reforms.

Unit 2: Liquidity – Purpose – Sources – Measurement – Liquidity / profitability problem – Theories ofliquidity management – Priorities in the employment of bank funds – Problem of resource allocation inIndian commercial banks.

Unit 3: Capital Adequacy in Banks - Functions of capital funds in commercial banks – Capital adequacy Basic norms on capital adequacy – Capital adequacy norms in Indian commercial banks – Present position of capital adequacy in Indian commercial banks

Unit 4: Investment Management – Nature and significance of investment management in commercial banks – Fundamental principles of security investment by commercial bank – Management of security investment – Reviewing investment portfolio – Organization of investment function.

Unit 5: Asset Liability Management and Non-Performing Assets - Concept of ALM – Objectives – Functions – Process – Measurement and Management of Risks Concept of NPAs, NPAs in Indian commercial banks, Causes, Suggestions and steps for containing NPAs, Prudential norms

Suggested Readings:

1. Srivastava Divya Nigam, Management of Indian Financial Institutions, HimalayaPublishing House.
2. M. Y. Khan, Indian Financial System , Tata McGraw Hill,
3. Bharati Pathak, Indian Financial System,

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MPhil -REGULATION

Research and Publication Ethics

Objectives CPE RPE

- To understand the philosophy of science and ethics, research integrity and publication ethics. To identify research misconduct and predatory publications.
- To understand indexing and citation databases, open access publications, research metrics (citations, h-index, impact Factor, etc.). To understand the usage of plagiarism tools.

Unit I: PHILOSOPHY AND ETHICS

Introduction to philosophy: definition, nature and scope, concept, branches -Ethics: definition, moral philosophy, nature of moral judgements and reactions.

Unit II: SCIENTIFIC CONDUCT

Ethics with respect to science and research - Intellectual honesty and research integrity - Scientific misconducts: Falsification, Fabrication and Plagiarism (FFP) - Redundant Publications: duplicate and overlapping publications, salami slicing - Selective reporting and misrepresentation of data.

Unit III: PUBLICATION ETHICS

Publication ethics: definition, introduction and importance - Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. – Conflicts of interest – Publication misconduct: definition, concept, problems that lead to unethical behaviour and vice versa, types – Violation of publication ethics, authorship and contributor ship - Identification of publication misconduct, complaints and appeals - Predatory publisher and journals.

Unit IV: OPEN ACCESS PUBLISHING

Open access publications and initiatives - SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies - Software tool to identify predatory publications developed by SPPU - Journal finger / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer, Journal Suggested, etc.

Unit V: PUBLICATION MISCONDUCT (4Hrs.)

Group Discussion

a) Subject specific ethical issues, FFP, authorship
b) Conflicts of interest
c) Complaints and appeals: examples and fraud from India and abroad Software tools

Use of plagiarism software like Turnitin, Urkund and other open source software tools.

References:

Bijorn Gustavii: How to write and illustrate scientific papers? Cambridge University Press.

Borden s K.S. and Abbott, B.b.: Research Design and Methods, Mc Graw Hill, 2008.

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VALUE ADDED NEW COURSES (2020-2021)

SYLLABUS

Course: DIPLOMA IN LEADERSHIP SKILL
Subject Code: 20VLDSK

AIMS: To emphasis better performance from the Overall Leadership skill

Objectives:

Help students to develop essential skills to influence and motivate others

Emotional, interpersonal, and social intelligence and integrative thinking for effective leadership

Create and maintain an effective and motivated team to work for the society

Nurture a creative and entrepreneurial mindset

Make students understand the personal values and apply ethical principles in professional and social contexts

OUTCOME:

1. Students will assess potential leadership philosophy, traits, skills, behaviors, and develop a leadership portfolio.
2. Students will construct an understanding of the fundamental ways leadership is practiced in the group organizations.
3. Students will evaluate fundamental leadership practices relevant in contemporary organizations.
4. Students will enhance their writing skills by comparing and contrasting different leadership approaches

UNIT-1

Understanding Leadership

Lectures, Readings, & Videos: Defining Leadership; Global Leadership Attributes; Practicing Leadership.

UNIT-2

Recognizing Your Traits

Lectures, Readings, & Videos: Historical Leaders: What Traits Do These Leaders Display? Leadership Styles;

UNIT-3

Engaging People's Strength

Lectures, Readings, & Videos: Explore how strengths can make one a better leader. Understand the concept of strength; Describe the historical background of strengths-based leadership.

Examine how to identify strengths; Review measures used to assess strengths; Examine strengths-based leadership in practice

UNIT-4

Understanding Philosophy and Styles

Lectures, Readings, & Videos: Leadership Explained-Theory X and Theory Y; Leadership Styles Explained; Leadership Styles in Practice

UNIT-5

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SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATION

BOARD OF STUDIES MEMBERS OF B.Ed. & M.Ed. 2020-2021

CIRCULAR

By direction Board of Studies meeting for the department of Education will be held on 18.03.2020 at 11.00 a.m. in Education Dean online meeting. The following committee members are requested to attend the meeting.

AGENDA

- Discussion of Curriculum & Syllabus in B.Ed. (Education) Full Time programme – Regulation 2019
- Discussion of Curriculum & Syllabus in M.Ed. (Education) Full Time programme – Regulation 2019
- Discussion of Curriculum & Syllabus in M.Phil. (Education) Full Time programme – Regulation 2020

K.B Jasmine Suthandira Devi
CHAIRMAN BOS

TO COMMITTEE MEMBERS: Dr.K.B.Jasmine Suthandira Devi, Dean/ PRIST DEEMED TO BE University (Chairman, BOS)

Dr.N.Sasikumar, Asst. Prof/ Alagappa University (External Member, BOS)

Dr.P.Srinivasan, Asst. Prof/ Central University, Thiruvarur (External Member, BOS)

Dr.P.Rajasekar,Prof/ PRIST DEEMED TO BE University (Member, BOS)

Dr.R.Arivalan, Prof/ PRIST DEEMED TO BE University (Member, BOS)

Dr.M.Balasubramanian, Associate Prof/ PRIST DEEMED TO BE University (Member, BOS)

Dr.D.Murugan antham, Associate Prof/ PRIST DEEMED TO BE University (Member, BOS)

Dr.M.Aron Antony Charles, Associate Prof/PRIST DEEMED TO BE University (Member, BOS)

Dr. P. Subathra, Associate Prof. / PRIST DEEMED TO BE University (Member, BOS)

Dr.R. Gunasekaran, Asst. Prof. / PRIST DEEMED TO BE University (Member, BOS)

Mrs.T.Subashini, Asst. Prof. / PRIST DEEMED TO BE University (Member, BOS)

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SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATION

MINUTES OF BOARD OF STUDIES MEETING

The Board of Studies meeting for the department of Education will be held on 18th March ,2020 at 11.00 a.m. in Education Dean for online meeting..

THE FOLLOWING MEMBERS WERE PRESENT:

Dr.K.B.Jasmine Suthandira Devi, Dean/ PRIST DEEMED TO BE University (Chairman, BOS)
Dr.N.Sasikumar, Asst. Prof/ Alagappa University (External Member, BOS)
Dr.P.Srinivasan, Asst. Prof/ Central University, Thiruvarur (External Mamber, BOS)
Dr.P.Rajasekar,Prof/ PRIST DEEMED TO BE University (Member, BOS)
Dr.R.Arivalan, Prof/ PRIST DEEMED TO BE University (Member, BOS)
Dr.M.Balasubramanian, Associate Prof/ PRIST DEEMED TO BE University (Member, BOS)
Dr.D.Muruganantham, Associate Prof/ PRIST DEEMED TO BE University (Member, BOS)
Dr.M.Aron Antony Charles, Associate Prof/PRIST DEEMED TO BE University (Member, BOS)
Dr. P. Subathra, Associate Prof. / PRIST DEEMED TO BE University (Member, BOS)
Dr.R. Gunasekaran, Asst. Prof. / PRIST DEEMED TO BE University (Member, BOS)
Mrs.T.Subashini, Asst. Prof. / PRIST DEEMED TO BE University (Member, BOS)

Dr. K.B.Jasmine Suthandira Devi, Chairman (BOS) chaired the meeting and Dr.R.Arivalan Prof/Education welcomed all the members to the BOS meeting. He introduced the members of BOS.

The Committee carefully reviewed and discussed the curriculum and syllabi in detail and resolved to make necessary changes wherever required.

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The suggestions are as follows:

The Board has thoroughly scrutinize the syllabus and unanimously decided to continue the same curriculum for both B.Ed. and M Ed. programme for the academic year 2019-2020.

The Board also prepared a Panel of Examiners for the department of Education (B.Ed. & M.Ed.) courses and submitted the same to the academic council for its Approval.

List of value added course: Personality development, Computing skills, communication skills development, Climate education. Technology enhanced instructional platforms

List of M.Phil new course: Research Methodology, Advanced Educational Philosophy and Psychology, Curriculum Design and Development, Research and Publications Ethics, Dissertation – (Topic selected should be relevant to the topic of the In-depth paper)

The Meeting concluded with thanks from Chairperson/ Board of Studies.

Signature of the Chairman & Members

1. K.B Jasmine Sulthandirudeur
2. bfeem kcccu aaf
3. P. Srinivasan
4.
5. R. Arivalan
6.
7. D. Murty
8. M. Aron Antony Charles
9. P. Subathra
10. R Raj
11. T. L

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Value Added Course

Course Code: 20130VAC1 – Personality Development

Objectives: Enable students to acquire knowledge about various methods of psychology
Gain knowledge about the concept of learning and its related theories
Understand motivation and its influence on human behavior
Comprehend in-depth concepts of intelligence and creativity
Explain the concepts and theories of personality

UNIT – I Introduction to Personality Development

The concept of personality - Dimensions of personality - Theories of Freud & Erickson- Significance of personality development. The concept of success and failure: What is success? - Hurdles in achieving success - Overcoming hurdles - Factors responsible for success - What is failure - Causes of failure. SWOT analysis.

UNIT – II Attitude & Motivation

Attitude - Concept - Significance - Factors affecting attitudes - Positive attitude – Advantages– Negative attitude- Disadvantages - Ways to develop positive attitude - Differences between personalities having positive and negative attitude. Concept of motivation - Significance - Internal and external motives - Importance of self- motivation- Factors leading to de-motivation

UNIT- III Self-esteem

Term self-esteem - Symptoms - Advantages - Do's and Don'ts to develop positive self-esteem– Low self- esteem - Symptoms - Personality having low self esteem - Positive and negative self esteem. Interpersonal Relationships – Defining the difference between aggressive, submissive and assertive behaviours - Lateral thinking.

UNIT- IV Other Aspects of Personality Development

Body language - Problem-solving - Conflict and Stress Management - Decision-making skills - Leadership and qualities of a successful leader – Character building -Team-work – Time management - Work ethics-Good manners and etiquette.

UNIT- V Employability Quotient

Resume building- The art of participating in Group Discussion– Facing the Personal (HR & Technical) Interview -Frequently Asked Questions - Psychometric Analysis - Mock Interview Sessions.

Outcomes:

Understand motivation and its influence on human behavior
Comprehend in-depth concepts of intelligence and creativity
Explain the concepts and theories of personality

Reference Books:

1. Andrews, Sudhir. How to Succeed at Interviews. 21st (rep.) New Delhi Tata McGraw-Hill 1988.
2. Heller, Robert. Effective leadership. Essential Manager series. Dk Publishing, 2002
3. Hindle, Tim. Reducing Stress. Essential Manager series. Dk Publishing, 2003
4. Lucas, Stephen. Art of Public Speaking. New Delhi. Tata - Mc-Graw Hill. 2001
5. Mile, D.J Power of positive thinking. Delhi. Rohan Book Company, (2004).
6. Pravesh Kumar. All about Self-Motivation. New Delhi. Goodwill Publishing House. 2005.
7. Smith, B . Body Language. Delhi: Rohan Book Company. 2004

Hurlock, E.B (2006). Personality Development, 28th Reprint. New Delhi: Tata McGraw Hill.

Stephen P. Robbins and Timothy A. Judge(2014), *Organizational Behavior 16th Edition*

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Value Added Course

Course Code: 20130VAC2 – Computing skills

Objectives:

- Acquire knowledge of the approaches to computer science in level-I
- Obtain in depth knowledge about teaching of computer science
- Comprehend the concepts of growth and development of computer science in education
- Know about various polices
- Understand integrating ICT in teaching

UNIT –I Introduction to Computer, Characteristics of Computers; Evolution of Computers; Basic Components of a Computer. Their Functions, and Inter-relation; Computer Languages: Types of Computer Systems: Personal- Micro, Mini, Mainframe, and Super Computer

UNIT –II Data Storage: Primary Storage. Secondary Storage: Input and Output Devices: Concept of Data Communication and Network Topology

UNIT –III Operating System: Introduction to Operating System; Types of Operating Systems: Word Processor: Meaning and

UNIT –I V Windows: Basic Functionality; MS Office: Basic functions and Commands in MS Word and MS PowerPoint

UNIT –V MS Office: MS Excel-Working with Excel. Basic Functions and Formulae: Internet: Usage and Applications.

Outcomes:

- Acquire knowledge of the approaches to computer science in level I
- Obtain in depth knowledge about teaching of computer science
- Comprehend the concepts of growth and development of computer science in education
- Know about various polices
- Understand integrating ICT in teaching

References:

- Balagursamy, *Programming in Basic*, THN, Delhi.
- Aggarwal J.C., (2000) Principles, Methods and Techniques of Teaching, Vikas Publishing House Pvt. Ltd.,
- Malvino, Digital Computer Electronics, TMH, Delhi.
- Krishna Sagar. (2005) ICTs and teacher training. Delhi: Tarum offset.
- Harley, H.K. (2007). The internet: complete reference. New Delhi: Tata McGraw Hill, pub.co. Ltd.
- Goel, H.K (2007). Teaching of computer science. New Delhi: R.Lall Books

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Value Added Course

Course Code: 20130VAC3 – Communication Skill Development

Objectives:

- Acquire knowledge of the approaches to computer science in level-I
- Obtain in depth knowledge about teaching of computer science
- Comprehend the concepts of growth and development of computer science in education
- Know about various polices
- Understand integrating ICT in teaching

Unit-1: Communication: An Introduction Definition, Nature and Scope of Communication Importance and Purpose of Communicatior Process of Communication Types of Communication

Unit-2: Non-Verbal Communication Personal Appearance Gestures Postures Facial Expression Eye Contacts Body Language(Kinesics) Time language Silence Tips for Improving Non-Verbal Communication

Unit-3: Effective Communication Essentials of Effective Communication Communication Techniques Barriers to Communication

Unit-4: Communication Network in an Organization-I Personal Communication Internal Operational Communication External Operational Communication.

Unit-5: Communication Network in an Organization-II Horizontal(Lateral) Communication Vertical(Downward) Communication Vertical(Upward) Communication

Outcomes:

- Acquire knowledge of the approaches to computer science in level I
- Obtain in depth knowledge about teaching of computer science
- Comprehend the concepts of growth and development of computer science in education
- Know about various polices
- Understand integrating ICT in teaching

References:

- Balagursamy, *Programming in Basic*, THN, Delhi.
- Aggarwal J.C., (2000) Principles, Methods and Techniques of Teaching, Vikas Publishing House Pvt. Ltd.,
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- Harley, H.K. (2007). The internet: complete reference. New Delhi: Tata McGraw Hill, pub.co. Ltd.
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Value Added Course

Course Code: 20130VAC4 – Climate Education

Objectives:

Acquire knowledge of the terms used in educational administration and management

Understand the role of head master and his/her duties

Develop the mode of inspection and supervision of function

Know the role of teacher in decision making

Develop interest in the educational administration and management techniques

UNIT-I Introduction to Climate Change and Sustainable Development:Principles and Approaches

Global Climate System- Climate Change: Causes and Consequences- Sustainable Development: Scope and Emerging Trends- Climate and Sustainable Development: An Interface

UNIT-II Climate Change: Challenges and Choices

Climate Change and Water-Climate Change: Forest and Biodiversity-Climate Change: Coastal Ecosystem-Climate Change: Agriculture and Food Security

UNIT-III Climate Change and Sustainable Development: Policies andProgrammes

Sustainable Development Goals: An overview- Climate Change and Sustainable Development: National and State Policies- Achieving Sustainable Development Goals: Role of Various Stakeholders- Building Partnership for Climate Change and Sustainable Development

UNIT-IV Climate Change and Sustainable Development: Stories of Success

Cross Country Experiences- National Experiences- Regional Experiences- Community led Experiences

UNIT- V Project Work

Topic should be selected in relevance to the Course Curriculum

Outcomes:

By the end of the course, the student teacher will be able to

Acquire knowledge of the terms used in educational administration and management

Understand the role of head master and his/her duties

Develop the mode of inspection and supervision of function

Know the role of teacher in decision making

Develop interest in the educational administration and management techniques

References:

- Chakraborty, A. K. (2004). Principle & practice of education. Meerut: R.Lall Books Depot. NIEP A.
- Chaupe, S. P . (2008). Foundations of education. UP: Vikas Publishing House Pvt Ltd
- Chaube, S. P ., & Chaube, A. (2008). School organisation. New Delhi: Vikas Publishing House.
- Gangadhar, R. M., & Rao, V . P . S. (2000). Organizational behaviour . Delhi: Konark Publishers Pvt. Ltd.

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Value Added Course

Course Code: 20130VAC5–Technology Enhanced Instruction Platforms

Objectives:

- Explain the aims and objectives of teaching Computer Science.
- Select and use appropriate teaching skills in their teaching.
- Write lesson plans and unit plans on their own.
- Develop programmed instruction for the lessons in Computer Science.
- Explain the various instructional media to be used in teaching Computer Science.

UNIT–I Digital Media Use and Implementation

In this first module, we begin with the foundational understanding and use of digital media teachers use for today's learners. As you work your way through each module you will gain a progressive understanding of digital media concepts and conclude with a look at several digital media tools broken down into three distinct uses.

UNIT–I Technology Tools: From Web 2.0 to 3.0 and Beyond

In module two, we will take a deeper look at some more specific digital technology tools and examples of each one. Some of the earliest forms of digital technology based learning success came from concepts that are readily used today. One of the greatest challenge of choosing the correct technology tool is knowing what's available and how to use. This module will demonstrate example of different technology tools and provide you an opportunity to build some of your own.

UNIT–III Curriculum Design: Engage, Collaborate, and Demonstrate

The first three weeks of the course have introduced you to several new digital learning elements including software, web 2.0, and websites to provide diverse options for learning. This module will focus exclusively on the implementation strategy of digital learning. Instructional designers, technologists, teachers, and trainers should really enjoy the information in this module.

UNIT–IV Audio Tools and Learning Implementation

There are many types of learners. Some do well with kinesthetic, hands-on assignments, while others need visual aids to retain information. Some learn best through the arts, while others need a more logical approach. Audio learning adds so many important elements to the overall learning experience and use of digital media tools. In this module, you will explore some examples of effective digital media for creating audio and implementation strategies to enhance the overall experience for end-users.

UNIT–V E-Learning Author Tools and Instructional Design Strategy

Module seven will focus on the digital media use associated with author tools for developing e-learning. E-learning can be viewed as multiple specializations including the development of a module and the instructional design of an e-learning module. In this module, you will explore different technologies used in the development of digital media learning tools like e-learning and apply digital media design strategies to develop instructional design assets. As you move into the different content areas of this module, reflect on the information you have learned in this course and how each element ties to the foundation of instructional design practices.

outcomes

Upon completion of this course, you will learn:

- How to design and use instructional materials to enhance online teaching and learning
- Curriculum design techniques to develop technology-enhanced learning experiences
- How to engage stakeholders to collaborate, design and evaluate learning experiences and programs

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SCHOOL OF EDUCATION
M Phil- SYLLABUS
(For the candidates admitted from the academic year 2020-2021 onwards)
PAPER – I Research Methodology-203RMG11
(Common for all Subjects except Languages)

Unit – I:

Methods and Technique. An Introduction – Defining the research problem – What is a research problem?, Selecting the problem, Necessity of defining the problem, Technique involved in defining the problem, An illustration and conclusion. Research design – Meaning of research design, Need for research design, Features of good design, Important concepts of relating to research design, different research designs, Basic principles of experimental design and conclusion.

Unit – II:

Assignment and Thesis at the tertiary level: Writing at the tertiary level – assignments and term papers, thesis and dissertations, conventions of writing-the question of style. Planning the assignment – A time schedule, consulting source materials, preparing a work bibliography, taking notes, the outlines and the first draft. Planning the thesis – selecting a topic, reviewing the literature, designing the study and the chapter outline. Scholarly writing – a case study

Unit – III:

Writing the thesis or assignment: General format – preliminaries, the text, the reference material, the abstract and final product Page and Chapter format – chapter divisions and sub divisions, spacing, pagination, margins, paragraph indentation and sample pages Tables and Figures – use of tables and figures, placement of tables and figures, Numbering of tables, numbering of pages, numbering of figures, table and figure captions, format of tables, format of figures, preparation of figures, foot notes to tables and figures, very large table and figures, pagination and margin, spacing and alignment, abbreviations and special symbols and numbers. Referencing – Reference systems, Essential informations, spacing capitalization and underline, alphabetical and chronological order, edited works and sum special cases.

Unit – IV:

Computer packages and Internet: Word Basics – Creating and working with documents – working with text and tables – Using Mail Merge. Using Excel: Working with worksheets – creating chart – working with Formula and Functions. Using Power Point: Working with power point – User Interfaces – Using templates and wizard (slide Presentation) - - Creating chart and Tables. Internet and World Wice Web (WWW) – Electronic Main (E-mail) Intranet and Extranet.

Unit – V:

Descriptive statistics – tabulation, graphical representation – bar diagram – and pie diagrams – various measures of variance, measures of central tendency and normal distribution. Differential statistics "t" test, Chi – square test, "F" test (ANOVA) co -variance (ANCOVA) correlation and multiple regression analysis - Introduction to SPSS.

References:

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- Research Methodology by C.R. Kothari, Chapter 1,2,3.
- Microsoft Office 2003 – Edward C. Willet. First Edition 2004, Wiley Publications, USA , (Chapters 2,3,4,5,6,12,14,15,26,28,29)

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M.PHIL EDUCATION
PAPER – II
ADVANCED EDUCATIONAL PHILOSOPHY AND PSYCHOLOGY
SUB CODE – 203EDE12

OBJECTIVES

On completion of the course the students will be able to

- understand the various schools and methods of psychology
- understand adolescent's growth, development and their problems
- acquaint with the significance of learning and the various theories of learning
- understand the biogenic and sociogenic motives and different theories of motivation
- understand the concepts and theories of intelligence and creativity

UNIT – I: PHILOSOPHY OF EDUCATION:

Meaning, concept and importance - Philosophy and Education – Scope and functions of Educational Philosophy. Indian Schools of Philosophy: Sankhya, Yoga, Nyaya, Vedanta, Buddhism, Jainism and Islamic traditions. Western Schools of Philosophy: Idealism, Naturalism, Realism, Pragmatism, Existentialism.

UNIT – II: EDUCATIONAL THINKERS:

Indian Educational Thinkers: Thiruvalluvar, Swami Vivekananda, Rabindranath Tagore, Mahatma Gandhi, J. Krishnamoorthy - Western Educational Thinkers: Pavlov, Dewey, Rousseau, Comenius, Froebel, Confucius.

UNIT – III: PSYCHOLOGY OF EDUCATION:

Definition of Psychology – Methods of Psychology: Introspection, Observation, Anecdotal method, Field study method, Experimental method, Differential method, Developmental method, Case study method – Different branches of Psychology: General Psychology, Child Psychology, Clinical Psychology, Developmental Psychology, Social Psychology, Industrial Psychology – Define, Nature and Scope of Educational Psychology.

UNIT – IV: THEORIES OF LEARNING - I

Meaning and Characteristics of Growth and Development – Principles of Growth and Development – Growth and Development in Adolescence – Special Characteristics of adolescence – Interests and Problems of Adolescents - Concept and Characteristics of Emotion – Different categories of Emotion – Factors affecting Emotional Development – Importance of Emotional development – Meaning of Leadership – Importance of Leadership – Types of Leadership – Qualities of Leadership – Meaning of Learning – Characteristics of Learning – Thorndike's Trial and Error Learning Theory – Learning Curve – Pavlov's classical conditioning Theory.

UNIT – V: THEORIES OF LEARNING - II

Motivation: Define motives – Characteristics of Motivation – Theories of Motivation – Morgan's Physiological Theory – Hull's Drive-reduction Theory – Murray's Need Theory – Maslow's Theory of Hierarchical Needs – McClelland's Theory of Achievement Motivation – Define Intelligence – Types of Intelligence – Theories of Intelligence – Concept of Intelligence Quotient (I.Q) – Meaning and Definition of Aptitude and Attitude – Uses of Aptitude Test – Measuring Attitude – Meaning and Characteristics of Personality – Methods of measuring Personality – Mental Health and Hygine.

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LEARNING OUTCOMES:

- Student teachers acquired knowledge of basic concept of educational psychology.
- They gained knowledge of methods of educational psychology.
- They understood the various schools of psychology.
- Adolescent's growth, development and their problems have been realized.
- Various theories of motivation have been understood.
- They acquired the knowledge about the changing concept of intelligence theories and creativity.

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- Tripathi, S. N.: Pratiba Aur Srijnatmakta, Mcmillan Co., Bombay, 1983.
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M.PHIL EDUCATION
PAPER – III
CURRICULUM DESIGN AND DEVELOPMENT – SUB CODE – 203EDC13

OBJECTIVES

On completion of the course the students will be able to

- Analyse the approaches of curriculum organization
- Understand the models of curriculum implementation
- Understand the factors influencing effective teaching
- Recognize the various approaches and models of curriculum evaluation
- Comprehend the strategies and models of curriculum change.

UNIT-I: APPROACHES OF CURRICULUM DESIGN

Subject- Centred Designs: Subject design, Discipline design, Broad- field design and Correlation design - Learner-centred designs: Child-centred design, Experience-centred design, Romantic design and Humanistic design - Problem-centred Designs: Life-Situation design, Core design and Social Reconstruction design.

UNIT - II: CURRICULUM IMPLEMENTATION

Models of Curriculum Implementation: Overcoming Resistance to Change (ORC) Model, Leadership Obstacle Course (LOC) Model, Linkage Model, Organizational Development (OD) Model and Rand Change Agent (RCA) Model – Factors influencing Curriculum Implementation.

UNIT - III: CURRICULUM TRANSACTION

Concept of teaching learning – Teaching-Learning Process - Creating an effective environment – Effective Teaching – Factors influencing effective teaching- Instructional system – Need to enhance curricular transactions – Different types of enhancing curriculum transactions.

UNIT - IV: CURRICULUM EVALUATION

Concept, Definition, Need, Importance, Source Aspects and Methods of Curriculum Evaluation – Approaches of Curriculum Evaluation: Bureaucratic, Autocratic and Democratic Evaluation – Models of Curriculum Evaluation: Tyler's Objectives-centred Model – Stuffle beam's CIPP Model and Robert Stake's Congruence – Contingency Model.

UNIT V: CHANGE AND INNOVATION IN CURRICULUM

Definition, Need, Factors influencing the change in curriculum – Dimensions of curriculum change - Curriculum Change and Innovations - Context of Curriculum Change and Innovations – Strategies and Models for Curriculum Change and Innovations – Planning and Executing Change – Restructuring the curriculum.

LEARNING OUTCOMES:

- Concept and principles of curriculum development and design experienced.
- Gained insight in to the development of new curriculum
- The continuous Curriculum reconstruction appreciated
- Teaching-learning process of curriculum learnt.

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ACADAMIC YEAR 2020-2021

SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF CHEMISTRY

DEPARTMENT ACADEMIC COMMITTEE MEETING CIRCULAR

The Department Academic Committee Meeting will be held online on 19-07-2020 at 11 am via the Google Meet platform. https://meet.google.com/ofi-rmuz-fvj. All the staff members are requested to attend the meeting.

Agenda of the meeting:

- Curriculum
- Feedback
- Academic Calendar
- Department Activities

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Dean of Arts & Science
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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF CHEMISTRY

MINUTES OF THE DEPARTMENT ACADEMIC COMMITTEE MEETING

Date: 19-07-2020

The Department Academic Committee Meeting was held on 19-07-2020 at 11 am in online mode. Dr. Jerome Rozario, Head of the Department, welcomed the committee members. Members analyzed the feedback from the stakeholders and the follow-up actions taken. The committee carefully reviewed the curriculum in detail and proposed no changes in the syllabus.

Staff members were asked to conduct department activities like the conduct of seminars through online mode until further communication from the office about the lockdown imposed by the government. The workload was discussed and courses were allotted to the staff members.

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DATE 19-07-2020

Department of Chemistry

Meeting of board of studies in Department of Chemistry minutes of the meeting 2020-2021

DEPARTMENT OF CHEMISTRY

MINUTES OF THE DEPARTMENT ACADEMIC COMMITTEE MEETING

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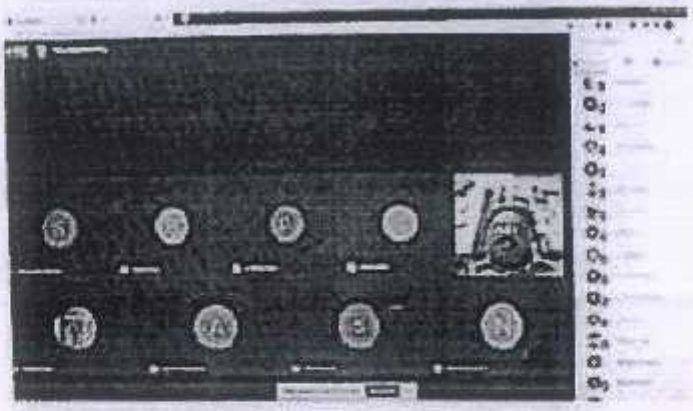
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ACADAMIC YEAR 2020-2021



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Department of chemistry

Meeting of the board of studies in the department of chemistry minutes of the meeting

2020-2021

The Meeting of the Board of Studies in the department of Chemistry was held online on 30.07.2020 at 10.30 am under the chairmanship of Prof. Dr. L. Chinnappa, Dean, School of Arts and Science. The following members were present:

Dr. P. Parthiban Professor

Dr. M. Jerome Rosario Professor

Dr. D. Senthilnathan Associate Professor

Dr. I.S. Muthulakshmi Associate Professor

Dr. S. Muralidharan Assistant Professor

Dr. D. Chitravelu Assistant Professor

Dr. M. Sumathi Varma Assistant Professor

Dr. A. Jerril Deniza Assistant Professor

Dr. N.V.Prabhu Assistant Professor

Dr. I. Thanalakshmi Assistant Professor

Dr. C.R. Shanthi Assistant Professor

Dr. I.Sheikmeeran Assistant Professor

Dr.P.Rajamohan Assistant Professor

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NAME LIST 2020-2021

S.No	Name Of The Members	Designation	SIGNATURE
1	Dr.Kabilan	Professor /Academic Expert	
2	Dr.P.Balamurugan	Industrial Expert	
3	Dr. P. Parthiban	Professor	
4	Dr. M. Jerome Rosario	Professor	
5	Dr. D. Senthilnathan	Associate Professor	
6	Dr. J.S. Nirmalraaj	Associate Professor	
7	Mr. R Manikandan	Assistant Professor	
8	Dr. D. Chitraraja	Assistant Professor	
9	Dr. M. Surendra Varma	Assistant Professor	
10	Dr. A. Jamil Basha	Assistant Professor	
11	Dr. N.V.Prabhu	Assistant Professor	
12	Dr. T. Thulasidhasan	Assistant Professor	
13	Dr. C.R. Shanthi	Assistant Professor	
14	Dr.J.Sridharan	Assistant Professor	
15	Dr.P.Rajamohan	Assistant Professor	

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DEPARTMENT OF CHEMISTRY

We have collected feedback on the curriculum from all the stakeholders for the academic year 2019-20. We have analyzed the feedback and found the issues and suggestions from students, alumni, academic peers, employers, Employer and parents.

- As per analysis of students's feedback, students feel that there is a need to add the latest technology to the syllabus.
- Alumni felt that the assessment system for communication skills should be revamped and a soft skills course was suggested.
- Employers suggested that there is a need to include the new curriculum in the syllabus.
- Academic peers suggested introducing the exploration-oriented course in the curriculum.
- Parents feel to revise the employability courses on the curriculum.

Curriculum and take action for their feedback.

Determined to take note of the summaries of stakeholders responses collected during the year 2019-2020 and further resolved to take the response into consideration during the forthcoming curriculum revision for B.Sc., M.Sc., and M.Phil. in Chemistry. Determined to take note of the summaries of stakeholder responses collected during the year 2019-2020 and further resolved to take the response into consideration during the forthcoming curriculum revision for B.Sc., M.Sc., and M.Phil. in Chemistry.

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DEPARTMENT OF CHEMISTRY

MEETING OF BOARD OF STUDIES IN DEPARTMENT OF CHEMISTRY MINUTES OF THE MEETING

The Meeting of the Board of Studies in the department of Chemistry was held online on 30.07.2020 at 10.30 am under the chairmanship of Prof. Dr. L. Chinnappa, Dean, School of Arts and Science.

NAME & DESIGNATION

Dr. F. Parthiban Professor

Dr. M. Jerome Rozario Professor

Dr. D. Senthilnathan Associate Professor

Dr. J.S. Nirmalram Associate Professor

Dr. E. Manikandan Assistant Professor

Dr. B. Chinnaraja Assistant Professor

Dr. M. Surendra Varma Assistant Professor

Dr. A. Jenil D'souza Assistant Professor

Dr. N.V.Prabhu Assistant Professor

Dr. J. Thalaiyasan Assistant Professor

Dr. C.K. Shanthi Assistant Professor

Dr. J Silaharasan Assistant Professor

Dr.P.Rajamohan Assistant Professor

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The chairman of the board of studies welcomed the members.

The members of the Board scrutinized the existing syllabi for B.Sc Chemistry & M.Phil Chemistry programme and based on the Stakeholders feedback revision in the followingCourses have been carried out

1. It has been proposed to introduce Audit Courses in the B.Sc.(Chemistry) programme curriculum with effect from 2020-21Based on the following courses are proposed to introduce during various semesters

   In Semester I: Universal Human Values
   In Semester II : Communication Skills
   In Semester III: Office automation-
   In Semester IV: Leadership and Management Skills
   In Semester V: Professional Skills

   The board resolved to approve the syllabus for the above mentioned Audit Courses

2. Based on feedback from the Alumni it has been proposed to introduce the following Audit Courses on Soft Skills in the B.Sc.(Chemistry) programme curriculum with effect from 2020-21

   Year I: Basic Behavioral Etiquette
   Year II : General Aptitude and Quantitative Ability
   Year III: Interview Skills Training and Mock Test

   The board further resolved to approve the syllabus of the above mentioned Audit Courses on Soft Skills.

3. There is a Plan of introducing Audit Course on "Community Engagement" in the 3rd year of B.Sc.(Chemistry) programme curriculum with effect from 2020-21

4. The board decided to drop the courses on Communicative English Laboratories.

5. The board decided to drop the courses on Skill Based Elective Courses- Package laboratories

6. The board decided to drop Course on Extension Activities from the existing curriculum of B.Sc.(Chemistry) programme with effect from 2020-21.

7. It is proposed to introduce a course on "Research and Publication Ethics" with 2 credits in the M.Phil.(Chemistry) programme curriculum with effect from 2020-21

8. It was suggested to introduce phytochemical concepts in the syllabus of Phamacuetical Chemistry in 6th Semester of B.Sc (Chemistry)

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9. The committee recommended introduction of Green Chemistry in the Elective Course.

10. The members of the board also scrutinized and updated the panel of examiners for the B.Sc Chemistry & M.Sc Chemistry and submitted the same for the Academic Council for its approval.

Expert members accepted to introduce the courses as listed above.

Furthermore, the individual members offered their viewpoints.

The meeting was concluded with thanks from the chairman.

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SCHOOL OF ARTS OF SCIENCE

DEPARTMENT OF CHEMISTRY

B.Sc CHEMISTRY CURRICULUM

REGULATION 2020

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF CHEMISTRY

B.Sc CURRICULUM – REGULATION 2020

B.Sc. Graduate Attributes

- Domain knowledge
- Critical thinking
- Effective Communication
- Reflective learning
- Critical thinking

B.Sc Programme Educational Objectives – PEO

- PE01- Acquired the knowledge with facts and figures related to various subjects in pure sciences.
- PE02- Understood the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
- PE03- Acquired the skills in handling scientific instruments, planning and performing in laboratory experiments.
- PE04- The skills of observations and drawing logical inferences from the scientific experiments.
- PE05- Analyzed the given scientific data critically and systematically and the ability to draw the objective conclusions.
- PE06- Been able to think creatively (divergently and convergent) to propose novel ideas in explaining facts and figures or providing new solution to the problems.
- PE07-Realized how developments in any science subject helps in the development of other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments.
- PE08- Developed scientific outlook not only with respect to science subjects but also in all aspects related to life.
- PE09- Realized that knowledge of subjects in other faculties such as humanities, performing arts, social sciences etc.
- PE10- Can have greatly and effectively influence which inspires in evolving new scientific theories and inventions.
- PE11- Imbibed ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.
- PE12- Developed various communication skills such as reading, listening, speaking, etc., which we will help in expressing ideas and views clearly and effectively.
- PE13- Realized that pursuit of knowledge is a lifelong activity and in combination with untiring efforts and positive attitude and other necessary qualities leads towards a successful life.

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B.Sc Programme Outcome – PO

- PO1- To understand basic facts and concepts in Chemistry while retaining the exciting aspects of Chemistry so as to develop interest in the study of chemistry as a discipline.
- PO2- To develop the ability to apply the principles of Chemistry.
- PO3 - To appreciate the achievements in Chemistry and to know the role of Chemistry in nature and in society. To develop problem solving skills.
- PO4- To be familiarised with the emerging areas of Chemistry and their applications in various spheres of Chemical sciences and to apprise the students of its relevance in future studies.
- PO5- To develop skills in the proper handling of apparatus and chemicals.
- PO6- To be exposed to the different processes used in industries and their applications.

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B.Sc. Course – C

- C1- General Chemistry – I
- C2- Volumetric Analysis Lab
- C3- Mathematics – I
- C4- Mathematics – II
- C5- General Chemistry – II
- C6- Organic Analysis Lab
- C7- Mathematics - III
- C8- Mathematics – IV
- C9- Research Led Seminar
- C10- General Chemistry – III
- C11- Physical Chemistry Lab – I
- C12- Physics - I & II
- C13- Physics Lab – I & II
- C14- Research Methodology
- C15- General Chemistry – IV
- C16- Physical Chemistry Lab – II
- C17- Inorganic Chemistry – I
- C18- Organic Chemistry – I
- C19- Physical Chemistry – I
- C20- Inorganic Qualitative Analysis Lab
- C21- Gravimetric Analysis Lab
- C22- Participation in Bounded Research
- C23- Inorganic Chemistry – II
- C24- Organic Chemistry – II
- C25- Physical Chemistry – II
- C26- Project Work
- C27- Package Lab I to VI
- C28- Communication Lab I to VI

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B.Sc Curriculum Mapping

Programme Educational Objectives Vs Programme Outcome

Programme Outcome-PO Programme Educational Outcome - PEO	PO1	PO2	PO3	PO4	PO5	PO6
PE01	✓					
PE02						
PE03		✓				
PE04			✓			
PE05						
PE06					✓	
PE07				✓		
PE08						✓
PE09	✓			✓		
PE10		✓	✓			
PE11						
PE12				✓		
PE13	✓		✓		✓	

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B.Sc Curriculum Mapping

Programme Outcome vs Courses Outcome

Programme Outcome-PO Courses Outcome-CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1			*	*		*
CO2		*		*	*	*
CO3	*	*			*	
CO4			*	*		*
CO5			*	*		*
CO6		*		*	*	*
CO7	*	*			*	
CO8		*	*		*	
CO9	*	*			*	*
CO10		*	*	*		*
CO11		*		*	*	
CO12	*	*		*	*	
CO13		*	*	*	*	
CO14		*	*	*	*	*
CO15	*		*		*	
CO16		*		*		*
CO17	*		*		*	
CO18		*		*	*	
CO19	*	*		*		*
CO20			*	*	*	
CO21	*		*	*		*
CO22	*	*		*		*
CO23			*	*	*	
CO24	*	*	*		*	*
CO25	*	*		*		*
CO26	*	*		*	*	
CO27		*	*	*		
CO28	*	*			*	

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF CHEMISTRY

B.Sc CHEMISTRY – REGULATION 2020

COURSE STRUCTURE

COURSE CODE	COURSE TITLE	L	T	P	C
	SEMESTER – I				
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Tamil – I / Advanced English – I / Hindi – I / French-I	4	0	0	2
20111AEC12	English – I	4	0	0	2
20114AEC13	General Chemistry – I	6	0	0	4
20114AEC14L	Volumetric Analysis Lab	0	0	3	2
20112AEC15A (OR) 20114AEC17	Calculus and Fourier Series General and Applied Botany –I	5	0	0	4
20112AEC16A (OR) 20114AEC18L	Algebra and Trigonometry General Botany Lab –I	6	0	0	6
20INDCONS	Indian Constitution	4	0	0	3
20ULSCUV	Universal Human Values	0	0	3	2
	Total	29	0	06	19
	SEMESTER – II				
20110AEC21/ 20111AEC21/ 20131AEC21/ 20135AEC21	Tamil – II / Advanced English – II / Hindi – II / French-II	4	0	0	2
20111AEC22	English – II	4	0	0	2
20114AEC23	General Chemistry – II	6	0	0	4
20114AEC24L	Organic Analysis Lab	0	0	3	2
20112AEC25A (OR) 20114AEC29A	ODE, PDE and Laplace Transform General and Applied Botany –II	5	0	0	4
20112AEC26A 20114AEC20L	Analytical Geometry in Vector Calculus General Botany Lab –II	6	0	0	6
20114RLC27	Research Led Seminar	4	0	0	3
20LSCCS	Communication Skills	0	0	3	2
20ISSCBE	Basic Behavioral Etiquette	-	-	-	1
	Total	-	-	-	2
		-	-	-	2
		29	0	06	22
	SEMESTER – III				
20110AEC31/ 20111AEC31/ 20131AEC31/ 20135AEC31	Tamil – III / Advanced English – II I / Hindi – III / French-III	4	0	0	2
20111AEC32	English – III	4	0	0	2
20114AEC33	General Chemistry – III	5	0	0	4
20114AEC34L	Physical Chemistry – Non – Electrical Practical	0	0	3	2

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20113AEC35	Physics – I	6	0	0	5
20113AEC36L	Physics Lab – I	0	0	3	2
20114RMC37	Research Methodology	2	0	0	2
201ACLSOAN	Office automation	-	-	-	2
	Total	21	0	06	21
	SEMESTER – IV				
20110AEC41/ 20111AEC41/ 20131AEC41/ 20135AEC41	Tamil – IV / Advanced English – IV / Hindi – IV / French-IV	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20114AEC43	General Chemistry – IV	5	0	0	4
20114AEC44L	Physical Chemistry – Electrical Practical	0	0	3	2
20113AEC45	Physics – II	6	0	0	5
20113AEC46L	Physics Lab – II	0	0	3	2
201ENVTSTU	Environmental Studies	2	-	-	2
201LSCLS	Leadership and Management Skills	-	-	-	2
201SSCAQ	General Aptitude and Quantitative Ability	-	-	-	2
	Total	21	0	06	23
	SEMESTER – V				
20114AEC51	Inorganic Chemistry – I	5	0	0	4
20114AEC52	Organic Chemistry – I	4	1	0	3
20114AEC53	Physical Chemistry	4	1	0	4
20114AEC54L	Inorganic Qualitative Analysis Lab	0	0	3	2
20114AEC55L	Gravimetric Analysis Lab	0	0	3	2
20114DSC56	Discipline Specific Elective –I	5	0	0	3
20114BRC57	Participation in Bounded Research	-	-	-	1
201ACLSPSL	Professional Skills	-	-	-	2
	Total	18	02	06	21
	SEMESTER – VI				
20114AEC61	Inorganic Chemistry – II	4	1	0	4
20114AEC62	Organic Chemistry – II	5	0	0	5
20114AEC63L	Industrial Chemistry Practical	0	0	3	2
20114AEC64L	Domestic Products Preparation - Practical	0	0	3	2
20114DSC65	Discipline Specific Elective – II	5	0	0	3
201__OEC66	Open Elective	4	0	0	2
20114PRW67	Project Work	0	0	0	4
201LSCCE	Community Engagement	-	-	-	1
201SSCIM	Interview Skills Training and Mock Test	-	-	-	2
20114PEE	Programme Exit Examination	0	0	0	1
	Total	18	01	06	26
	Total Credits of the Program				132

REGISTRAR
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DISCIPLINE SPECIFIC ELECTIVE COURSES – I & II

Semester	Elective No.	Course Code	Course Title
V	I	20114DSC56A 20114DSC56B	A) Pharmaceutical Chemistry B) Agricultural Chemistry
VI	II	20114DSC65A 20114DSC65B	A) Polymer Chemistry B) Nano Science

OPEN ELECTIVE COURSES

Semester	Course code	Course Title
VI	20110OEC	Tamil Nakkiya Varalaru
	20111OEC	Journalism
	20112OEC	Development of Mathematical Skills
	20113OEC	Instrumentation
	20116OEC	Wildlife Conservation
	20120OEC	E-Learning
	20120OEC	Web Technology
	20161OEC	Banking Service

RESEARCH BASED COURSES

Semester	Course Code	Course Title
II	20114RLC27	Research Led Seminar
II	20114RMC37	Research Methodology
IV	20114BRC57	Participation in Bounded Research

AUDIT COURSES

Semester	Course Code	Course Title
I	201LSCUV	Universal Human Values
II	201LSCCS	Communication Skills
II	201SSCBE	Basic Behavioral Etiquette
III	201ACLSOAN	Office automation
IV	201LSCLS	Leadership and Management Skills
IV	201SSCAQ	General Aptitude and Quantitative Ability
V	201ACLSPSL	Professional Skills
VI	201SSCIM	Interview Skills Training and Mock Test
VI	201LSCCE	Community Engagement

Head, Science Department
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CREDIT DISTRIBUTION

SEMESTER	AEC	DSC	OEC	RESEARCH	OTHERS	TOTAL
I	17	-	-	-	02	19
II	17	-	-	01	04	22
III	17	-	-	02	02	21
IV	17	-	-	-	06	23
V	15	03	-	01	04	23
VI	13	03	02	04	02	24
TOTAL	96	06	02	08	20	132

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SCHOOL OF ARTS OF SCIENCE

DEPARTMENT OF CHEMISTRY

M.Sc CHEMISTRY CURRICULUM

REGULATION 2020

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF CHEMISTRY
M.Sc CHEMISTRY – REGULATION 2020
COURSE STRUCTURE

M.Sc. Graduate Attributes

- Domain knowledge
- Investigative
- Critical thinking
- Resourceful and Responsible
- Effective Communication
- Ethical and Moral values

M.Sc. Programme Educational Objective – PEO

- PEO1-To demonstrate broad knowledge of descriptive Chemistry.
- PEO2-To impart the basic analytical and technical skills to work effectively in the various fields of chemistry.
- PEO3- To motivate critical thinking and analysis skills to solve complex chemical problems, e.g., analysis of data, synthetic logic, spectroscopy, structure and modeling, team-based problem solving, etc.
- PEO4-To demonstrate an ability to conduct experiments in the above sub-disciplines with mastery of appropriate techniques and proficiency using core chemical instrumentation and modeling methods.
- PEO5-To demonstrate the ability to perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions.
- PEO6-To develop skills in quantitative modeling of static and dynamic chemical systems.
- PEO7-To develop laboratory competence in relating chemical structure to spectroscopic phenomena.

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- PEO8-To demonstrate the ability to synthesize, separate and characterize compounds using published reactions, protocols, standard laboratory equipment, and modern instrumentation.

M.Sc Programme Outcome –PO

- PO1-Think critically and analyze chemical problems.
- PO2-Present scientific and technical information resulting from laboratory experimentation in both written and oral formats.
- PO3-Work effectively and safely in a laboratory environment.
- PO4-Use technologies/instrumentation to gather and analyze data.
- PO5-Work in teams as well as independently.
- PO6-Apply modern methods of analysis to chemical systems in a laboratory setting.

M.Sc Course -C

- C1-Organic Chemistry-I
- C2-Inorganic Chemistry-I
- C3-Physical Chemistry-I
- C4-Research Led Seminar
- C5-Organic Chemistry-II
- C6-Inorganic Chemistry-II
- C7-Physical Chemistry-II
- C8-Research Methodology
- C9-Participation in Bounded Research
- C10-Organic Chemistry-III
- C11-Inorganic Chemistry-III
- C12-Physical Chemistry-III
- C13- Participation in Scaffold Research
- C14-Project Work

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M.Sc Curriculum Mapping

Programme Educational Objectives Vs Programme Outcome

Programme Outcome-PO Programme Educational Outcome - PEO	PO1	PO2	PO3	PO4	PO5	PO6
PE01	✓					
PE02						
PE03		✓				
PE04			✓			
PE05						
PE06					✓	
PE07				✓		
PE08						✓

M.Sc Curriculum Mapping
Programme Outcome vs Courses Outcome

Programme Outcome-PO Courses Outcome-CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1			*	*		*
CO2		*		*	*	*
CO3	*	*			*	
CO4			*	*		*
CO5			*	*		*
CO6		*		*	*	*
CO7	*	*			*	
CO8		*	*		*	
CO9	*	*			*	*
CO10		*	*	*		*
CO11		*		*	*	
CO12	*	*		*	*	
CO13		*	*	*	*	
CO14		*	*	*	*	*

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF CHEMISTRY
M.Sc CHEMISTRY – REGULATION 2020
COURSE STRUCTURE

SEMESTER - I					
COURSE CODE	COURSE TITLE	L	T	P	C
20214SEC11	Organic Chemistry-I	5	0	0	4
20214SEC12	Inorganic Chemistry-I	5	0	0	4
20214SEC13	Physical Chemistry-I	5	0	0	4
20214SEC14L	Organic Chemistry Lab-I	0	0	5	2
20214SEC15L	Inorganic Chemistry Lab-I	0	0	5	2
20214DSC16_	Discipline Specific Elective-I	5	0	0	4
20214RLC17	Research Led Seminar	-	-	-	1
	Total	20	-	10	21
SEMESTER - II					
20214SEC21	Organic Chemistry-II	4	0	0	4
20214SEC22	Inorganic Chemistry-II	4	0	0	4
20214SEC23	Physical Chemistry-II	4	0	0	4
20214SEC24L	Organic Chemistry Lab-II	0	0	5	2
20214SEC25L	Inorganic Chemistry Lab-II	0	0	5	2
20214DSC26_	Discipline Specific Elective-II	5	0	0	4
20214RMC27	Research Methodology	3	0	0	2
20214BRC28	Participation in Bounded Research	-	-	-	2
	Total	20	-	10	24
SEMESTER - III					
20214SEC31	Organic Chemistry-III	5	0	0	5
20214SEC32	Inorganic Chemistry-III	5	0	0	5
19214DSC35_	Discipline Specific Elective-III	5	0	0	4

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20214SEC33L	Physical Chemistry Lab-I	-	0	5	3
20214SEC34L	Physical Chemistry Lab-II	-	0	5	3
202_ _ OEC36	Open Elective	4	0	0	2
19214SRC37	Participation in Scaffold Research (Design and Societal Project)	-	-	-	2
	Total	19	0	10	24
SEMESTER - IV					
20214SEC41	Physical Chemistry-III	6	1	0	6
20214SEC32	Industrial Chemistry	6	1	0	5
19214DSC43_	Discipline Specific Elective-III	5	0	0	4
20214PRW44	Project	-	-	-	10
20214PEE	Programme Exit Examination	-	-	-	2
	Total	17	2	0	27
	Total Credits of this Program				96

DISCIPLINE SPECIFIC ELECTIVE COURSES –I

Semester	Elective No.	Course Code	Course Title
I	I	20214DSC16A	a) Environmental Chemistry
		20214DSC16B	b) Supramolecular Chemistry

DISCIPLINE SPECIFIC ELECTIVE COURSES –II

Semester	Elective No.	Course Code	Course Title
II	II	20214DSC26A	a) Special Topics in Chemistry
		20214DSC26B	b) Macromolecules as Engineering Materials

DISCIPLINE SPECIFIC ELECTIVE COURSES –III

Semester	Elective No.	Course Code	Course Title
III	III	20214DSC35A	a) Medicinal Chemistry
		20214DSC35B	b) Green Organic Synthesis: Principles and Applications

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DISCIPLINE SPECIFIC ELECTIVE COURSES –IV

Semester	Elective No.	Course Code	Course Title
IV	IV	20214DSC43A	a) Nano Chemistry
		20214DSC43E	b) Material Chemistry

OPEN ELECTIVE COURSES

Semester	Course Code	Course Title
III	20211OEC	Writing for the Media
	20212OEC	Applicable Mathematical Techniques
	20213OEC	Biomedical Instrumentation
	20215OEC	Herbal Medicines
	20220OEC	M-Marketing
	20261OEC	Financial Service
	20280OEC	Counselling and Psychology

CREDIT DISTRIBUTION

SEMESTER	SEC	GEC	DSE	RESEARCH	OTHERS	TOTAL
I	16	-	04	01		21
II	16	-	04	04		24
III	16	02	04	02		24
IV	11	-	04	10	02	27
TOTAL	59	02	16	17	02	96

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Course Code	Course Title	L	T	P	C
20114DSC56A		0	0	4	4
	PHARMACEUTICAL CHEMISTRY				
Course Outline	**UNIT-I: Physical properties in Pharmaceuticals:** Physical properties of drug molecule: physical properties.Refractive index-Definition, explanation, formula, importance, determination, specific & molar refraction. Optica activity\rotation-monochromatic & polychromatic light, optical activity, angle of rotation, specific rotation examples, measurement of optical activity. Dielectric constant & Induced Polirization- Dielectric constant explanation & determination.Rheology of pharmaceutical systems: Introduction, Definition, Applications, concept of viscosity, Newton's law offlow, Kinematic, Relative, Specific, Reduced & Intrinsic viscosity, Newtonian system, non-Newtonian system- Plastic flow, Pseudoplastic flow, Dilatent flow. Viscosity measurements- selection of viscometer for Newtonian and non-Newtonian system.				
	UNIT-II:Isotopic Dilution analysis: principle andapplications, Neutron activation analysis: Principle, advantages and limitations,Scintillation counters:Body scanning.Introduction to radiopharmaceuticals.Properties of various types of radiopharmaceuticals. Radiopharmaceuticals as diagnostics, as therapeutics, for research and sterilization.Physico Chemical Properties and drug action. Physico chemical properties of drugs (a) Partition coefficient, (b) solubility (c) surface activity, (d) degree of ionization.				
	UNIT-III: Drug dosage and product development: Introduction to drug dosage Forms & Drug Delivery system – Definition of Commonterms. Drug Regulation and control,pharmacopoeias formularies, sources of drug, drug nomenclature, routes of administration of drugs products, need for a dosage form, classification of dosage forms. Drug dosage and product development. Introduction to drug dosage Forms & Drug Delivery system – Definition of Common terms. Drug Regulation and control,pharmacopoeias formularies, sources of drug, drug nomenclature, routes of administration of drugs products, need for a dosage form, classification of dosage forms.				

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	UNIT-IV:Development of new drugs: Introduction,procedure followed in drug design, theresearch for lead compounds, molecular modification of lead compounds. Structure-Activity Relationship (SAR): Factorseffecting bioactivity, resonance, inductive effect,isoterism, bioisosterism, spatial considerations,biological properties of simple functional groups,theories of drug activity, occupancy theory, ratetheory, induced-fit theory,4.3Quantitative structure activity relationship(QSAR): Development of QSAR, drug receptor interactions, the additivity of group contributions, physico-chemical parameters, lipophilicity parameters, electronic parameter, ionizationconsants, steric parameters, chelation parameters, redox potential, indicator-variables.	
	UNIT-V:Computers in Pharmaceutical Chemistry: Need of computers for chemistry. Computers for Analytical Chemists-Introduction to computers. Organization of computers, CPU, Computer memory, I/Odevices, information storage, software components. Application of computers in chemistry. Programming in high level language (C++) to handle various numerical methods in chemistry – least square fit, solution to simultaneous equations, interpolation, extrapolation, data smoothing, numerical differentiation andintegrations.	
Extended Professional Component (is a part of internal component only. Not to be included in the external examination question paper)	Questions related to the above topics, from various competitive examinations UPSC / TRB : NET/ UGC-CSIR / GATE /TNPSC others to be solved (To be discussed during the Tutorial hours)	
Skills acquired from this course	Knowledge, Problem solving, Analytical ability, Professional Competency, Professional Communication and Transferable skills.	

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Dean of Arts & Science
PRIST Deemed to be University
Thanjavur - 613 403, Tamilnadu.

Recommended Text	1. Physical Chemistry- Bahl and Tuli. 2. Text Book of Physical Pharmaceutics, IInd edition, Vallabh Prakashan-C.V.S. Subramanyam. 3. Medicinal Chemistry (Organic Pharmaceutical Chemistry), G.R Chatwal, Himalaya Publishing house. 4. Instrumental method of Analysis- Hubert H, Willard,7th edition. 5. Textbook of Pharmaceutical Chemistry by,Jayshree Ghosh, S. Chand & company Ltd.Pharmaceutical Chemistry by Dr. S. Lakshmi, Sultanchand & Sons.	
Reference Books	1. Computers in chemistry, K.V. Raman, Tata Mc.Graw-Hill, 1993. 2. Computers for Chemists, S.K Pundir, Anshu bansal, A pragate prakashan., 2 nd edition, New age international (P) limited, New Delhi 3. Physical Pharmacy and Pharmaceutical Sciences by Martins, Patrick J, Sinko, Lippincott, William and Wilkins. 4. Cooper and Gunn's Tutorial Pharmacy ,6th edition by S.J. Carter, CBS Publisher Ltd. 5. Ansels pharmaceutical Dosage forms and Drug Delivery System by Allen Popvich and Ansel, Indian edition-B.I. Publication Pvt. Ltd.	
Website and e-learning source	https://www.ncbi.nlm.nih.gov/books/NBK482447/ https://training.seer.cancer.gov/treatment/chemotherapy/types.html	

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Course Code	Course Title	L	T	P	C

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20114DSC56B	Phytochemistry	4	1	0	3
Course Outline	**UNIT-I:Pharmacognosy and Standardization of Herbal drugs:** Introduction, definition, development classification and Source of Drugs: Biological, mineral, marine,and plant tissue cultures. Study of pharmacognosticof a crude drug. Biosynthesis: Shikimic acid pathway and acetate pathway. Systematic analysis of Crude drugs. Standardization of Herbal drugs.WHO guidelines. Sampling of crude drug. Methods of drug evaluation. Determination of foreign matter, moisture Ash value. Phytochemical investigations-General chemical tests.				
	UNIT-II:Extraction Techniques: General methods of extraction, types – maceration, Decoction, percolation, Immersion and soxhlet extraction. Advanced techniques- counter current, steam distillation, supercritical gases, sonication, Micro waves assisted extraction. Factors affecting the choice of extraction process.				

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	UNIT-III:Drugs containing Terpenoids and volatile oils: Terpenoids: Classification, Isoprene rule, Isolation and separation techniques, General properties Camphor, Menthol, Eucalyptol. Volatile Oils or Essential Oils: Method of Preparations, Classifications of Volatile oils, Camphor oil, Geranium oil, Citral- Structure uses. Pentacyclic triterpenoids; amyrines; taraxasterol: Structure and pharmacological applications.	
	UNIT-IV:Drugs containing alkaloids: Occurrence,function of alkaloids in plants, pharmaceutical applications. Isolation, Preliminary Qualitative tests and general properties, General methods of structural elucidation. Morphine, Reserpine, papaverine - chemical properties,structure and uses. papaverine-structure, chemical properties and uses.	
	UNIT-V:Plant Glycosides and Marine drugs: Glycosides: Basic ring system, classification, isolation, properties, qualitative analysis. Pharmacological activity of Senna glycosides. Cardiacglycosides-Digoxin, digitoxin. Steroidal saponins glycosides-Diosgenin, hecogenin. Plant pigments: Occurrence and general methods of structure determination, Isolation and synthesis of quercetin and cyanidin chloride.Marine drugs -Selected Drug Molecules: Cardiovascular active substances, Cytotoxic compounds, antimicrobial compounds, antibiotic compounds, Anti-inflammatory agents, Marine toxins.	

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Extended Professional Component (is a part of internal component only, Not to be included in the external examination question paper)	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET/ UGC-CSIR / GATE /TNPSC others to be solved (To be discussed during the Tutorial hours)	
Skills acquired from this course	Knowledge, Problem solving, Analytical ability, Professional Competency, Professional Communication and Transferable skills.	
Recommended Text	1. Gurdeep R Chatwal (2016), Organic chemistry of Natural products, Volume I&II, 5th edition, Himalaya publishing House. 2. S.V.Bhat, B.A. Nagasampagi, M.Sivakumar (2014), Chemistry of Natural Products, Revised edition, Narosa Publishers.	
Reference Books	1. Jeffrey B. Harborne (2012), Phytochemical methods: A Guide to Modern Techniques of Plant Analysis, 4th edition, Indian reprint, Springer. 2. Ashutoshkar (2007), Pharmacognosy and Pharmacobiotechnology, 2 nd edition, New age international (P) limited, New Delhi.	

Course Code	Course Title	L	T	P	C
20114DSC56C	/Green Chemistry	0	0	4	4

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REGISTRAR
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PRIST Deemed to be University

Course Outline	**UNIT-I:Introduction to receptors:** Introduction, targets. Agonist, antagonist, partial agonist.Receptors, Receptor types. Theories of Drug – receptor interaction. Drug synergism, Drug resistance, physicochemical factors influencing drug action.	
	UNIT-II:Antibiotics: Introduction. Targets of antibiotics action, classification of antibiotics, enzyme-based mechanism of action, SAR of penicillins and tetracyclins, clinical application of penicillins, cephalosporin.Current trends in antibiotic therapy.	
	UNIT-III.Antihypertensive agents and diuretics: Classification of cardiovascular agents, introduction to hypertension, etiology, types, classification of antihypertensive agents, classification and mechanism of action of diuretics, Furosemide, Hydrochlorothiazide, Amiloride.	
	UNIT-IV:Antihypertensive agents and diuretics: Classification of cardiovascular agents, introduction to hypertension, etiology, types, classification of antihypertensive agents, classification and mechanism of action of diuretics, Furosemide, Hydrochlorothiazide, Amiloride.	
	UNIT-V: Analgesics, Antipyretics and Anti-Inflammatory Drugs: Introduction, Mechanism of inflammation, classification and mechanism of action and paracetamol, Ibuprofen, Diclofenac, naproxen, indomethacin, phenylbutazone and meperidine. Medicinal Chemistry of Antidiabetic Agents Introduction, Types of diabetics, Drugs used for the treatment, chemical classification, Mechanism of action, Treatment of diabetic mellitus. Chemistry of insulin, sulfonylurea.	
Extended Professional Component (is a part of internal component only. Not to be included in the external examination question paper)	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET/ UGC-CSIR / GATE /TNPSC others to be solved (To be discussed during the Tutorial hours)	
Skills acquired from this course	Knowledge, Problem solving, Analytical ability, Professional Competency, Professional Communication and Transferable skills.	

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Recommended Text	1. Wilson and Gisvold's textbook of organic medicinal and pharmaceutical chemistry. 2. Wilson, Charles Owens; Beale, John Marlowe; Block, John H, Lipincott William, 12th edition, 2011. 3. Graham L. Patrick, An Introduction to Medicinal Chemistry, 5th edition, Oxford University Press, 2013. JayashreeGhosh,AtextbookofPharmaceuticalChemistry,S.ChandandCo.Ltd,1999,1999 edn. 4. O.LeRoy,Natural andsyntheticorganicmedicinal compounds,Ealemi,1976. 5.S.AshutoshKar,MedicinalChemistry, WileyEasternLimited, NewDelhi,1993,New edn.	
Reference Books	1. Foye's Principles of Medicinal Chemistry, Lipincott Williams, Seventh Edition, 2012 2. Burger's Medicinal Chemistry, Drug Discovery and Development, Donald J. Abraham, David P. Rotella, Alfred Burger, Academic press, 2010. 3. WilsonandGisvold'sTextbookofOrganicMedicinalandPharmaceuticalChemistry,John M.EealeJrandJohnM. Block, Wolters Kluwer, 2011,12thedn. 4. P.Parimoo,ATextbookofMedicalChemistry,NewDelhi:CBSPublishers,1995 5. S.Ramakrishnan, K.G.PrasannanandR.Rajan,TextbookofMedicalBiochemistry,Hyderabad: Orient Longman,3rd edition,2001.	
Website and e-learning source	1. https://www.ncbi.nlm.nih.gov/books/NBK487447/ 2. https://training.seer.cancer.gov/treatment/chemotherapy/types.html 3. https://www.classcentral.com/course/swayam-medicinal-chemistry-12588	

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF CHEMISTRY

VALUE ADDED COURSE

Diploma Course on Molecular Structure Drawing Tool

Aim:

- To introduce students to molecular structure and biological evaluation of novel biologically active compounds

Objectives:

To inculcate concepts of molecular structure target identification and validation.

To understand techniques in Phenotypic screening and target convolution.

To increase employability of the students.

To educate about role of molecular structure of novel biologically active compounds

Course Outcomes:

At the end of this unit, you will be able to:

- Understand the software used in chemistry
- Perform the Manipulations of Selected Objects
- Apply the chemdraw software to draw the different systems
- Generate the IUPAC and physical properties of organic compounds
  Predict resonance spectral data of chemical structures.

UNIT-I: Molecular Structure Drawing Tool

ChemDraw - Introduction, Installation, Drawing molecular structures - structuretypes,drawing the framework of a structure, Drawing Bonds of Different Types Changing Bond Types Introducing Atom Labels.

UNIT-II: Manipulations with Selected Objects

Manipulations with Selected Objects- Select Objects, Move Objects, Copy Objects, Rotate and Mirror Objects, Stretch/Shrink/Scale Objects, Structure Perspective, Join Objects.

UNIT-III: ChemDraw-Practical I

Drawing of molecules - acyclic, cyclic, heterocyclic and bicyclic systems

- Analysis of molecules - formula, exact mass and elemental analysis
- Graphical representation of reaction scheme

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UNIT-IV: ChemDraw-Practical II

- Chemical structures to IUPAC names
- IUPAC naming to chemical structures
- 2D structures into 3D structures
- Prediction of boiling point, melting point, critical temperature, critical pressure, criticalvolume and heat of formation.

UNIT-V: ChemDraw-Practical III

Prediction of ^{1}H NMR & ^{13}C NMR of following compounds:

Ethanol, Ethyl methyl ketone, Cycloheptanone, Pyridine and α-napthol

Text Books:

Dr. StefanBienz Short Manual to the Chemical DrawingProgram ChemDraw Universityof Zurich I-V

Branch name	Year	Course offered
CHEMISTRY - 22415NHI	MSc	Diploma Course on Sustainable Development

Diploma Course on Sustainable Development

Aim

To provide an idea on Green Technology with an approach towards the design, manufacturing and use of chemical products to reduce or eliminate the chemical hazards intentionally. Green Technology is a new and rapidly emerging branch of chemistry.

Course learning outcomes:

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To understand the principles of green chemistry and engineering

To understand the field of Green Technology and its approach towards the new discoveryand innovation

To gain knowledge on Green industrial processes

To understand the concept of sustainable development and its importance

Ability to describe Cleaner Production measures applicable to different Industries variousapplications.

UNIT -1

Principles of Green Technology and Green Engineering: To learn to modify the processes and products to make them green safe and economically acceptable to the society. Concepts of green chemistry and Process intensification

UNIT-2

Green Synthesis and Catalysis: Green oxidation and photochemical reactions, Microwave and Ultrasonic assisted reactions, Synthesis of Green Reagents, Green solvents, Green nanotechnology and ionic liquids.

UNIT-3

Green Industrial Processes: Pollution statistics from various industries like polymer, textile, pharmaceutical, dyes, pesticides and wastewater treatment. A greener approach towards all these industries.

UNIT-4

Meaning of Sustainable Development: Understand the Sustainable Development, three principal dimensions: the ecological, the economic and the social dimension, including intergenerational justice; use a systems perspective, to describe sustainability challenges and possibilities for major technical systems and for their transformation to meet sustainability requirements

UNIT-5

Concepts of Cleaner Technologies: Cleaner Production (CP), Definition, methodology, and Institutions, Environmental Management Hierarchy, Relation of CP and EMS, CP case studies Ammonical nitrogen recovery from wastewater, Fluoride removal from wastewater, Reuse of water from sewage treatment plant, Gas quenching process: replacement of oil with nitrogen and Reduction of hydrogen cyanide from process stack, Reuse of liquid industrial waste from several industries

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Reference Book

1) Chemistry for Environmental Engineering and Science, Sawyer C.N, McCarty P.L and Parkin G.F 5th ed. McGraw-Hill Professional, 2003.
2) Environmental Chemistry with Green Chemistry, Das A. K. Books and Allied (P) Ltd., Kolkata, India, 2012.
3) Green Chemistry: Environmentally Benign Reactions, Ahluwalia, V.K. Ane BooksIndia, New Delhi, India, 2006.
4) Green Chemistry: An Introductory Text, Lancaster M. Royal Society of Chemistry,Cambridge, 2002

Text Books

1) Introduction to Green Chemistry, Matlack A.S. Publisher: Marcel Dekker,Newyork 2001.
2) Green Chemistry: Theory and Practice, Anastas P.T. and Warner J.C. Oxford University Press,1998.
3) Pollution Prevention: Fundamentals and Practice, Bishop P. L., McGraw-Hill,Boston, 2000.
4) Cleaner Production Audit Environmental System Reviews, Modak P., Visvanathan C. and Parawira M. Asian Institute of Technology, Bangkok, 1995. Handbook ofGreen Chemistry

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"Research and Publication Ethics" with 2 credits in the M.Phil.(Chemistry) programme curriculum with effect from 2021-22.

Unit I: PHILOSOPHY AND ETHICS

Introduction to philosophy: definition, nature and scope, concept, branches – Ethics: definition, moral philosophy, nature of moral judgements and reactions.

Unit II: SCIENTIFIC CONDUCT Ethics with respect to science and research - Intellectual honesty and research integrity -Scientific misconducts: Falsification, Fabrication and Plagiarism (FFP) – Redundant Publications: duplicate and overlapping publications, salami slicing - Selective reporting and misrepresentation of data.

Unit III: PUBLICATION ETHICS

Publication ethics: definition, introduction and importance - Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. - Conflicts of interest - Publication misconduct: definition, concept, problems that lead to unethical behaviour and vice versa, types - Violation of publication ethics, authorship and contributor ship - Identification of publication misconduct, complaints and appeals - Predatory publisher and journals.

Unit IV: OPEN ACCESS PUBLISHING

Open access publications and initiatives - SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies - Software tool to identify predatory publications developed by SPPU - Journal finger / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer, Journal Suggester, etc.

Unit V: PUBLICATION MISCONDUCT

Group Discussion (a) Subject specific ethical issues, FFP, authorship b) Conflicts of interest c) Complaints and appeals: examples and fraud from India and abroad Software tools: Use of plagiarism software like Turnitin, Urkund and other open source software tools

Unit VI: DATABASES AND RESEARCH METRICS (7Hrs.)

Databases Indexing databases, Citation databases: Web of Science, Scopus, etc.

Research Metrics : Impact Factor of journal as per Journal Citations Report, SNIP, SJR, IPP, Cite Score - Metrics: h-index, g index, i10 Index, altmetrics.

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Department of Chemistry
PRIST Deemed to be University
Vallam, Thanjavur-613403

References

1. Nicholas H. Steneck. Introduction to the Responsible Conduct of Research. Office of Research Integrity. 2007. Available at: https://ori.hhs.gov/sites/default/files/rcrintro.pdf

2. The Student's Guide to Research Ethics By Paul Oliver Open University Press, 2003

3. Responsible Conduct of Research By Adil E. Shamoo; David B. Resnik Oxford University Press, 2003

4. Ethics in Science Education, Research and Governance Edited by Kambadur Muralidhar, Amit Ghosh Ashok Kumar Singhvi. Indian National Science Academy, 2019. ISBN : 978-81-939482-1-7.

5. Anderson B.H., Dunstan, and Poole M.: Thesis and assignment writing. Wiley Eastern 1997.

6. Bjorn Gustavii: How to write and illustrate scientific papers? Cambridge University Press.

7. Bordens K.S. and Abbott. B.B.: Research Design and Methods, Mc Graw Hill, 2008.

8. Graziano, A., M., and Raulin, M.L.: Research Methods – A Process of Inquiry, Sixth Edition, Pearson, 2007.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MEETING OF BOARD OF STUDIES IN COMPUTER SCIENCE AND ENGINEERING

08.06.2020

MINUTES OF THE MEETING

The Meeting of Board of Studies in the Department of Computer science and Engineering was held on 10.06.2020 at 11.30 am in the ICT Room at PRIST University, Vallam Campus under the Chairmanship of Prof. Dr.R.Latha.

The following members attended the meeting:

S.No.	Nameofthe Member	Position	Role
1.	Dr.R.Latha	HOD/CSE	Chair Person
2.	Dr.K.Selvakumar	HOD/CSE,JJ College of engineering & Technology	External Member
3.	Vijayaraagavan Ramanujam	Progarm Director,QA Consultant	External Member
4.	Dr.S.Nithyanandam	Professor	Internal Member
5.	Dr.L.S. Usharani	Professor	Internal Member
6.	Dr.A.N.Arulaasan	Associate Professor	Internal Member
7.	Dr.K.Padmapriya	Associate Professor	Internal Member
8.	S.Jancy Sickory Daisy	Assistant Professor	Internal Member
9.	K.Jayanthi	Assistant Professor	Internal Member
10	Prof.R.Tamizhselvan	Dean	Internal Member
11	R.Hariharan	Alumini Global Technology,Thanjavur	Internal Member
12	M.Vinoth	IV Year Student	Internal Member

At the outset, the Chairman BOS welcomed the members for attending the meeting of the Board of Studies. In her introductory remarks, she described the agenda items.

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After thorough scrutiny of the curriculum and Syllabi and the details of feedback on curriculum received from the Stake holders during the Year 2019-20, the members of the Board have unanimously passed the following resolutions:

- Resolved to introduce the following Audit courses in B.Tech (Computer Science and Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of theAll India Council for Technical Education

  Sem -I: Induction Training Programme- 2credits
  Sem-II: Indian Constitution- 2credits
  Sem-III: Introduction to Gender studies- 2credits
  Sem IV: Community Engagement- 2credits
  Sem V: Innovation and Entrepreneurship- 2credits
  Sem VIII: Professional Ethics and Human Value- 2credits

Further resolved to approve the syllabus for the above mentioned Audit Courses as given in Annexure-I

- Resolved to introduce the following Audit courses on Soft kills in the B.Tech (Computer Science and Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of the All India Council for Technical Education:

  Year I: Basic Behavioral Etiquette-2 credits
  Year II: Technical, General Aptitude and Skill set Development-2 credits
  Year III: Technical Training-2 credits
  Year IV: Interview Skills Training and Mock Test -2 credits

Further resolved to approve the syllabus for the above mentioned Audit Courses as given in Annexure-II

- Resolved to approve the syllabus for the newly introduced Under Graduate Programme B.Tech (Computer Science and Engineering) with specialization in Artificial Intelligence and Machine Learningin collaboration with IBM-ICEwith effect from the year 2020-21as given in
  Annexure –III.

- Resolved to approve the syllabus for the newly introduced Under Graduate ProgrammeB.Tech (Computer Science and Engineering) with specialization in Internet of Thingsin collaboration with IBM-ICEwith effect from the year 2020-21as given in Annexure –III.

- To introduce value added courses

  Artifical intelligences Cyber Security
  Data Science using Artifical Intelligence
  3D Animation using Maxplot

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- Inclusion of additional elective courses in B.Tech(FT)

17150E761	Knowledge Engineering
17150E81H	Database Design and Management

- The members of the board also scrutinized and updated the panel of examiners for B. Tech (CSE) and M. Tech (CSE). The same was submitted to the Academic Council Board for approval.

The meeting was concluded with thanks from Chairperson

S.No.	Name of the Member	SIGNATURE
1.	Dr.R.Latha	
2.	Dr.K.Selvakumar	
3.	Vijayaragavan Ramanujam	
4.	Dr.S.Nithyanandam	
5.	Dr.L.S. Usharani	
6.	Dr.A.N.Arulanasan	
7.	Dr.K.Padmapriya	
8.	S.Janey Sickory Daisy	
9.	K.Jayanthi	
10.	Prof.R.Tamizhselvan	
11.	R.Hariharan	
12.	M.Vinoth	

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B.TECH (FT) CSE [REGULATION 2020]

SEMESTER I

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20147S11	Communicative English	2	0	0	2
2.	20148S12	Engineering Mathematics I	3	1	0	4
3.	20149S13	Engineering Physics	2	1	0	3
4.	20149S14	Engineering Chemistry	2	1	0	3
5.	20154S15	Engineering Graphics	1	0	4	3
6.	20150S16	Problem Solving and Basics of Python Programming	3	0	0	3
PRACTICAL						
7.	20150L17	Problem Solving and Basics of Python Programming Laboratory	0	0	4	2
8.	20149L18	Physics and Chemistry Laboratory	0	0	4	2
TOTAL			13	03	12	22
AUDIT COURSE						
1.	201AGIT	Induction Training Programme				2

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SEMESTER II

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1	20147S21	Technical English	2	0	0	2
2	20148S22	Engineering Mathematics – II	3	1	0	4
3	20149S23A	Physics for Information Science	3	0	0	3
4	20149S24A	Environmental Science And Engineering	3	0	0	3
5	20153S25A	Basic Electrical, Electronics And Measurement Engineering	2	1	0	3
6	20150S26A	Programming in C	4	0	0	4
		PRACTICAL				
7	20154L27	Engineering Practices Laboratory	1	0	4	3
8	20150L28A	C Programming Laboratory	0	0	4	2
		TOTAL	18	02	08	24
		AUDIT COURSE				
1	201AGIC	Indian Constitution				2
		SOFT SKILL COURSE				
1	201ASBE	Basic Behavioral Etiquette				2

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SEMESTER III

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20148S31A	Discrete Mathematics	3	1	0	4
2.	20150S32	Digital Principles and System Design	4	0	0	4
3.	20150C33	Data Structures	3	0	0	3
4.	20150C34	Object Oriented Programming	3	0	0	3
5.	20150S35	Communication Engineering	3	0	0	3
		PRACTICAL				
6.	20150L36	Data Structures Laboratory	0	0	4	2
7.	20150L37	Object Oriented Programming Laboratory	0	0	4	2
8.	20150L38	Digital Systems Laboratory	0	0	4	2
9.	20150L39	Interpersonal Skills/Listening &Speaking	0	0	2	1
		TOTAL	16	1	14	24
		AUDIT COURSE				
1.	201AGGS	Introduction to Gender studies				2

SEMESTER IV

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	20148S41A	Probability and Queuing Theory	3	1	0	4
2.	20150C42	Computer Architecture	3	0	0	3
3.	20150C43	Database Management Systems	3	0	0	3
4.	20150C44	Design and Analysis of Algorithms	3	0	0	3
5.	20150C45	Operating Systems	3	0	0	3
6.	20150C46	Software Engineering	3	0	0	3
		PRACTICAL				
7.	20150L47	Database Management Systems Laboratory	0	0	4	2
8.	20150L48	Operating Systems Laboratory	0	0	4	2
9.	20150L49	Advanced Reading and Writing	0	0	2	1
		TOTAL	18	1	10	24

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AUDIT COURSE			
1.	201AGCE	Community Engagement	2
SOFT SKILL COURSE			
1.	201ASGS	Technical, General Aptitude and Skill set Development	2

SEMESTER V

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20148S51A	Algebra and Number Theory	3	1	0	4
2.	20150C52	Computer Networks	3	0	0	3
3.	20150C53	Microprocessors and Microcontrollers	3	0	0	3
4.	201__OE54__	Open Elective – I	3	0	0	3
5.	20150C55	Theory of Computation	2	1	0	3
6.	20150C56	Object Oriented Analysis and Design	3	0	0	3
PRACTICAL						
7.	20150L57	Microprocessors and Microcontrollers Laboratory	0	0	4	2
8.	20150L58	Object Oriented Analysis and Design Laboratory	0	0	4	2
9.	20150L59	Networks Laboratory	0	0	4	2
		TOTAL	17	02	12	25
AUDIT COURSE						
1.	201AGIE	Innovation and Entrepreneurship				2

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SEMESTER VI

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20150C61	Internet Programming	3	0	0	3
2.	20150C62	Artificial Intelligence	3	0	0	3
3.	20150C63	Mobile Computing	3	0	0	3
4.	20150C64	Compiler Design	3	1	0	4
5.	20150C65	Distributed Systems	3	0	0	3
6.	20150E66	Elective - I	3	0	0	3
PRACTICAL						
7.	20150L61	Internet Programming Laboratory	0	0	4	2
8.	20150L62	Mobile Application Development Laboratory	0	0	4	2
9.	20150MP63	Mini Project	0	0	4	2
10.	20150L64	Professional Communication	0	0	2	1
		TOTAL	18	02	14	26
SOFT SKILL COURSE						
1.	201ASTT	Technical Training				2

SEMESTER VII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20150S71	Principles of Management	3	0	0	3
2.	20150C72	Cryptography and Network Security	3	0	0	3
3.	20150C73	Cloud Computing	3	0	0	3
4.	201__OE74__	Open Elective – II	3	0	0	3
5.	20150E75__	Elective – II	3	0	0	3
6.	20150E76__	Elective – III	3	0	0	3
PRACTICAL						
7.	20150L77	Cloud Computing Laboratory	0	0	4	2
8.	20150L78	Security Laboratory	0	0	4	2
		TOTAL	18	0	8	22

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SEMESTER VIII

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1.	20150E81	Elective – IV	3	0	0	3
2.	20150E82	Elective – V	3	0	0	3
PRACTICAL						
3.	20150P83	Project Work	0	0	12	6
		TOTAL	6	0	12	12
AUDIT COURSE						
1	201AGPE	Professional Ethics and Human Value				2
SOFT SKILL COURSE						
2.	201ASIM	Interview Skills Training and Mock Test				2

ELECTIVE I (SEMESTER VI)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	20150E66A	Data Warehousing and Data Mining	3	0	0	3
2	20150E66B	Software Testing	3	0	0	3
3	20150E66C	Embedded Systems	3	0	0	3
4	20150E66D	Graph Theory and Applications	3	0	0	3
5	20150E66E	Digital Signal Processing	3	0	0	3

ELECTIVE II (SEMESTER VII)

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	20150E75A	Big Data Analytics	3	0	0	3
2	20150E75B	Machine Learning Techniques	3	0	0	3
3	20150E75C	Software Project Management	3	0	0	3
4	20150E75D	Internet of Things	3	0	0	3
5	20150E75E	Service Oriented Architecture	3	0	0	3

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ELECTIVE III (SEMESTER VII)

SL No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	20150E76A	Multi-core Architectures and Programming	3	0	0	3
2	20150E76B	Human Computer Interaction	3	0	0	3
3	20150E76C	C# and .Net Programming	3	0	0	3
4	20150E76D	Wireless Adhoc and Sensor Networks	3	0	0	3
5	20150E76E	Advanced Topics on Databases	3	0	0	3

ELECTIVE IV (SEMESTER VIII)

SL No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	20150E81A	Digital Image Processing	3	0	0	3
2	20150E81B	Social Network Analysis	3	0	0	3
3	20150E81C	Information Security	3	0	0	3
4	20150E81D	Cyber Forensics	3	0	0	3
5	20150E81E	Soft Computing	3	0	0	3

ELECTIVE V (SEMESTER VIII)

SL No	COURSE CODE	COURSE TITLE	L	T	P	C
THEORY						
1	20150E82A	Information Retrieval Techniques	3	0	0	3
2	20150E82B	Natural Language Processing	3	0	0	3
3	20150E82C	Parallel Algorithms	3	0	0	3
4	20150E82D	Speech Processing	3	0	0	3
5	20150E82E	Fundamentals of Nano Science	3	0	0	3

OPEN ELECTIVE I (SEMESTER V)

SL No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	ECE	20152OE54A	Basics Of Bio Medical Instrumentation	3	0	0	3
2.		20152OE54B	Sensors And Transducers	3	0	0	3

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3.	EEE	20153OE54A	Industrial Nano Technology	3	0	0	3
4.		20153OE54B	Energy Conservation and Management	3	0	0	3
5.	MECH	20154OE54A	Renewable energy sources	3	0	0	3
6.		20154OE54B	Automotive Systems	3	0	0	3
7.	CIVIL	20155OE54A	Air Pollution And Control Engineering	3	0	0	3
8.		20155OE54B	Geographic Information Systems	3	0	0	3
9.	CSE**	20150OE54A	Database Management Systems	3	0	0	3
10.		20150OE54B	Cloud Computing	3	0	0	3
		17150E76I	Knowledge Engineering	3	0	0	3

**Offered for other Departments only

OPEN ELECTIVE II (SEMESTER VII)

Sl. No	DEPT	COURSE CODE	COURSE TITLE	L	T	P	C
1.	ECE	20152OE74A	Robotics	3	0	0	3
2.		20152OE74B	Electronic Devices	3	0	0	3
3.	EEE	20153OE74A	Basic Circuit Theory	3	0	0	3
4.		20153OE74B	Introduction To Renewable Energy Systems	3	0	0	3
5.	MECH	20154OE74A	Industrial Safety	3	0	0	3
6.		20154OE74B	Testing Of Materials	3	0	0	3
7.	CIVIL	20155OE74A	Green Building Design	3	0	0	3
8.		20155OE74B	Waste Water Treatment	3	0	0	3
9.	CSE**	20150OE74A	Introduction To C Programming	3	0	0	3
10.		20150OE74B	Datastructures And Algorithms	3	0	0	3
		17150E81H	Database Design and Management	3	0	0	3

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CREDITS DISTRIBUTION

CGPA CREDITS

Semester	Core	Elective	Open Elective	Practical	Project	Total
I	18	-	-	04	-	22
II	19	-	-	05	-	24
III	17	-	-	07	-	24
IV	19	-	-	05	-	24
V	16	-	03	06	-	25
VI	16	03	-	07	-	26
VII	09	06	03	04	-	22
VIII	-	05	-	-	06	12
TOTAL CGPA CREDITS						179

TOTAL CREDITS – 179

NON-CGPA CREDITS

Semester	Audit and skill Course	Total
I	01	02
II	02	04
III	01	02
IV	02	04
V	01	02
VI	01	02
VII	-	-
VIII	02	04
TOTAL NON-CGPA CREDITS		20

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Annexure-I

Student Induction Training

The *Induction Program* is designed to make the newly joined students feel comfortable, sensitize them towards exploring their academic interests and activities, reducing competition and making them work for excellence, promote bonding within them, build relations between teachers and students, give a broader view of life, and building of character.

Induction program	3 weeks duration
Induction program for students to be offered right at the start of the first year.	• Physical activity • Creative Arts • Universal Human Values • Literary • Proficiency Modules • Lectures by Eminent People • Visits to local Areas • Familiarization to Dept./Branch & Innovations

The activities during the Induction Program would have an Initial Phase, a Regular Phase and a Closing Phase. The Initial and Closing Phases would be two days each.

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Course on Indian Constitution

Aim:

- To understandthe salient features of the Indian Constitution

Objectives:

- To make the students understand about the Democratic Rule and Parliamentarian Administration.
- To appreciate the salient features of the Indian Constitution.
- To know the fundamental Rights and Constitutional Remedies.
- To make familiar with powers and positions of the Union Executive, Union Parliament and the Supreme Court.
- To exercise the adult franchise of voting and appreciate the Electoral system of Indian Democracy.

Outcomes

- Democratic values and citizenship Training are gained.
- Awareness on Fundamental Rights are established.
- The functions of union Government and State Governments are learnt.
- The power and functions of the Judiciary learnt thoroughly.
- Appreciation of Democratic Parliamentary Rule is learnt.

UNIT I: The Making Ofindianconstitution

The Constituent Assembly Organization Character – Work – Salient features of the constitution – Written and Detailed Constitution – Socialism – Secularism – Democracy and Republic.

UNIT II: Fundamental Rights And Fundamental Duties Of The Citizens

Right of Equality – Right of Freedom – Right against Exploitation – Right to Freedom of Religion – Cultural and Educational Rights – Right to Constitutional Remedies – Fundamental Duties.

UNIT III: Directive Principles Of State Policy

Socialism Principles – Gandhian Principles – Liberal and General Principles – Differences between Fundamental Rights and Directive principles.

UNIT IV: The Union Executive, UnionparliamentAnd Supreme Court

Powers and positions of the President – Qualification Method of Election of President and vice president – Prime Minister RajyaSabha- LokSabha – The Supreme Court – High Court – Functions and position of Supreme court and High Court.

UNIT V: State Council – Election System AndPartliamentary Democracy In India

State council of Ministers – Chief Minister – Election system in India- Main features – Election Commission - Features of Indian Democracy.

References:

1. Palekar S.A. Indian Constitution Government and politics, ABD Publications, India.
2. AiyerAlladi, Krishnaswami, Constitution and fundamental rights 1955.
3. Markandan K.C. Directive Principles in the Indian Constitution 1966.
4. KashyapSubash C Our Parliament, National Book, Trust New Delhi 1989.

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INTRODUCTION TO GENDER STUDIES

COURSE OUTLINE

Unit-I Concepts
Sex vs. Gender, masculinity, femininity, socialization, patriarchy, public/ private, essentialism, binaryism, power, hegemony, hierarchy, stereotype, gender roles, gender relation, deconstruction, resistance, sexual division of labour.

Unit-II
Feminist Theory
Liberal, Marxist, Socialist, Radical, Psychoanalytic, postmodernist, eco-feminist.

Unit-III
Women's Movements: Global, National and Local
Rise of Feminism in Europe and America.
Women's Movement in India.

Unit-IV
Gender and Language
Linguistic Forms and Gender.
Gender and narratives.

Unit-V
Gender and Representation
Advertising and popular visual media.
Gender and Representation in Alternative Media.
Gender and social media.

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Community Engagement

a) Objectives:

- To develop appropriate values, knowledge, life skills and competencies among students
- To make students sensitive towards socio-economic and environmental problems
- To understand the functioning of democracy, role of citizens in democracy, social capital, its role in development
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

b) Learning Outcomes:

After completing this course, student will be able to

- Gain an understanding of rural life, culture and socio-economic
- Develop appropriate rapport with the community
- Appreciate strengths and weaknesses of the community and develop plans to overcome the weaknesses
- Learn to share their knowledge and skills with the community
- Identify opportunities for contributing to community's socio-economic empowerment

c) Credit:

2 credit, 30 hours, at least 50% in field, compulsory for all students

d) Contents:

Divided into four Modules, field immersion is part of each Unit

CourseStructure:2CreditsCourse(1CreditforClassroomandTutorialand1CreditforFieldEngagement)

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S. No	Module Title	Module Content	Assignment	Teaching/ Learning Methodology	No. of Classes
1	Appreciation of Rural Society	Rurallifestyle,rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of 'soul of India lies in villages' (Gandhi), ruralinfrastructure	Prepare a map (physical, visual or digital) of the village youvisited andwriteanessay about inter-family relations in that village.	- Classroom discussions - Fieldvisit ** - Assignment Map	2 4 2
2	*Understanding rural economy & livelihood*	Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets	Describe your analysis of rural household economy,its challenges and possible pathways to address them	- Fieldvisit ** - Group discussions in class - Assignment	3 4 1
3	*Rural Institutions*	Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration	How effectively are Panchayati rajinstitutions functioning in the village?What wouldyousuggest to improve their effectiveness? Present a case study (written or audio-visual)	- Classroom - Fieldvisit ** - Group presentation ofassignment	2 4 2

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4	*Rural Development Programmes*	History of rural development in India, current national programmes: SarvaShikshaAbhiyan, DetiBachao, DetiPadhao, Ayushman Bharat, Swachh Bharat, PM AwaasYojana, Skill India, Gram PanchayatDecentralised Planning, NRLM, MNREGA, etc.	Describe the benefits received and challenges faced in the delivery of one of these programmes in the rural community; give suggestions about improving implementation of the programme for the rural poor.	- Classroom - Each student selects one program for field visit** - Written assignment	2 4 2

INNOVATION AND ENTREPRENEURSHIP

Course Outcomes

After the completion of the course, the students will be able to:

- Comprehend the role of bounded rationality, framing, causation and effectuation in entrepreneurial decisionmaking.
- Demonstrate an ability to design business modelcanvas.
- Evaluate the various sources of raising finance for startupventures.
- Understand the fundamentals of developing and presenting business pitching to potential investors.

Course Content

Module – I
Introduction to Entrepreneurship: Entrepreneurs; entrepreneurial personality and intentions-characteristics, traits and behavioral; entrepreneurial challenges.

Module-II

Module Entrepreneurial Opportunities: Opportunities, discovery/ creation, Pattern identification and recognition for venture creation: prototype and exemplar model, reverse engineering.

Module –III

Entrepreneurial Process and Decision Making: Entrepreneurial ecosystem, Ideation, development and exploitation of opportunities; Negotiation, decision making process and approaches, Effectuation and Causation.

Module-IV

Crafting business models and Lean Start-ups: Introduction to business models; Creating value propositions-conventional industry logic, value innovation logic; customer focused innovation;

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Module – V

Understanding Business and Entrepreneurial Finance: Forms of business organizations; capital structure; Evolution of Organization, sources and selection of venture finance options and its management implications Policy initiatives and focus; role of institutions in promoting entrepreneurship.

Books for References

- Ries, Eric (2011). *The lean Start-up: How constant innovation creates radically successful businesses*. Penguin Books, India
- Blank, Steve (2012). *The Startup Owner's Manual: The Step By Step Guide for Building a Great Company*. K&S Ranch
- S. Chand and S. Jaiswal, *Entrepreneurship and small business: Principal Practice and Policy*, Pearson Education, 2016
- J. A. Timmons, R. D. Hisrich, J. Vohora, *Technology Ventures: From Idea to Enterprise*, McGraw Hill(2013)
- Osterwalder, Alex and Pigneur, Yves (2013) Business Model Generation
- Kalam, Dr. A.P.J. Abdul and Pandey, Sunil (2013) *India Land of a Billion Entrepreneurs*, Pentagon
- Kiyosaki, Robert (2000). *Rich Dad Poor Dad: What the Rich Teach Their Kids About Money That the Poor and Middle Class Do Not!*, Plata Publishing
- Kiyosaki, Robert T. & Lechter, Sharon L. (2012). *Rich Dad's Prophecy: Why the Biggest Age Transfer in History Is Coming, How You Can Prepare Yourself and Profit from It!*, John Wiley & Sons
- Kotler, Philip, (2013). *Kotler Wows Kerala*, Westland
- Kiyosaki, Robert (2013). *Rich Dad's Before You Quit Your Job: 10 Real-Life Lessons Every Entrepreneur Should Master*, Plata Publishing
- Kotler, Philip (2015). *Kotler Wows Karnataka*, Penguin Random House India
- Kotler, Philip (2015). *Kotler Wows Kerala*, Westland
- Kiyosaki, Robert (2015). *Rich Dad's Increase Your Financial IQ: Get Smarter with Your Money

17IS50ES1H DATABASE MANAGEMENT SYSTEMS

L T P C
3 0 0 3

OBJECTIVES:

- To learn the fundamentals of data models .
- To understand the internal storage structures using different file and indexing techniques.
- To know the fundamental concepts of transaction processing- concurrency control techniques and recovery procedure.
- To understand the basic concepts of the emerging trends in the area of distributed DB- and OODB.

UNIT I INTRODUCTION AND CONCEPTUAL MODELING 9 + 3

Introduction to File and Database systems- Database system structure – Data Models – Introduction to Network and Hierarchical Models – ER model – Relational Model – Relational Algebra and Calculus.

UNIT II RELATIONAL MODEL 9 + 3

SQL – Data definition- Queries in SQL- Updates- Views – Integrity and Security – Relational Database design – Functional dependences and Normalization for Relational Databases (up to BCNF).

UNIT III DATA STORAGE AND QUERY PROCESSING 9 + 3

Primary file organization- Secondary storage Devices- Operations on Files- Heap File- Sorted Files- Hashing Techniques – Index Structure for files –Different types of Indexes- B-Tree - Query Processing.

UNIT IV TRANSACTION MANAGEMENT 9 + 3

Transaction Processing – Introduction- Need for Concurrency control- Schedule and Recoverability- Serializability and Schedules – Concurrency Control – Types of Locks- Two Phases locking- Deadlock- Time stamp based concurrency control – Recovery Techniques – Concepts- Immediate Update- Deferred Update - Shadow Paging.

UNIT V CURRENT TRENDS 9 + 3

Object Oriented Databases – Need for Complex Data types- OO data Model- Nested relations- Complex Types- Inheritance Reference Types - Distributed databases- Homogenous and Heterogenous- Distributed data Storage

OUTCOMES: At the end of this course, the students will be able to: • Write queries to retrieve data. • Model and represent the real world data using Object Oriented Database. • Represent the data using XML database for better interoperability. • Develop and Deploy Web databases. • Use Advanced Indexing Techniques and apply Block Chaining Concepts.

REFERENCES: Henry F Korth, Abraham Silberschatz, S. Sudharshan "Database System Concepts", Seventh Edition, McGraw-Hill Education, March 2019. (Unit I, II, V)

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17150E76A KNOWLEDGE ENGINEERING L T P C
3 0 0 3

OBJECTIVES: • To understand the concepts of Knowledge Engineering. • To explain logic based reasoning. • To understand Reasoning under uncertainty. • To examine the various Knowledge representation and reasoning. • To apply Expert systems for various applications.

UNIT I KNOWLEDGE ENGINEERING CONCEPTS 7

Knowledge Engineering in AI – Knowledge base Systems – Knowledge base systems Vs Database systems – Rules Vs Triggers – Domain Expert – Expert Systems – Architecture of Expert Systems – Expert System Shell - JESS- Heuristic Search – A*, AO* and Mini-max algorithms - Knowledge representation using Rules- Rule Matching and Rule Firing- Active and Passive rules- Procedural Versus Declarative Knowledge - Logic Programming - Forward versus Backward Reasoning – Rules in Production Systems- Working Memory- Conflict Resolution- Rete's Algorithm – Discriminant Networks Knowledge representation using Semantic Networks – Frames- Conceptual Dependency – Scripts – Ontology – Semantic Web – Knowledge Based Reasoning Methods.

UNIT II LOGIC BASED REASONING 9

Role of Logic – Propositional logic – Predicate logic – Syntax – Semantics – Interpretations – Denotation – Satisfaction and models – Pragmatics – Explicit and Implicit Beliefs - Logical Consequence – Expressing Knowledge - Basic and Complex Facts – Terminological facts – Entailment – Abstract Individuals - Other Sorts of Facts – Resolution – The Propositional Case – Predicate Logic – Handling Variables and Quantifiers – First Order Resolution- Answer Extraction – Skolemization – Clause Form – Equality - Dealing with Computational Intractability - The First-Order Case - Herbrand Theorem - The Propositional Case - The Implications - SAT Solvers - Most General Unifiers - Other Refinements

UNIT III REASONING UNDER UNCERTAINTY 9

Vagueness- Uncertainty – Degrees of Belief- Defaults – Default Reasoning – Closed World Assumption – Situation Logic - Non Monotonic Logic- Truth Maintenance Systems - Fuzzy Logic – Inference using Fuzzy Rules – Modal Logic – Temporal Logic – Temporal reasoning – Temporal Constraint networks – Epistemic Logic- Statistical Reasoning – Bayesian Networks – Plausibility Theory - Reasoning and Decision Making under Uncertainty.

UNIT IV KNOWLEDGE REPRESNTATION AND REASONING 9

Control Knowledge – Reasoning with Horn Clauses – Computing Selective Linear Definite clause resolution Derivatives – Rule Formation and Search Strategy – Algorithm Design – Specifying Goal order – Committing to Proof methods – Controlling Back Tracking – Negation as Failure – Dynamic Databases - Structured Descriptions – Descriptions – Description Language – Meaning and Entailment – Interpretations – Truth in an Interpretation – Computing Entailments – Simplifying the Knowledge base

UNIT V EXPERT SYSTEMS AND APPLICATIONS 9

Expert Systems – Inference Engine – Forward and Backward Chaining Inference – MYCIN - DENDRAL – Knowledge Acquisition - Rote Learning – Learning from Examples – Machine LearningNeural Networks – Regression Analysis- Predictive Models - Deep Learning – Robotics and Automation -Field and Service Robotics –Assistive Robotics -Military Applications - Medicare – Education – Business Intelligence – Recommendation Systems – Social Network Analysis – Natural Language Processing – Information Retrieval Systems.

TOTAL: 45 PERIODS

OUTCOMES: At the end of this course, the students will be able to: • Explain the concepts of Knowledge Engineering. • Interpret logic based reasoning. • Understand Reasoning under uncertainty.

REFERENCES: . Ronald Brachman, Hector Levesque, "Knowledge Representation and Reasoning", 1st Edition, Morgan Kaufmann, 2004. 2. Richard A Frost, "Introduction to Knowledge Based Systems", Macmillan Publishing Co, 1986.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

VALUE ADDED COURSE

215150AIC ARTIFICIAL INTELLIGENT FOR CYBER SECURITY

UNIT I Introduction to AI for Cyber security

Applying AI in cyber security,The evolution from expert systems to data mining and AI,The different forms of automated learning,The characteristics of algorithm training and optimization,Beginning with AI via Jupyter Notebooks,Introducing AI in the context of cyber security

UNIT II AI for Cyber security Arsenal

Classification ,Regression,Dimensionality reduction,Clustering, Speech recognitionVideo anomaly detection,Natural language processing (NLP),NLP,Large-scale image processing, Social media analysis

UNIT III Detecting Cyber security Threats with AI

How to detect spam with Perceptrons,Image spam detection with support vector machines (SVMs),Phishing detection with logistic regression and decision trees,Spam detection with Naive Bayes,Spam detection adopting NLP

UNIT IV Protecting Sensitive Information and Assets

Authentication abuse prevention,Account reputation scoring,User authentication with keystrokerecognition,Biometric authentication with facial recognition.

UNIT-V Data protection

Data Protection and Data Privacy, Breach Response & Recovery, Cyber Crisis Management, Business Continuity Planning, Identifying Business Continuity requirements, Business Impact analysis

Duration:45Hours

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
Value added courses

215150DSA DATA SCIENCE USING ARTIFICIAL INTELLIGENT

UNIT I INTELLIGENT AGENTS

Introduction to AI – Agents and Environments – concept of rationality – nature of environments – structure of agents. Problem solving agents – search algorithms – uninformed search strategies.

UNIT II PROBLEM SOLVING

Heuristic search strategies – heuristic functions. Local search and optimization problems – local search in continuous space – search with non-deterministic actions – search in partially observable environments – online search agents and unknown environments

UNIT III GAME PLAYING AND CSP

Game theory – optimal decisions in games – alpha-beta search – monte-carlo tree search – stochastic games – partially observable games. Constraint satisfaction problems – constraint propagation – backtracking search for CSP – local search for CSP – structure of CSP.

UNIT IV LOGICAL REASONING

Knowledge-based agents – propositional logic – propositional theorem proving – propositional model checking – agents based on propositional logic. First-order logic – syntax and semantics – knowledge representation and engineering – inferences in first- order logic – forward chaining – backward chaining – resolution.

UNIT V PROBABILISTIC REASONING

Acting under uncertainty – Bayesian inference – naïve Bayes models. Probabilistic reasoning – Bayesian networks – exact inference in BN – approximate inference in BN – causal networks

Duration:45Hours

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Value added courses

215150DAM - 3D ANIMATION USING MATPLOT

UNIT I INTRODUCTION TO SET MODELING FOR FILM, GAMING AND TELEVISION.

Set Modeling Overview and Objective: Modeling using Nurbs and Polygons in 3D software. Strategies of Modeling. Tips and Techniques of Modeling usingPolygons.overview of Polygon selection and creation, Combining, separating and splitting.

UNIT II INTRODUCTION TO IN – ORGANIC, AUTOMOTIVE MODELING

In-organicModeling such as Solar systems, mountain, stage show background, gaming background. Automotive like car, bus and van with reference pictures. To create a model as it is in the picture.

UNIT III BASIC TEXTURING

Advanced Materials Using Specialized Material Types. Unwrapping UVs and Using Pelt Mapping and Creating Baked Textures and Normal Maps. Working with Advanced Modeling and Light Tracing with Radiosity

UNIT IV TEXTURING THE MODEL USING UV MAPPING

Texturing and Shading, Intro to Hyper shade, UV mapping overview, Mapping UVs, Modeling and Texturing effects,UVs menu reference, UVs windows and editors reference.

UNIT V RENDERING THE TEXTURE WITH SHADING

Texturing and Shading by Unwrapping the Models. Gaming background Texturing, Digital texturing using Photoshop and Texturing via other 2D tools.Applying Mental Ray Shades to the model and Using Final Gather to Fine Tuning Mental Ray Shades.

Duration:45Hours

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SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING

MEETING OF BOARD OF STUDIES IN CIVIL ENGINEERING

The Meeting of the Board of Studies in Department of Civil Engineering was held on 20.05.2020(Online) at 2.30 PM under the chairmanship of Dr. ASHUTOSH DAS

Meeting link: https://meet.google.com/kfc-oapq-gtm

The following Members were present for the meeting:

S.No.	Name of the Member	Position	Role
1	Dr. ASHUTOSH DAS	Professor	Chair Person/HOD
2	Dr S.MANJULA	Assistant Professor-NIT Trichy	External Member
3	MR.P.VADIVEL	Divisional engineer-highways department, Trichy.	External Member
4	Dr.IRAIKARKUZHALI	Professor	Internal Member
5	Dr.P.PARAMAGURU	Associate Professor	Internal Member
6	Dr.R.SIVA SAMUNDY	Associate Professor	Internal Member
7	D.AMAL COLINS	Associate Professor	Internal Member
8	S.RAMAKRISHNAN	Associate Professor	Internal Member
9	B.JOSE RAVINDRA RAJ	Assistant Professor	Internal Member
10	D.JEYAKUMAR	Assistant Professor	Internal Member
11	A.BELCIYA MARY	Assistant Professor	Internal Member
12	K.SHANTHI	Assistant Professor	Internal Member
13	J.SANTHIYAA JENIFER	Assistant Professor	Internal Member
14	R.DEVI	Assistant Professor	Internal Member
15	P.VENKATESWARAN	Assistant Professor	Internal Member
16	S.RAVISHANKAR	Assistant Professor	Internal Member
17	M.KARPAGAM	Assistant Professor	Internal Member
18	T.VIDHUDHALAI	Assistant Professor	Internal Member

The Chairman, Board of Studies in the Department of civil Engineering welcomed the members and briefed about the existing curriculum and syllabi. For various programmes offered by the Department and

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also the details of feedback on curriculum received from the various stake holders during the Academic year 2019-2020.

After thorough scrutiny of the curriculum and Syllabi and the details of feedback on curriculum received from the Stake holders during the Year 2019-2020, the members of the Board have unanimously passed the following resolutions:

- The members of the board scrutinized the Feedback of stake holder and Programmers are resolved to revise the curriculum for the Academic Year 2020-2021 for the following programmers and recommend to the academic year B.Tech (Civil Engineering) - Full Time.

- The members of the board also scrutinized and updated the panel of examiners for B.Tech FT/PT and recommended for the Academic Council for its approval.

- The members of the board also scrutinized and updated the panel of examiners for M.Tech FT/PT and recommended for the Academic Council for its approval.

- Resolved to introduce the following Audit courses in B.Tech (CIVIL Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of the All India Council for Technical Education:

  Sem-I: Induction Training Programme-2credits
  Sem-II: Indian Constitution-2credits
  Sem-III: Introduction to Gender studies-2credits
  SemIV: Community Engagement-2credits
  SemV: Innovation and Entrepreneurship-2credits
  SemVIII: Professional Ethics and Human Value-2credits

- Resolved to introduce the following Audit courses on Softkills in the B.Tech(Civil Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of the All India Council for Technical Education:

  YearI: Basic Behavioral Etiquette-2credits
  YearII: Technical,General Aptitude and Skillset Development-2credits
  YearIII: Technical Training-2 credits
  YearIV: Interview Skills Training and Mock Test-2credits

- Resolved to introduce the following Elective courses in B.Tech (CIVIL Engineering)-Full Time curriculum with effect from 2020-21 as per the guidelines of the All India Council for

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Technical Education:

Sem–V: Elective I

S.No	Name of the Subject
1	Construction Equipment and Automation
2	Principles of Architecture
3	Forensic Engineering & Rehabilitation
4	Energy Efficient Buildings

Sem-VI:Elective-II

S.No	Name of the Subject
1	Energy and Environment
2	Environmental Policies and Legislation
3	Sustainable Urban Development Concepts and Strategies
4	Instrumental Methods and Analysis of Environmental Pollutants

Sem-VII: Elective-III

S.No	Name of the Subject
1	Building Automation & Management System
2	Pavement Design
3	Town Planning
4	Smart materials and smart structures

Sem-VIII: Elective-IV

S.No	Name of the Subject
1	Environmental Economics
2	Simulation and Modeling in Environmental Systems
3	Membrane Separation for Water and Waste water
4	Theory and Practice of Industrial Wastewater Treatment

Sem-VIII: Elective-V

S.No	Name of the Subject
1	Airport & Waterways Engineering
2	Surface Hydrology
3	Contracts Management
4	Sustainable Construction methods

- Apart from Curriculum courses the Board members discussed with the feedback taken from various stake holders with respect of increasing the skill and potential of students. Finally came

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out with suggesting 4 new courses can introduced as Value added courses for the benefit of students.

- The list of suggested Value added courses are as follows:
  - ✓ Infrastructural Modelling
  - ✓ STADD PRO V8i
  - ✓ Geotechnical Engineering
  - ✓ Plastic waste Management

➢ The meeting was concluded with thanks from the Board of Studies Chairman

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Signature of the members:

S.No.	Name of the Member	Signature of the Member
1	Dr. ASHUTOSH DAS	
2	Dr. S.MANJULA	
3	MR.P.VADIVEL	
4	Dr.IRAIKARKUZHALI	
5	Dr.P.PARAMAGURU	
6	Dr.R.SIVA SAMUNDY	
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B.Tech-Civil Engineering – Full Time-2017R

SEMESTER I

Sl.No	Course Code	Course Title	Periods Per Week			Credit
			L	T	P	
		THEORY				
1	17147S11	Communicative English	5	1	0	4
2	17148S12	Engineering Mathematics	5	1	0	4
3	17149S13	Engineering Physics	5	1	0	4
4	17149S14	Engineering Chemistry	5	1	0	4
5	7154S15	Engineering Graphics	5	1	0	4
6	17150S15	Problem Solving and Python Programming	5	1	0	4
		PRACTICALS				
7	17150L17	Problem Solving and Python Programming Laboratory	0	0	3	2
8	17149L18	Physics and Chemistry Laboratory	0	0	3	2
9	171VEA19	Value Education				1
		TOTAL				29

SEMESTER II

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
		THEORY				
1.	17147S21	Technical English (All Branches)	5	1	0	4
2.	17148S22A	Engineering Mathematics II (All Branches)	5	1	0	4
3.	17149S23D	Physics for Civil Engineering	5	1	0	4
4.	7149S24A	Environmental Science And Engineering	5	1	0	4
5.	7153S25E	Basic Electrical And Electronics Engineering	5	1	0	4
6.	17154S26D	Engineering Mechanics	5	1	0	4
		PRACTICALS				
7.	17154L27	Engineering Practices Laboratory	0	0	4	2
8.	17155L28E	Computer Aided Building Drawing Lab	0	0	4	2
9.	171CA29	Fundamentals of Indian Constitution and Economy	0	0	0	1
		TOTAL	21	0	8	29

SEMESTER III

S. No	Sub. Code	Name of the Subject	L	T	P	C
		THEORY				
1	17148S31C	Transforms and Partial Differential Equations	4	0	0	4
2	17155C32	Engineering Geology	4	0	0	4
3	17155C33	Construction Materials	4	0	0	4
4	17155C34	Strength of Materials-I	4	0	0	4
5	17155C35	Fluid Mechanics	4	0	0	3

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6	17155C36	Surveying	4	0	0	3
		PRACTICALS				
7	17155L37	Surveying Laboratory	0	0	3	2
8	17155L38	Construction Materials Laboratory	0	0	3	2
9	17155L39	Interpersonal Skills / Listening and Speaking	0	0	2	1
		TOTAL				27

SEMESTER IV

S. No	Sub. Code	Name of the Subject	L	T	P	C
		THEORY				
1	17148S41C	Numerical Methods	4	0	0	4
2	17155C42	Construction Techniques and Practices	3	0	0	3
3	17155C43	Strength of Materials II	4	0	0	4
4	17155C44	Applied Hydraulic Engineering	4	0	0	4
5	17155C45	Concrete Technology	3	0	0	3
6	17155C46	Soil Mechanics	3	0	0	3
		PRACTICALS				
7	17155L47	Strength of Materials Lab	0	0	3	2
8	17155L48	Hydraulic Engineering Lab	0	0	3	2
9	17155L49	Advanced Reading & Writing	0	0	2	1
10	17155CRS	Research Led Seminar	0	0	2	
		TOTAL				27

SEMESTER – V

S. No	Sub. Code	Name of the Subject	L	T	P	C
		THEORY				
1	17155C51	Design of Reinforced Cement Concrete Elements	4	0	0	4
2	17155C52	Structural Analysis I	3	0	0	3
3	17155C53	Water Supply Engineering	4	0	0	4
4	17155FE54	Free Elective I	3	0	0	3
5	17155E55	Elective I	3	0	0	3
6	17155C56	Foundation Engineering	3	0	0	3
		PRACTICALS				
7	17155L57	Soil Mechanics Lab	0	0	3	2
8	17155L58	Water and Waste Water Analysis Lab	0	0	3	2
9	17155L59	Survey Camp	0	0	2	2
10	17155CRM	Research Methodology	0	0	2	3
		TOTAL				29

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SEMESTER VI

S. No	Sub. Code	Name of the Subject	L	T	P	C
		THEORY				
1	17155C61	Design of Steel Structural Elements	3	0	0	3
2	17155C62	Structural Analysis II	4	0	0	4
3	17155C63	Irrigation Engineering	3	0	0	3
4	17155C64	Highway Engineering	3	0	0	3
5	17155C65	Waste Water Engineering	3	0	0	3
6	17155E66	Elective II	3	0	0	3
		PRACTICALS				
7	17155L67	Highway Engineering Laboratory	0	0	3	2
8	17155L68	Irrigation and Environmental Engineering Drawing	0	0	3	2
9	17155L69	Professional Communication	0	0	2	2
10	17155CBR	Participation in Bounded Research	0	0	2	2
		TOTAL				27

SEMESTER - VII

S. No	Sub. Code	Name of the Subject	L	T	P	C
		THEORY				
1	17155C71	Estimation , Costing & Valuation Engineering	4	0	0	3
2	17155C72	Railways, Airports, Docks And Harbour Engineering	4	0	0	3
3	17155C73	Structural Design and drawing	4	0	0	4
4	17155FE74	Free Elective II	4	0	0	3
5	17155E75	Elective III	4	0	0	4
		PRACTICALS				
6	17155L76	Creative and Innovation project (activity based subject related)	0	0	4	2
7	17155L77	Industrial Training (4 Weeks during VI th Sem Summar)	0	0	0	0
8	17155L78	Technical Seminar	0	0	2	1
9	17155CSR	Design / Socio - Technical Project(Participated Scaffolded Research)	0	0	4	4
		TOTAL				26

SEMESTER – VIII

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	17155E81	Elective IV	4	0	0	3
2	17155E82	Elective V	4	0	0	3
3	17155PW83	Project Work	0	0	20	10
4	17155COM	COMPS	0	0	2	2
		TOTAL				18

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LIST OF ELECTIVES
SEMESTER – V
ELECTIVE I

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	17155E55A	Digital Cadastre	4	1	0	3
2	17155E55B	Advanced Surveying	4	1	0	3
3	17155E55C	Geographic Information System	4	1	0	3
4	17155E55D	Geo informatics Applications for Civil Engineers	4	1	0	3
5	17155E55E	Total Station and GPS Surveying	4	1	0	3
6	17155E55F	Disaster Management	4	1	0	3
7	17155E55G	Human Rights	4	1	0	3
8	17155E55H	Cartography	4	1	0	3

SEMESTER – VI
ELECTIVE II

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	17155E66A	Ground Improvement Techniques	4	1	0	3
2	17155E66B	Introduction to soil dynamics and machine foundation	4	1	0	3
3	17155E66C	Rock Engineering	4	1	0	3
4	17155E66D	Urban planning and development	4	1	0	3
5	17155E66E	Air pollution and control engineering	4	1	0	3
6	17155E66F	Intellectual property rights	4	1	0	3
7	17155E66G	Off shore Structures	4	1	0	3

SEMESTER – VII
ELECTIVE III

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	17155E75A	Pavement Engineering	3	1	0	4
2	17155E75B	Traffic engineering and management	3	1	0	4
3	17155E75C	Transport and Environment	3	1	0	4
4	17155E75D	Industrial Structures	3	1	0	4
5	17155E75E	Environmental and social impact assessment	3	1	0	4
6	17155E75F	Design of Prestressed concrete structures	3	1	0	4
7	17155E75G	Construction planning and scheduling	3	1	0	4
8	17155E75H	Municipal solid waste management	3	1	0	4
9	17160E75I	Total quality management	3	1	0	4
10	17160E75J	Water Quality and Management	3	1	0	4

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SEMESTER – VIII
ELECTIVE IV

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	17155E81A	Coastal Engineering	4	1	0	3
2	17155E81B	Participatory water resources management	4	1	0	3
3	17155E81C	Integrated water resources management	4	1	0	3
4	17155E81D	Groundwater engineering	4	1	0	3
5	17155E81E	Water resources system systems engineering	4	1	0	3
6	17155E81F	Geo-environmental engineering	4	1	0	3
7	17155E81G	Hydrology and water resources engineering	4	1	0	3
8	17155E81H	Professional ethics in engineering	4	1	0	3
9	17155E81I	Urban Water Infrastructure	4	1	0	3

ELECTIVE V

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	17155E82A	Computer aided design of structures	4	1	0	3
2	17155E82B	Maintenance, repair and rehabilitation of structures	4	1	0	3
3	17155E82C	Structural dynamics and earthquake engineering	4	1	0	3
4	17155E82D	Prefabricated structures	4	1	0	3
5	17155E82E	Bridge engineering	4	1	0	3
6	17155E82F	Foundation of nano science	4	1	0	3

FREE ELECTIVE-I

1	17150FE54A	Database Management Systems (CSE)	3	0	0	3
2	17150FE54B	Cloud Computing (CSE)	3	0	0	3
3	17152FE54A	Basic Of Bio Medical Instrumentation (ECE)	3	0	0	3
4	17152FE54B	Sensor and Transducers (ECE)	3	0	0	3
5	17153FE54A	Industrial Nano Technology (EEE)	3	0	0	3
6	17153FE54B	Energy Conservation and Management (EEE)	3	0	0	3
7	17154FE54A	Renewable Energy Sources (MECH)	3	0	0	3
8	17154FE54B	Automotive Systems (MECH)	3	0	0	3
9	17155FE54A	Air Pollution And Control Engineering	3	0	0	3
10	17155FE54B	Geographic Information Systems	3	0	0	3

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FREE ELECTIVE-II

1	17150FE74A	Introcuction to C Programming (CSE)	3	0	0	3
2	17150FE74B	Data Stuctures & Algorithms (CSE)	3	0	0	3
3	17152FE74A	Robotics (ECE)	3	0	0	3
4	17152FE74B	Electronic Devices (ECE)	3	0	0	3
5	17153FE74A	Basic Circuit Theory (EEE)	3	0	0	3
6	17153FE74B	Introduction to Renewable Energy Systems (EEE)	3	0	0	3
7	17154FE74A	Industrial Safety (MECH)	3	0	0	3
8	17154FE74B	Testing of Materials (MECH)	3	0	0	3

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17160E75J WATER QUALITY AND MANAGEMENT L T P C 3 0 0 3

COURSE OBJECTIVES:

- To understand the furdamentals of mathematical models and their importance in water quality modelling, and to impart the skills to use water quality modelling software for surfaceand groundwater qualitymocelling.

UNIT I MODELLING INSIGHTS 9

Engineers and Mathematical models-Water quality models — historical development - different types of models-- steps in model development - importance of model building.- calibration and verification of models- finite element. finite difference and finite volume methods.

UNIT II POLLUTION TRANSPORT 9

Transport phenomena — advection, diffusion, dispersion- contamination transport in surface and subsurface water - Simple transport models –steady state and time variable solutions- conservation of mass, momentum and energy balance, governing equation for contaminant fate and transport

UNIT III SURFACE WATER QUALITY MODELLING 9

Water quality modeling of streams, lakes and estuaries — water quality– model sensitivity — assessing model performance; Models for dissolved oxygen, pathogens and COD, BOD-Streeter Phelp's model for point and distributed sources – modified streeter Phelp's equations.

UNIT IV GROUNDWATER QUALITY MODELLING 9

Groundwater flow and mass transport of solutes – groundwater quality modelling using numerical methods – Parameters, Input-output stresses, Initial and Boundary conditions- degradation of organic compounds in subsurface – Model calibration : steady state and unsteady state – sensitivity analysis – Model validation – seawater intrusion – basic concepts and modelling.

UNIT V WATER QUALITY MANAGEMENT MODELS 9

Exposure to surface water and groundwater quality modelling software's – MIKE 21, WASP, QUAL2E and MODFLOW – demonstration – case studies – Modeling multilayer groundwater flow system – Artificial recharge feasibility through modeling – Groundwater contamination, restoration and management.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

- On completion of the course, the students are able to

CO1 Know about the principles of water quality modelling.
CO2 Understand the pollutant transport phenomena in surface and groundwater.
CO3 Apply the knowledge of surface water quality modelling to predict the water quality of rivers, lakes and estuary.
CO4 Predict the groundwater contamination transport.
CO5 Predict water quality of surface and sub surface water using numerical solution.

REFERENCES:

1. Steven C. Chapra, "Surface Water Quality Modelling", Tata McGraw-Hill Companies, Inc., NewDelhi2018.
2. "Water Quality Modelling for Rivers and Streams" Authors: Benedini, Marcello, Tsakiris, George,Springer Netherlands2017.
3. "Hydrodynamics and Water Quality: Modelling Rivers, Lakes, and Estuaries", Zhen-Gang Ji, John Wiley & Sons,2018.
4. "Modelling Groundwater Flow and Contaminant Transport By Jacob Bear, A. H.-D. Cheng,Springer Science & Business Media,2010.
5. "Mathematical Modelling of Groundwater Pollution" Ne-Zheng Sun, Alexander Sun, SpringerNew York, 2012

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17155E81I URBAN WATER INFRASTRUCTURE L T P C

3 0 0 3

COURSE OBJECTIVE:

- To impart knowledge and skills relevant to water management in the context of urbanization and relate engineering principles to water supply, storm water and wastewater management, along with related regulations and best management practices from around the world.

UNIT I URBAN ECOSYSTEM 9

Cities as Ecological system – hybrid ecosystem – Resilience in urban ecosystem. Human components of Ecosystem – Urban pattern and Ecosystem function. Population and Community dynamics, functions of Urban Ecosystem.

UNIT II URBAN HYDROLOGY 9

The urban hydrological cycle – Function – Human induced changes in urban watershed – Hydrological calculation – Runoff – Infiltration – hydrograph

UNIT III URBAN STORM WATER MANAGEMENT 9

Design of Drainage System – Roadway Drainage Analysis – Types of inlet – inlet design – Design of storm drain - Storm water management regulations - structural storm management systems – Newer trends in storm water management (Green infrastructure) – installation operation and maintenance.

UNIT IV WATER CONSERVATION AND REUSE 9

Trends in supply and demand – indoor conservation – outdoor conservation – water reuse – Rainwater harvesting – public education.

UNIT V WATER GOVERNANCE 9

Challenges in water sector – Institutional setting, Supply Management, Demand Management, Wastewater management – Private sector participation, urban service delivery, customer satisfaction, financial resource management – case studies of best practices in cities across the world.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

On completion of the course, the student is expected to be able to

CO1 Explain various functional elements of urban ecosystem.
CO2 Calculate urban runoff, compute supply and demand of water, draw hydrograph
CO3 Compare advantages of Newer techniques of green infrastructure and illustrate benefits
CO4 Assess the Operation and Maintenance needs of urban water systems
CO5 Propose best management practices for Indian context

TEXT BOOKS:

1. AnandChiplunkar, K Seetharam and CheonKheong (ed) (2012), "Good Practices in urbanwater management" ADB, National University Singapore.

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2. Marina Alberti (2008). "Advances in Urban Ecology", SpringeR
3. Mohammad Karamouz, Ali Moridi, Sara Nazif (2016), Urban Water Engineering andManagement, 1st Edition, CRC Press
4. Monzur A. Imteaz , (2019), Urban Water Resources, CRC Press

REFERENCES:

1. HormozPazwash (2016), "Urban storm water management", CRC Press
2. Larry W. Mays, (2004), Urban Stormwater Management Tools, McGraw-Hil Companies
3. J Parkinson, O Mark (2005) Urban Stormwater Management in Developing Countries, IWAPublishin

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SEMESTER I

Sl.No	Course Code	Course Title	Periods Per Week			Credit
	THEORY		L	T	P	
1	20147S11	Communicative English	4	0	0	4
2	20148S12	Engineering Mathematics–I	3	2	0	4
3	20149S13	Engineering Physics	3	0	0	3
4	20149S14	Engineering Chemistry	3	0	0	3
5	20154S15	Engineering Graphics	2	0	4	4
6	20150S16	Problem Solving and Python Programming	3	0	0	3
	PRACTICALS					
7	20150L17	Problem Solving and Python Programming Laboratory	0	0	3	2
8	20149L18	Physics and Chemistry Laboratory	0	0	3	2
9	20IAGI9	Induction Training Programme				2
		TOTAL				25

SEMESTER II

Sl. No	COURSE CODE	COURSE TITLE	L	T	P	C
	THEORY					
1.	2014 /S21	Technical English (All Branches)	4	3	0	4
2.	20148S22A	Engineering Mathematics II (All Branches)	4	0	0	4
3.	20149S23D	Physics for Civil Engineering	5	0	0	3
4.	20149S24A	Environmental Science And Engineering	3	0	0	3
5.	20153S25E	Basic Electrical And Electronics Engineering	3	0	0	3
6.	20154S26D	Engineering Mechanics	3	2	0	4
	PRACTICALS					
7.	20154L27	Engineering Practices Laboratory	0	0	3	2
8.	20155L28E	Computer Aided Building Drawing Lab	0	0	3	2
9	20 AGIC	Indian Constitution				2
10.	20IASBE	Basic Behavioral Etiquette				2
		TOTAL	21	0	8	25

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SEMESTER III

S.No	Sub.Code	Name of the Subject	L	T	P	C
		THEORY				
1	20148S31C	Transforms and Partial Differential Equations	4	0	0	4
2	20155C32	Engineering Geology	3	0	0	3
3	20155C33	Construction Materials	3	0	0	3
4	20155C34	Strength of Materials-I	3	0	0	3
5	20155C35	Fluid Mechanics	3	2	0	4
6	20155C36	Surveying	4	0	0	3
		PRACTICALS				
7	20155L37	Surveying Laboratory	0	0	3	2
8	20155L38	Construction Materials Laboratory	0	0	3	2
9	20147L39	Interpersonal Skills/Listening and Speaking	0	0	2	1
10	20AGCS	Introduction to Gender Studies				2
		TOTAL				25

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SEMESTER IV

S.No	Sub.Code	Name of the Subject	L	T	P	C
THEORY						
1	20148S41C	Numerical Methods	4	0	0	4
2	20155C42	Construction Technicues and Practices	3	0	0	3
3	20155C43	Strength of Materials II	4	0	0	4
4	20155C44	Applied Hydraulic Ergineering	3	0	0	3
5	20155C45	Concrete Technology	3	0	0	3
6	20155C46	Soil Mechanics	3	0	0	3
PRACTICALS						
7	20155L47	Strength of Materials Lab	0	0	3	2
8	20155L48	Hydraulic Engineering Lab	0	0	3	2
9	20147L49	Advanced Reading & Writing	0	0	2	1
10	20155CRS	Research Led Seminar	0	0	2	1
11	20IAGCE	Community Engagement				2
12	20IASGS	Technical, General Aptitude and Skill Set Development				2
TOTAL						26

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SEMESTER–V

S.No	Sub.Code	Name of the Subject	L	T	P	C
		THEORY				
1	20155C51	Design of Reinforced Cement Concrete Elements	4	0	0	4
2	20155C52	Structural Analysis I	3	2	0	4
3	20155C53	Water Supply Engineering	3	0	0	3
4	20155FES4	Open Elective I	3	0	0	3
5	20155E55	Elective I	3	0	0	3
6	20155C56	Foundation Engineering	3	0	0	3
		PRACTICALS				
7	20155L57	Soil Mechanics Lab	0	0	3	2
8	20155L58	Water and Waste Water Analysis Lab	0	0	3	2
9	20155L59	Survey Camp	0	0	2	2
10	20155CRM	Research Methodology	0	0	2	3
11	20IAGIE	Innovation and Entrepreneurship				2
		TOTAL				29

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SEMESTER–VI

S.No	Sub. Code	Name of the Subject	L	T	P	C
		THEORY				
1	20155C61	Design of Stee Structural Elements	3	0	0	3
2	20155C62	Structural Analysis II	3	2	0	4
3	20155C63	Irrigation Engineering	3	0	0	3
4	20155C64	Highway Engineering	3	0	0	3
5	20155C65	Waste Water Engineering	3	0	0	3
6	20155E66	Elective II	3	0	0	3
		PRACTICALS				
7	20155L67	Highway Engineering Laboratory	0	0	3	2
8	20155L68	Irrigation and Environmental Engineering Drawing	0	0	3	2
9	20147..69	Professional Communication	0	0	2	1
10	20155CBR	Participation in Bounded Research	0	0	2	1
11	20IASTT	Technical Training				2
		TOTAL				25

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SEMESTER–VII

S. No	Sub. Code	Name of the Subject	L	T	P	C
		THEORY				
1	20155C71	Estimation , Costing & Valuation Engineering	4	0	0	4
2	20155C72	Railways, Airports, Docks And HarbourEngineering	3	2	0	4
3	20155C73	Structural Design and crawing	3	2	0	4
4	20155PE74	Open Elective II	4	0	0	3
5	20155E75	Elective III	4	0	0	3
		PRACTICALS				
6	20155L76	Creative and Innovation project (activity based –subject related)	0	0	4	2
7	20155L77	Industrial Training (4 Weeks during VI th SemSummer)	0	0	0	2
8	20155L78	Technical Seminar	0	0	2	1
9	20155CSR	Design / Socio Technical Project	0	0	4	3
		TOTAL				26

SEMESTER–VIII

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	20155E81	Elective IV	3	0	0	3
2	20155E82	Elective V	3	0	0	3
3	20155PW83	Project Work	0	0	30	10
4	20155PEE	Program Exit Exam				2
5	201AGPE	Professional Ethics and Human Values				2
6	201ASIM	Interview Skills Training and Mock Test				2
		TOTAL				18

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LIST OF ELECTIVES

SEMESTER – V

ELECTIVE I

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	20155E55A	Construction Equipment and Automation	3	0	0	3
2	20155E55B	Principles of Architecture	3	0	0	3
3	20155E55C	Geographic Information System	3	0	0	3
4	20155E55D	Forensic Engineering & Rehabilitation	3	0	0	3
5	20155E55E	Energy Efficient Buildings	3	0	0	3

SEMESTER – VI

ELECTIVE II

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	20155E66A	Energy and Environment	3	0	0	3
2	20155E66B	Environmental Policies and Legislation	3	0	0	3
3	20155E66C	Sustainable Urban Development Concepts and Strategies	3	0	0	3
4	20155E66D	Instrumental Methods and Analysis of Environmental Pollutants	3	0	0	3
5	20155E66E	Air pollution and control Engineering	3	0	0	3

SEMESTER – VI

ELECTIVE III

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	20155E75A	Building Automation & Management System	3	0	0	3
2	20155E75B	Design of Prestressed concrete structures	3	0	0	3
3	20155E75C	Pavement Design	3	0	0	3
4	20155E75D	Town Planning	3	0	0	3
5	20155E75E	Smart materials and smart structures	3	0	0	3

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SEMESTER – VIII ELECTIVE IV

S. No	Sub. Code	Name of the Subject	L	T	P	C
1	20155E81A	Environmental Economics	3	0	0	3
2	20155E81B	Simulation and Modeling in Environmental Systems	3	0	0	3
3	20155E81C	Membrane Separation for Water and Waste water	3	0	0	3
4	20155E81D	Theory and Practice of Incustrial Wastewater Treatment	3	0	0	3
5	20155E81E	Geo-environmental Engineering	3	0	0	3

ELECTIVE V

S. No	Sub. Code	Nameof theSubject	L	T	P	C
1	20155E82A	Airport & Waterways Engineering	3	0	0	3
2	20155E82B	Surface Hydrology	3	0	0	3
3	20155E82C	Prefabricated structures	3	0	0	3
4	20155E82D	Contracts Management	3	0	0	3
5	20155E82E	Sustainable Construction methods	3	0	0	3

OPEN ELECTIVE-I

1	20150FE54A	Database Management Systems (CSE)	3	0	0	3
2	20150FE54B	Cloud Computing (CSE)	3	0	0	3
3	20152FE54A	Basic of Bio Medical Instrumentation (ECE)	3	0	0	3
4	20152FE54B	Sensor and Transducers (ECE)	3	0	0	3
5	20153FE54A	Industrial Nano Technology (EEE)	3	0	0	3
6	20153FE54A	Energy Conservation and Management (EEE)	3	0	0	3
7	20154FE54A	Renewable Energy Sources (MECH)	3	0	0	3
8	20154FE54B	Automotive Systems (MECH)	3	0	0	3

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OPEN ELECTIVE-II

1	20150FE74A	Introduction to C Programming (CSE)	3	0	0	3
2	20150FE74B	Data Structures & Algorithms (CSE)	3	0	0	3
3	20152FE74A	Robotics (ECE)	3	0	0	3
4	20152FE74B	Electronic Devices (ECE)	3	0	0	3
5	20153FE74A	Basic Circuit Theory (EEE)	3	0	0	3
6	20153FE74B	Introduction to Renewable Energy Systems (EEE)	3	0	0	3
7	20154FE74A	Industrial Safety (MECH)	3	0	0	3
8	20154FE74B	Testing of Materials (MECH)	3	0	0	3

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20155E55A CONSTRUCTION EQUIPMENT AND AUTOMATION

L T P C
3 0 0 3

OBJECTIVE:

The main objective of this course is to make the student aware of the various construction techniques, practices and the equipment needed for different types of construction activities. At the end of this course the student shall have a reasonable knowledge about the various construction procedures for sub to super structure and also the equipment needed for construction of various types of structures from foundation to super structure.

UNIT I CONSTRUCTION TECHNIQUES 9

Structural systems - Load Bearing Structure - Framed Structure - Load transfer mechanism – floor system - Development of construction techniques - High rise Building Technology - Seismic effect - Environmental impact of materials – responsible sourcing - Eco Building (Green Building) - Material used - Construction methods - Natural Buildings - Passive buildings - Intelligent(Smart) buildings - Meaning - Building automation - Energy efficient buildings for various zones-Case studies of residential, office buildings and other buildings in each zones.

UNIT II CONSTRUCTION PRACTICES 9

Specifications, details and sequence of activities and construction co-ordination – Site Clearance – Marking – Earthwork - masonry – stone masonry – Bond in masonry - concrete hollow block masonry – flooring – damp proof courses – construction joints – movement and expansion joints – pre cast pavements – Building foundations – basements – temporary shed – centering and shuttering – slip forms – scaffoldings – de-shuttering forms – Fabrication and erection of steel trusses – frames – braced domes – laying brick — weather and water proof – roof finishes – acoustic and fire protection.

UNIT III SUB STRUCTURE CONSTRUCTION 9

Techniques of Box jacking – Pipe Jacking -under water construction of diaphragm walls and basement- Tunneling techniques – Piling techniques - well and caisson - sinking cofferdam - cable anchoring and grouting - driving diaphragm walls, sheet piles - shoring for deep cutting - well points -Dewatering and stand by Plant equipment for underground open excavation.

UNIT IV SUPER STRUCTURE CONSTRUCTION 9

Launching girders, bridge decks, off shore platforms – special forms for shells - techniques for heavy decks – in-situ pre-stressing in high rise structures, Material handling - erecting light weight components on tall structures - Support structure for heavy Equipment and conveyors - Erection of articulated structures, braced domes and space decks.

UNIT V CONSTRUCTION EQUIPMENT 9

Selection of equipment for earth work - earth moving operations - types of earthwork equipment - tractors, motor graders, scrapers, front end waders, earth movers – Equipment for foundation and pile driving. Equipment for compaction, batching, mixing and concreting - Equipment for material handling and erection of structures – types of cranes - Equipment for dredging, trenching, tunneling.

TOTAL: 45 PERIODS

OUTCOMES:

On successful completion of this course, students will be able to:

- know the different construction techniques and structural systems
- Understand various techniques and practices on masonry construction, flooring, and roofing.
- Plan the requirements for substructure construction.
- Know the methods and techniques involved in the construction of various types of super structures

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Select, maintain and operate hand and power tools and equipment used in the building construction sites.

TEXTBOOKS :

1. Peurifoy, R.L., Ledbetter, W.B. and Schexnayder, C., "Construction Planning, Equipment and Methods", 5th Edition, McGraw Hill, Singapore, 1995.
2. Arora S.P. and Bindra S.P., "Building Construction, Planning Techniques and Method of Construction", Dhanpat Rai and Sons, 1997.
3. Varghese, P.C. "Building construction", Prentice Hall of India Pvt. Ltd., New Delhi, 2007.

REFERENCES:

1. Jha J and Sinha S.K., "Construction and Foundation Engineering", Khanna Publishers, 1999.
2. Sharma S.C. "Construction Equipment and Management", Khanna Publishers New Delhi,2002.
3. Deodhar, S.V. "Construction Equipment and Job Planning", Khanna Publishers, New Delhi, 2012.
4. Mahesh Varma, "Construction Equipment and its Planning and Application", Metropolitan Book Company, New Delhi, 1983.

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20155E55B PRINCIPLES OF ARCHITECTURE

AIM &OBJECTIVE:

This course deals with the principles and cesign of architecture, Safety standarcs , Building rules and regulations , impacts of climate types in architecture , Principles of Landscape design.

UNIT I ARCHITECTURAL DESIGN 8

Architectural Design – an analysis – integration of function and aesthetics – Introduction to basic elements and principles of design.

UNIT II SITE PLANNING 9

Surveys – Site analysis – Development Control – Layout regulations- Laycut design concepts.

UNIT III BUILDING TYPES 12

Residential, institutional, commercial and Industrial – Application of anthropometry and space standards-Inter relationships of functions – Safety standards – Building rules and regulations – Integration of building services – Interior design

UNIT IV CLIMATE AND ENVIRONMENTAL RESPONSIVE DESIGN 8

Man and environment Interaction- Factors that determine climate – Characteristics of climate types – Design for various climate types – Passive and active energy controls – Green building concept

UNIT V TOWN PLANNING 8

Planning – Definition, concepts and processes- Urban planning standards and zoning Regulations- Urban renewal – Conservation – Principles of Landscape design

TOTAL: 45 PERIODS

REFERENCES

1. Francis D.K. Ching, "Architecture: Form, Space and Order", VNR, N.Y., 1999.
2. Givoni B., "Man Climate and Architecture", Applied Science, Barking ESSEX, 1982
3. Edward D.Mills, "Planning and Architects Handbook", Butterworth London, 1995.
4. Gallian B.Arthur and Simon Eisner, "The Urban Pattern – City Planning and Design",Affiliated Press Pvt. Ltd., New Delhi, 1995.
5. Margaret Robert, "An Introduction to Town Planning Techniques", Hutchinso London, 1990.

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20155E55 D **FORENSIC ENGINEERING & REHABILITATION**

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3	0	0	3

OBJECTIVE:

To acquire the knowledge on Quality of concrete, durability aspects, causes of deterioration, assessment of distressed structures, repairing of structures and demolition procedures.

UNIT I FAILURE OF STRUCTURES 9

Review of the construction theory – performance problems – responsibility and accountability - Causes of distress in structural members -Design and material deficiencies – over loading

UNIT II ENVIRONMENTAL PROBLEMS AND NATURAL HAZARDS 9

Quality assurance for concrete–Strength, Durability- Cracks, different types, causes–Effects due to climate, temperature, Sustained elevated temperature, Corrosion

UNIT III SPECIAL CONCRETES 9

Polymer concrete, Sulphur infiltrated concrete, Fibre reinforced concrete, High strength concrete, High performance concrete, Vacuum concrete, Self compacting concrete, Geopolymer concrete, Reactive powder concrete, Concrete made with industrial wastes.

UNIT IV TECHNIQUES AND PROTECTION METHODS 9

Non-destructive Testing Techniques, Load Test for Stability-Epoxy injection, Shoring, Underpinning, Corrosion protection techniques -Corrosion inhibitors, Corrosion resistant steels, Coatings to reinforcement, cathodic protection.

UNIT V RETROFITTING OF STRUCTURES 9

Strengthening of Structural elements, Repair of structures distressed due to corrosion, fire, leakage, earthquake-Transportation of Structures from one place to other -Structural Health Monitoring- demolition techniques-Engineered demolition methods-Case studies

TOTAL: 45 PERIODS

OUTCOMES:

Students will be able to understand

- the importance of maintenance and assessment method of distressed structures.
- the strength and durability properties ,their effects due to climate and temperature, recent development in concrete
- the techniques for repair rand protection methods
- repair, rehabilitation and retrofitting of structures and demolition methods.

TEXT BOOKS:

1. Shetty.M.S.ConcreteTechnology-Theory and Practice,S.Chandand Company, 2008.
2. Vidivelli.B Rehabilitation of Concrete Structures Standard Publishes Distribution.1st edition 2009.
3. Varghese.P.C Maintenance Repair and Rehabilitation & Minor works of building, Prentice Hall India Pvt Ltd 2014.
4. Dodge Woodson.R Concrete Structures, Protection, Repair and Rehabilitation, Butterworth-Heinemann,Elsevier,New Delhi 2012

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1. DovKominetzky.M.S ,-Design and Construction Failures, Galgotia,Publications Pvt.Ltd.,2001
2. Ravishankar.K. Krishnamoorthy.T.S, Structural Health Monitoring, Repair And Rehabilitation of Concrete Structures, Allied Publishers, 2004.
3. Hand book onSeismic Retrofit of Buildings,CPWD and Indian Buildings Congress, Narosa Publishers, 2008.
4. 4.Hand Book on "Repair and Rehabilitation of RCC Buildings"–Director General works CPWD ,Govt of India , New Delhi–2002

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20155E55E ENERGY EFFICIENT BUILDINGS L T P C

3 0 0 3

COURSE OBJECTIVES:

1. To learn the green buildings concepts applicable to alternate design
2. To be familiar with basic terminologies related to buildings
3. To learn the building (air)conditioning techniques
4. To know the methods to evaluate the performance of buildings
5. To incorpcrate Renewable energy systems in buildings

UNIT- I INTRODUCTION 9

Climate and Building, Historical perspective, Aspects of green building design – Sustainable Site, Water, Energy, Materials and IAQ, ECBC Standards

UNIT- II LAND SCAPE AND BUILDING ENVELOPES 9

Energy efficient Landscape design – Microclimate, Shading, Arbors, Windbreaks, Xeriscaping, Building envelope Thermal comfort, Psychrometry, Comfort indices, Thermal Properties of Building Materials – Thermal Resistance, Thermal Time Constant (TTC), Diurnal Heat Capacity(DHC),ThermalLag, Decrement Factor, Effect of Solar Radiation –Sol-air Temperature, Processes of heat exchange of building with environment, Insulation.

UNIT- III PASSIVE HEATING AND COOLING 9

HVAC introduction, Passive Heating – Solar radiation basics, Sun Path Diagram, Direct Heating, Indirect Heating and Isolated heating, Concept of Day lighting, Passive Cooling–Natural Ventilation(Stack and Wind),Evaporative Cooling and Radiative Cooling.

UNITI- V THERMAL PERFORMANCE OF BUILDINGS 9

Heat transfer due to fenestration / infiltration, Calculation of Overall Thermal Transmittance, Estimation of building loads: Steady state method, network method, numerical method, correlations, Thermal Storage integration in buildings

UNIT- V RENEWABLE ENERGY IN BUILDINGS 9

Introduction of renewable sources in buildings, BIPV, Solar water heating, small wind turbines, stand- alone PV systems, Hybrid system–Economics.

TOTAL: 45 PERIODS

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COURSE OUTCOMES:

Upon completion of this course, the students will be able to:

1. Design climate responsive building
2. Discover various physical properties influencing passive building design
3. Apply the passive(air)conditioning techniques in energy efficient building
4. Interpret the energy performance of buildings
5. Appraise the adaptation of renewable energy systems in buildings

REFERENCES:

1. ASHRAEHandbook-2009-Fundamentals.
2. Baruch Givoni: Climate considerationsinbuildingandUrbanDesign,JohnWiley&Sons,1998
3. Baruch Givoni: Passive Low Energy Cooling of Buildings by,John Wiley & Sons,15-Jul-1994
4. JA Duffie and WA Beckman: Solar Engineering of Thermal Processes, Third Edition, John Wiley& Sons, 2006.
5. Jan F. Kreider, Peter S.Curtiss, Ari Rabl, Heating and cooling of buildings: Design for Efficiency, Revised Second Edition, CRC Press,28-Dec-2009.

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20155E66A ENERGY AND ENVIRONMENT L T P C

3 0 0 3

COURSE OBJECTIVES:

1. To create awareness on the energy scenario of India with respect to world
2. To learn the methodology adopted for an energy audit
3. To appreciate the concepts adopted in project management
4. To study the different techniques adopted for financial appraisal of a project
5. To Comprehend the impact of energy on environment

UNIT– I ENERGY SCENARIO

9

Comparison of energy scenario – India and World (energy sources, generation mix, consumption pattern, T&D losses, energy demand, per capita energy consumption) – energy pricing –energy security-energy conservation and its importance - EnergyConservationAct2001

UNIT– II ENERGY MANAGEMENT

9

Energy audit - need – types – methodology – barriers - analysis on energy costing and sharing - bench marking - fuel and energy substitution – billing parameters in TANGEDCO – demand side management - instruments for energy audit – energy monitoring and targeting – CUSUM – energy labeling

UNIT–III PROJECT MANAGEMENT

9

Four Basic Elements of Project Management - Project Management Life Cycle - Steps in Project Management Project Definition and Scope, Technical Design, Financing, Contracting, Implementation Techniques (Gantt Chart, CPM and PERT) and PerformanceMonitoringEnMS5001

UNIT– IV FINANCIAL MANAGEMENT

9

Investment appraisal for energy conservation projects - Financial analysis techniques - Simple payback period, Return on investment, Net present value, Internal rate of return - Cash flows – Risk and sensitivity analysis: micro and macro factors- Financing options- energy performance contracts-ESCOs.

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UNIT– V ENERGY AND ENVIRONMENT 9

Greenhouse effect and the carbon cycle - current evidence and future effects of climate change - Global Environmental Concerns-United Nations Frame work Convention on Climate Change(UNFCC), Kyoto Protocol, Conference of Parties(COP), Emissions trading(ET), Joint implementation(JI), Clean Development Mechanism (CDM), Proto type Carbon Fund(PCF), Sustainable Development

TOTAL: 45 PERIODS

COURSE OUTCOMES:

Upon completion of this course, the students will be able to:

1. Recognize the importance of energy conservation and suggest measures for improving per capita energy consumption
2. Analyse the energy sharing and cost sharing pattern of fuels used in industries
3. Apply Gantt Chart, CPM and PERT in energy conservation projects
4. Evaluate the techno-economics of a project adopting discounting and non-discounting Cash flow techniques 13
5. Assess the sources of additional revenue generation for energy conservation projects Adopting

REFERENCES:

1. Energy Manager Training Manual (4Volumes) available at http://www.em-ea.org/ghook1.asp, a website administered by Bureau of Energy Efficiency (BEE),a statutory body under Ministry of Power, Government of India.2004.
2. L.C. Witte, P.S. Schmidt, D.R. Brown, "Industrial Energy Management and Utilisation" Hemisphere Publ,Washington,1988.
3. W.C.turner, "Energy Management Hard book"Wiley,NewYork,1982
4. W.R.Murphy and G.McKay "Energy Management" Butter worths. London 1987
5. Eastop.T.D & Croft D.R. Energy Efficiency for Engineers and Technologists, Logman Scientific & Technical, ISBN-0-582-03184, 1990.

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20155E66B ENVIRONMENTAL POLICIES AND LEGISLATION

L T P C
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OBJECTIVE:

To impart knowledge on the policies, legislations, institutional frame work and enforcement mechanisms for environmental management in India.

UNIT I INTRODUCTION

9

Indian Constitution and Environmental Protection – National Environmental policies – Precautionary Principle and Polluter Pays Principle Concept of absolute liability – multilateral environmental agreements and Protocols – Montreal Protocol, Kyoto agreement, Rio declaration – Environmental Protection Act, Water (P&CP) Act, Air (P&CP) Act – Institutional framework (SPCB/CPCB/MoEF)

UNIT II WATER (P&CP) ACT, 1974

8

Power & functions of regulatory agencies - responsibilities of Occupier Provision relating to prevention and control Scheme of Consent to establish, Consent to operate – Conditions of the consents – Outlet – Legal sampling procedures, State Water Laboratory – Appellate Authority – Peralties for violation of consent conditions etc. Provisions for closure/directions in apprehended pollution situation.

UNIT III AIR (P&CP) ACT, 1981

8

Power & functions of regulatory agencies - responsibilities of Occupier Provision relating to prevention and control Scheme of Consent to establish, Consent to operate – Conditions of the consents – Outlet – Legal sampling procedures, State Air Laboratory – Appellate Authority – Penalties for violation of consent conditions etc. Provisions for closure/directions in apprehended pollution situation.

UNIT IV ENVIRONMENT (PROTECTION) ACT 1986

13

Genesis of the Act – delegation of powers – Role of Central Government - EIA Notification – Sitting of Industries – Coastal Zone Regulation - Responsibilities of local bodies mitigation scheme etc., for Municipal Solid Waste Management - Responsibilities of Pollution Control Boards under Hazardous Waste rules and that of occupier, authorisation – Biomedical waste rules – responsibilities of generators and role of Pollution Control Boards

UNIT V OTHER TOPICS

7

Relevant Provisions of Indian Forest Act, Public Liability Insurance Act, CrPC, IPC -Public Interest Litigation - Writ petitions - Supreme Court Judgments in Landmark cases.

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20155E66C SUSTAINABLE URBAN DEVELOPMENT CONCEPTS AND STRATEGIES

L T P/S C 3 0 0 3

OBJECTIVES

To understand challenges pertaining to climate change sustainability, in a regional urban scale and sustainable design goals To learn analysis tools and policy mechanisms to ensure resilient urban settlements.

UNIT I CLIMATE CHANGE AND SUSTAINABILITY 8

Exigencies of climate change. Global warming and challenges for cities. Brundtland report - Kyoto protocol – UNFCCC - SDG 2019 - Coastal Cities. Integrated, inclusive, sustainable urban development. Science of Cities - Triple bottom of sustainability. Role of UN in climate change.

UNIT II GREEN URBANISM 8

Climatology of contemporary cities - Urban Heat Island - Microclimatic considerations in urban design - Eco Urbanism cores - Sponge cities.

UNIT III SUSTAINABILITY ANALYSIS TOOLS 9

Studying the application and use of SDGs. PEST and PESTAL economic goals. Life cycle assessments of resources: ecological & carbon foot print, benefit cost analysis & impact assessment of a site. Circular Economy. Land suitability, vulnerability assessment. Pollution modelling. Environmental assessment reports.

UNIT IV SUSTAINABLE POLICY 11

UN's initiative towards sustainable cities to be explored through Indian examples. Well planned, inclusive and integrated urban growth frameworks - sustainable transport, urban systems and public services, safety, waste management. Government of India environmental regulations for Greenfield and brown field development, water body's protection, coastal regulation zoning, emission and pollution controls. Energy standards for Indian cities- cases studies. Smart city projects.

UNIT V RESILIENT URBANISM 9

Regional planning and technology integration to combat climate change, pandemics and global emergencies. Best practices in ecological urbanism and urban resilience - 100 resilient cities, sponge cities. Social networks and cartography. Community based environmentalism- relevant case studies

TOTAL: 45 PERIODS

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TOTAL: 45 PERIODS

OUTCOMES:

On completion of the course the students will have the knowledge on the National environmental legislations and the policies

be able to plan programmes to comply with the legal requirements related to organizations

REFERENCES:

1. CPCB "Pollution Control acts, Rules and Notifications issued there under "Pollution Control Series – PCL/2/1992, Central Pollution Control Board, Delhi, 1997. 9

2. Shyam Divan and Armin Roseneranz "Environmental law and policy in India "Oxford University Press, New Delhi, 2001.

3. Greger I.Megregor "Environmental law and enforcement", Lewis Publishers, London. 1994

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OUTCOMES:

The students will gain understanding of sustainability concepts and development goals related to urban design and development. Students will be well versed with resilient strategies to combat global climate change and other emergencies.

REFERENCES:

1. Dominique Gauzin–Muller, 'Sustainable Architecture and Urbanism: Concepts, Technologies and Examples', Basel: Birkhauser, 2002.

2. Farr, Douglas. Urban Design with Nature. Hoboken: John Wiley & sons, 2008Cchen, Steven, The Sustainable City, Columbia University Press, 2017.

3. Dominique Gauzin–Muller, 'Sustainable Architecture and Urbanism: Concepts,Technologies and Examples', Birkhauser, 2002.

4. Calthorpe, Peter. Urbanism in the age of Climate Change. Washington DC: Island Press, 2011.

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20155E66D ENVIRONMENTAL MONITORING INSTRUMENTS L T P C
3 0 0 3

OBJECTIVE: To impart knowledge on types and sources of air pollution, its effects and design of control methods

UNIT I AIR POLLUTION MONITORING AND MODELLING 8

Ambient and stack sampling and analysis of particulate and gaseous pollutants -effects of meteorology on air pollution - fundamentals, atmospheric stability, inversion, wind profiles and stack plume patterns- transport & dispersion of air pollutants – modelling techniques – Air Pollution climatology.

UNIT II CONTROL OF PARTICULATE POLLUTANTS 10

Factors affecting selection of control equipment; gas particle interaction, – working principle, design and performance equations of gravity separators, cyclones, Fabric filters, particulate scrubbers, electrostatic precipitators – operational considerations – costing of APC equipment – recent advances

UNIT III CONTROL OF GASEOUS POLLUTANTS 10

Factors affecting selection of control equipment -working principle, design and performance equations of absorption, adsorption, condensation, incineration, bio-scrubbers, bio-filters – control technologies-SO2,NOx CO, H2S; process control and monitoring - operational considerations - costing of APC equipment –emerging trends,

UNIT IV AUTOMOBILE AND NOISE POLLUTION 9

Vehicular Pollution: Automobile emission- types of emissions- prevention and control of vehicular pollution. Noise Pollution: Sources and effects of noise pollution – measurement – standards –control and preventive measures. Indoor Air Pollution: Sources and effects –control and preventive measures

UNIT V CONTINUOUS MONITORING INSTRUMENTS 8

Principles, techniques and applications of NDIR analyzer for CO, chemiluminescent analyzer for NOx, fluorescent analyzer for SO2- particulates analysis- auto analyzer for water quality using flow injection analysis.

TOTAL: 45 PERIODS

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OUTCOMES:

After completion of this course, the student is expected to be able to understand:

CO1 Various types and sources of air pollution and its effects

CO2 Methods of source and ambient monitoring and dispersion of pollutants and their modeling

CO3 The principles and design of control of particulate pollutants

CO4 The principles and design of control of gaseous pollutant

CO5 Sources, effects and control of vehicular, indoor air and noise pollution

REFERENCES:

1. Noel de Nevers, "Air Pollution Control Engg", McGraw Hill, New York, 2016.

2. Daniel Vallero "Fundamentals of Air Pollution", Fourth Edition, 2008.

3. Arthur C.Stern, "Air Pollution (Vol.I – Vol.VIII)", Academic Press, 2006.

4. Lawrence K. Wang, Norman C. Pareira, Yung Tse Hung, "Air Pollution Control Engineering", Tokyo, 2004.

5. David H.F. Liu, Bela G. Liptak, "Air Pollution", Lweis Publishers, 2000.

6. Wayne T.Davis, "Air Pollution Engineering Manual", John Wiley & Sons, Inc., 2000.

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20155E75A BUILDING AUTOMATION AND MANAGEMENT SYSTEMS L T P C 3 0 0 3

OBJECTIVES:

- To give introduction to automation and management systems in buildings.
- To give knowledge about specific systems in the field of fire safety, security, communication,
- HVAC, lighting, climate control, etc.,
- To give information about integration of systems with each other and with building construction.

UNIT I INTRODUCTION TO BUILDING AUTOMATION AND CONTROL SYSTEMS 9

Introduction to and History of Building Automation Systems (BAS). Building Types and Key Requirements. Different systems in BAS which includes HVAC, security and surveillance, communication, fire, lighting systems, climate control, etc. Ideas of intelligent buildings, Human Machine Interface (HMI), facilities management and life cycle costs. The fundamental concepts of building control, and building automation. Control Theory. Building automation topics include device 97 technology (sensors, control elements), direct digital control, control applications, communication systems, and Building Automation Protocols. Role of different stakeholders (Architect, contractor, consultant, application engineer and engineer) in BAS system design.

UNIT II FIRE SAFETY SYSTEMS 9

Statutory Standards and codes for fire safety. Objective and essential components and working of a Fire Alarm System. Type of detection technology in the Fire alarm system. Basic knowledge on working, design and installation of Fire alarm system.Fire suppression systems. Components, working andinstallation. various types of technologies currently in use.

UNIT III SECURITY, SURVEILLENCE AND COMMUNCATION SYSTEMS 6

Introduction to Access Control, Intruder Alarm, Essential Components of each System, and Various types of Technologies employed in the system, Basic knowledge as how they work, are designed and installed. Introduction to CCTV, Perimeter protection system, Essential Components of each System, and Various types of Technologies employed in the system, Basic knowledge as how they work, are designed and installed. Public Address System and other communication systems and their requirements.

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UNIT IV HVAC, LIGHTING, CLIMATE CONTROL 12

Building Automation and Control Systems for HVAC, Lighting and Climate Control. Energy Conservation Control Strategies.

UNIT V INTEGRATED BUILDING MANAGEMENT SYSTEM 9

Overview of various components, technology, sensors, etc., that are common to more than one system. Integrated Building Management System IBMS. Integrated approach in design, maintenance and management system. Current trend and innovation in building automation systems. Impact of Information Technology.

TOTAL: 45 PERIODS

OUTCOME:

- Overall knowledge of building automation and managements systems.
- Knowledge about different building automation control systems.
- Overall understanding of integration of different systems with each other and with architecture.

TEXTBOOKS:

1. Building Automation Systems – A Practical Guide to Selection and Implementation, Maurice Eyke 2. National Building Code of India

REFERENCES

1. George Clifford , Modern Healing Ventilating and Air Conditioning

2. Vaughn Bradshaw , Building control Systems

3. Roger W. Haines, HVAC Systems Design Handbook, Fifth Edition by 5.

4. James E. Brumbaugh, HVAC Fundamentals

5. Herman Kruegle, CCTV Surveillance,

6. John L. Bryan, Fire Suppression Detection System

7. Vivian Capel, Security Systems and Intruder Alarm System,

8. Mike Constant & Peter Turnbull, The Principles and Practice of Closed Circuit Televisicn.

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20155E75C **PAVEMENT DESIGN** L T P C

3 0 0 3

COURSE OBJECTIVE:

- Student gains knowledge on various IRC guidelines for designing rigid and flexible pavements. Further, the student will be in a position to assess quality and serviceability conditions of roads.

UNIT I PAVEMENT MATERIALS AND SUBGRADE ANALYSIS 8

Introduction – Pavement as layered structure – Pavement types -rigid and flexible-Subgrade analysis- Stress and deflections in pavements- Pavement Materials and Testing- Modified Binders.

UNIT II DESIGN OF FLEXIBLE PAVEMENTS 10

Flexible pavement design – Advantages and disadvantages -Factors influencing design of flexible pavement, Empirical – Mechanistic empirical and theoretical methods – Design procedure as per IRC guidelines – Design and specification of rural roads.

UNIT III DESIGN OF RIGID PAVEMENTS 9

Cement concrete pavements Factors influencing CC pavements – Modified Westergaard approach – Design procedure as per IRC guidelines – Concrete roads and their scope in India.

UNIT IV PAVEMENT CONSTRUCTION, EVALUATION AND MAINTENANCE 10

Construction Techniques practice of flexible and concrete pavement Pavement Evaluation - Causes of distress in rigid and flexible pavements – Evaluation based on Surface Appearance, Cracks, Patches and Pot Holes, Undulations, Raveling, Roughness, Skid Resistance. Structural Evaluation by Deflection Measurements - Pavement Serviceability index, - Pavement maintenance (IRC Recommendations only).

UNIT V STABILIZATION OF PAVEMENTS 8

Stabilization with special reference to highway pavements – Choice of stabilizers – Testing and field control - Stabilization for rural roads in India – Use of Geosynthetics in roads.

TOTAL: 45 PERIODS

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COURSE OUTCOMES

CO1 Get knowledge about types of rigid and flexible pavements.

CO2 Able to design of rigid pavements

CO3 Able to design of flexible pavements.

CO4 Determine the causes of distress in rigid and flexible pavements.

CO5 Understand stabilization of pavements, testing and field control.

TEXTBOOKS:

1. Khanna, S.K. and Justo C.E.G.and Veeraragavan, A, "Highway Engineering", New Chand and Brothers, Revised 10th Edition,2014.

2. Kadiyali, L.R., "Principles and Practice of Highway Engineering", Kharnatech. Publications, New Delhi,2015. REFERENCES: 1. Yoder, R.J. and Witchak M.W. "Principles of Pavement Design", John Wiley2000. 2. Guidelines for the Design of Flexible Pavements, IRC-37-2012, The Indian roads Congress, NewDelhi.

3. Guideline for the Design of Rigid Pavements for Highways, IRC 58-2018, The Indian Road Congress, NewDelhi.

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20155E75D URBAN PLANNING AND DEVELOPMENT L T P C 3 0 0 3

OBJECTIVES:

To enable students to have the knowledge on planning process and to introduce to the students about the regulations and laws related to Urban Planning.

UNIT I BASIC ISSUES 8

Definition of Human settlement, Urban area, Town, City, Urbanisation, Suburbanisation, Urban sprawl, Peri urban areas, Central Business District (CBD), Classification of urban areas – Trend of Urbanisation at International, National, Regional and State level.

UNIT II PLANNING PROCESS 8

Principles of Planning – Types and Level of Plan, Stages in Planning Process – Goals, Objectives, Delineation of Planning Areas, Surveys and Questionnaire Design.

UNIT III DEVELOPMENT PLANS, PLAN FORMULATION AND EVALUATION 10

Scope and Content of Regional Plan, Master Plan, Detailed Development Plan, Development Control Rules, Transfer of Development Rights , Special Economic Zones-Development of small town and smart cities-case studies.

UNIT IV PLANNING AND DESIGN OF URBAN DEVELOPMENT PROJECTS 9

Site Analysis, Layout Design, Planning Standards, Project Formulation – Evaluation, Plan Implementation, Constraints and Implementation, Financing of Urban Development Projects.

UNIT V LEGISLATION, DEVELOPMENT AND MANAGEMENT OF URBAN SYSTEM 10

Town and Country Planning Act, Land Acquisition and Resettlement Act etc., Urban Planning Standards and Regulations, Involvement of Public, Private, NGO, CBO and Beneficiaries.

TOTAL : 45 PERIODS

OUTCOMES:

The students completing the course will have the ability to

CO1 Understand the basic concepts in urban planning and development.

CO2 Knowledge on principles of planning, surveys and analysis. in developing an urban area.

CO3 Knowledge on development of regional, master plan and norms for development of smart cities.

CO4 Planning of standards, implanting and financing of Urban projects.

CO5 Understand the norms, legal aspects and stakeholders role in planning an urban area.

TEXTBOOKS:

1. Goel, S.L Urban Development and Management, Deep and Deep publications, New Delhi 2002

2. George Chadwick, A Systems view of planning, Pergamon press, Oxford 1978

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3. Singh V.B, Revitalised Urban Administration in India, Kalpaz publication, Delhi. 2001
4. Edwin S.Mills and Charles M.Becker, Studies in Urban development. A World Bank publication, 1986

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1. Tamil Nadu Town and Country Planning Act 1971, Government of Tamil Nadu, Chennai
2. Goel S.L., Urban Development and Management, Deep and Deep Publications, New Delhi,2002
3. Thooyavar., K.R., Human Settlements – A Planning Guide to Beginners, M.A Publications, Chennai, 2005
4. CMDA, Second Master Plan for Chennai, Chennai 2008

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20155E75E SMART MATERIALS AND SMART STRUCTURES

L T P C
3 0 0 3

COURSE OBJECTIVES:

The main learning objective of this course is to prepare the students for:

1. Knowing the different concepts in selecting smart materials
2. Comparing the different electro-rheological materials
3. Discuss on the various and piezoelectric materials
4. Distinguishing the different shape memory materials and their applications
5. Identying suitable materials for various applications such as actuators, sensors, etc.

UNIT I INTRODUCTION 9

Intelligent/Smart materials – Functional materials Polyfunctional materials – Structural materials, Electrical materials, bio-compatible materials. – Intelligent biological materials – Biomimetics – Wolff's Law – Biocompatibility – Material response: swelling and leaching, corrosion and dissolution, deformation and failure, friction and wear – host response: the inflammatory process – coagulation and hemolysis – in vitro and in vivo evaluation of biomaterials.

UNIT II ELECTRO-RHEOLOGICAL AND PIEZOELECTRIC MATERIALS 9

The principal ingredients of smart materials –microsensors hybrid smart materials – an algorithm for synthesizing smart materials – active, passive reactive actuator based smart structures- suspensions and electro-rheological fluids – Bingham body model – principal characteristics of electro-rheological fluids – charge migration mechanism for the dispersed phase – electro- rheological fluid domain – fluid actuators- design parameter – application of Electo-rheological fluids

UNIT III MAGNETO-RHEOLOGICAL AND PIEZOELECTRIC MATERIALS 9

Basics, Principles and instrumentation and application of Magnetorheological fluids – Piezoelectric materials: polymers and ceramics, mechanism, properties and application. Introduction to electrorestrictive and magneto-restrictive materials

UNIT IV SHAPE MEMORY MATERIALS 9

Nickel – Titanium alloy (Nitinol) – Materials characteristics of Nitinol – martensitic transformations – austenitic transformations – thermoelastic martensitic transformations– classification of SMA alloysmechanism of magnetic SMA

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UNIT V APPLICATIONS OF SHAPE MEMORY ALLOYS 9

Continuum applications of SMA fasteners – SMA fibers – reaction vessels, nuclear reactors, chemical plant, etc. – micro robot actuated by SMA – SMA memorization process (Satellite Antenna Applications) SMA blood clot filter – Impediments to applications of SMA – Shape memory polymers– mechanism of shape memory-Primary moulding – secondary moulding– types and applications.

TOTAL:45 PERIODS

COURSE OUTCOMES:

Upon Completion of the Course, the students will be able to

1. Discuss the different Smart materials.

2. Describe the functions of Electro-Rheological Materials and their suitability for various applications.

3. Deiscuss the functions of Piezoelectric Materials and their suitability for various applications.
4. Explain the principle of shape memory effect and the transformations that occur in smart materials.

5. Select a suitable smart material for a given application

TEXT BOOKS

1. M. V. Gandhi and B. S. Thompson, "Smart Materials and Structures", Chapman and Hall, London, First Edition, 1992

2. Mohsen Shahinpoor and Hans-Jo¨rg Schneider "Intelligent Materials", RSC Publishing,2008

REFERENCES

1. Duerig,T. W., Melton, K. N, Stockel, D. and Wayman, C.M., "Engineering aspects of Shape memory Alloys", Butterworth – Heinemann, 1990

2. Mel Schwartz (Ed), Encyclopaedia of Smart Materials" Volume –I and II, John Wiley & Sons, Inc.2002

3. Rogers, C. A., Smart Materials, "Structures and Mathematical issues", Technomic Publishing Co., U.S.A, 1989

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20155E81A ENVIRONMENTAL ECONOMICS L T P C 3 0 0 3

OBJECTIVES:

To provide a sufficient understanding of economic thinking so as to critically evaluate environmental issues and provide policy recommendations to improve related problems

To apply the basic economic theory to issues involving the joint interaction of economic activity,the environment, and use of natural resources including valuing environment to introduce market based instruments and economic policies for environmental management..

UNITI INTRODUCTION TO ECONOMICS 10

Principles of Economics – Economics, Ecology and Ethics - Wealth, Welfare, Scarcity, Growth and Sustainability definitions — Concepts of Costs, Benefits, Opportunity costs , Social Costs – Marginal Costs and Marginal Benefits - Positive and Normative criteria for decision making - Consumer Choice theory –Supply and Demand– Economic Efficiency and Markets–Static and dynamic efficiency - market failures – property rights, externalities and environmental problems – Coase Theorem - Public Goods and Externalities - Free rider problem – Tragedy of the commons

UNITII VALUATION OF ENVIRONMENTAL COSTS AND BENEFITS 9

Types of Economic value - Environmental Benefits and Environmental Costs - Valuing the Environment – Direct and indirect methods – Surrogate markets – Stated Preference and Revealed Preference methods- hedonic prices, travel cost models, contingent valuation, benefit transfer – economic valuation of ecosystem services- Assessment of Loss of Ecology - Valuation of Health impacts - Environmental accounting

UNITIII ECONOMICS OF POLLUTION PREVENTION 9

Economics of Environmental Quality- - Cost benefit analysis and Cost effectiveness analysis – Principles, methodology and Limitations – Discounting - Profitability of Pollution Prevention - Pay back period – Present value estimation – Internal rate of return – Opportunity costs – Economic analysis of Pollution Prevention Case studies –economically efficient pollution control programmes – Economics of Enforcement - Efficient allocation of pollution from mobile and stationery source – Total Cost Assessment- Life cycle costing-Green Accounting and Economic indicators

UNIT IV ECONOMIC INSTRUMENTS FOR ENVIIRONMENTAL PROTECTION 9

Point vs. Nonpoint Sources - Stock vs. Fund Pollutants - Nature of Marginal abatement cost and that of Marginal damage cost -Efficient level of pollution, total cost of efficient level of pollution - Polluter pays Principle –Economic Optimum level of Pollution- Marginal Damage Functions – Marginal Abatement Costs - Allocation of Stock and Fund Pollutants - Economic analysis of Environmental Policy -Regulatory versus Economic Instruments – Decentralized Policies: Liability Laws, Property Rights,and Moral Suasion - Command-and-Control Strategies - Pigovian and Pollution Taxes – Incentive-Based Strategies: Emission Charges and Subsidies–

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Marketable permits – Emission trading – Non Compliance fees, bonds and deposit refunds – Evaluation of Instruments – Choice of instruments for Environmental policy

UNIT V NATURAL RESOURCE ECONOMICS 8

Types, scarcity and classification of Natural Resources – Depletable and non renewable resources – Recyclable resources – Replenishable but depletable resources – Storable renewable resources – Renewable common property Resources– Economic Theory of Depletable Resources- Optimal Use of Exhaustible Resources- – Natural resources accounting - Economics of Forestry and fisheries exploitation –Trade and environment – Income Effects and Environmental Kuznets Curves – Race to the Bottom and Pollution Haven Hypothesis - Porter Hypothesis - Economics of Climate Change

TOTAL: 45 PERIODS

OUT COMES :

A student completing the course is expected to be able to understand concepts of willingness to pay, public goods, property rights, market and nonmarket valuation techniques explain why optimal pollution levels, suggest policies within the cost benefit analysis framework have a good appreciation of the economics of exhaustible resources and renewable resources

REFERENCES:

1. Barry Field and Martha Field, Environmental Economics: An Introduction, McGraw-Hill

2. Kolstad, Charles, (2011),"Environmental Economics", Oxford University Press, New York 3 John Asafu Adjaye, "Environmental Economics for non-Economists – techniques and policies for Sustainable Development, World Scientific,2005

4. Tom Tietenberg, "Environmental and Natural Resource Economics", 5th Edition, Harper Collins College Publishers, 2000.

5. Nick Hanley, Jaison F. Shogren and Ben White "Environmental Economics" – In theory and practice" Macmillan India Ltd, New Delhi. 1999,

6. Perman R, Y. Ma, J. McGilvray and M Common, Natural Resource and Environmental Economics, 3rd edition, Pearson Education, Harlow (2003).

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20155E81B ENVIRONMENTAL ECONOMICS L T P C

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OBJECTIVES:

To provide a sufficient understanding of economic thinking so as to critically evaluate environmental issues and provide policy recommendations to improve related problems .To apply the basic economic theory to issues involving the joint interaction of economic activity, the environment, and use of natural resources including valuing environment to introduce market based instruments and economic policies for environmental management.

UNITI INTRODUCTION TO ECONOMICS 10

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UNIT II VALUATION OF ENVIRONMENTAL COSTS AND BENEFITS 9

Types of Economic value - Environmental Benefits and Environmental Costs - Valuing the Environment – Direct and indirect methods – Surrogate markets – Stated Preference and Revealed Preference methods- hedonic prices, travel cost models, contingent valuation, benefit transfer – economic valuation of ecosystem services- Assessment of Loss of Ecology - Valuation of Health impacts - Environmental accounting

UNIT III ECONOMICS OF POLLUTION PREVENTION 9

Economics of Environmental Quality- - Cost benefit analysis and Cost effectiveness analysis – Principles, methodology and Limitations – Discounting - Profitability of Pollution Prevention - Pay back period – Present value estimation – Internal rate of return – Opportunity costs – Economic analysis of Pollution Prevention Case studies –economically efficient pollution control programmes – Economics of Enforcement - Efficient allocation of pollution from mobile and stationery source – Total Cost Assessment- Life cycle costing-Green Accounting and Economic indicators

UNIT IV ECONOMIC INSTRUMENTS FOR ENVIRONMENTAL PROTECTION 9

Point vs. Nonpoint Sources - Stock vs. Fund Pollutants - Nature of Marginal abatement cost and that of Marginal damage cost -Efficient level of pollution, total cost of efficient level of pollution - Polluter pays Principle –Economic Optimum level of Pollution- Marginal Damage Functions – Marginal Abatement Costs - Allocation of Stock and Fund Pollutants - Economic analysis of Environmental Policy -Regulatory versus Economic Instruments – Decentralized Policies: Liability Laws, Property Rights,and Moral Suasion - Command-and-Control Strategies - Pigovian and Pollution Taxes – Incentive-Based Strategies: Emission Charges, and Subsidies–

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UNIT V NATURAL RESOURCE ECONOMICS 8

Types, scarcity and classification of Natural Resources – Depletable and non renewable resources – Recyclable resources – Replenishable but depletable resources – Storable renewable resources – Renewable common property Resources– Economic Theory of Depletable Resources- Optimal Use of Exhaustible Resources- – Natural resources accounting - Economics of Forestry and fisheries exploitation –Trade and environment Income Effects and Environmental Kuznets Curves – Race to the Bottom and Pollution Haven Hypothesis - Porter Hypothesis - Economics of Climate Change

TOTAL: 45 PERIODS

OUTCOMES :

•A student completing the course is expected to be able to understand concepts of willingness to pay, public goods, property rights, market and nonmarket valuation techniques

• Explain why optimal pollution levels, suggest policies within the cost benefit analysis

• Framework have a good appreciation of the economics of exhaustible resources and renewable resources

REFERENCES:

1. Barry Field and Martha Field, Environmental Economics. An Introduction, McGraw-Hill

2. Kolstad, Charles, (2011),"Environmental Economics", Oxford University Press, New York

3. John Asafu Adjaye, "Environmental Economics for non-Economists – techniques and policies for Sustainable Development, World Scientific,2005

4. Tom Tietenberg, "Environmental and Natural Resource Economics", 5th Edition, Harper Collins College Publishers, 2000.

5. Nick Hanley, Jaison F. Shogren and Ben White "Environmental Economics" – In theory and practice" Macmillan India Ltd, New Delhi. 1999,

6. Perman R, Y. Ma, J. McGilvray and M. Common, Natural Resource and Environmental Economics, 3rd edition, Pearson Education, Harlow (2003).

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20155E81B SIMULATION AND MODELING IN ENVIRONMENTAL SYSTEMS

L T P C

3 0 0 3

COURSE OBJECTIVES:

To impart an understanding of systems approach to Environmental Management as per ISO 14001 and skills for environmental performance assessment in terms of legal compliance, pollution prevention and continual improvement.

UNIT I ENVIRONMENTAL MANAGEMENTSTANDARDS 9

Unique Characteristics of Environmental Problems - Classification of Environmental Impact Reduction Efforts - Systems approach to Corporate environmental management - Business Charter for Sustainable Production and Consumption – Tools and Barriers - Evolution of Environmental Stewardship –National policies on abatement of pollution and conservation of resources - Charter on Corporate responsibility for Environmental protection - Environmental quality objectives – Rationale of Environmental standards: Concentration and Mass standards, Effluent and stream standards, Emission and ambient standards, Minimum national standards, environmental performance evaluation: Indicators, benchmarking

UNIT II PREVENTIVE ENVIRONMENTAL MANAGEMENT 9

Pollution control Vs Pollution Prevention - Opportunities and Barriers – Cleaner production and Clean technology, closing the loops, zero discharge technologies – Four Stages and nine approaches of Pollution Prevention - Getting management commitment – Analysis of Process Steps- source reduction, raw material substitution, toxic use reduction and elimination, process modification –Material balance – Technical, economical and environmental feasibility evaluation of Pollution Prevention options in selected industries Preventive Environmental Management over Product cycle.

UNIT III ENVIRONMENTAL MANAGEMENT SYSTEM 10

ISO 14000 family- EMS as per ISO 14001– benefits and barriers of EMS – Understanding the organisation and its context- Understanding the needs and expectations of interested parties- Determining the scope of the environmental management system- Leadership and commitment- Environmental policy- Organizationalroles, responsibilities and authoritiesActions to address risks and opportunities- Environmental objectives and planning – Resources- Competence- Awareness- Communication-Documented Information –Operational Planning and Control. Emergency preparedness and response- Monitoring, measurement, analysis and evaluation - Management review

UNIT IV ENVIRONMENTAL AUDIT 8

Environmental management system audits as per ISO 19011-Internal Audits and Certification Audits – Principles of auditing- Roles and qualifications of auditors - Determining auditor competence- Managing an audit programme – Establishing and Implementing audit programme- Selecting audit team members and Assigning responsibility - Conducting an audit- opening

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meeting, Audit evidence gathering - Collecting and verifying information Managing and maintaining audit programme records- closing meeting and reporting - Non conformance – Corrective and preventive actions - Continual improvement - compliance audits – waste audits and waste minimization planning – Environmental statement (form V) - Due diligence audit

UNIT V CASE STUDIES 9

Case studies on applications of EMS, Waste Audits and Pollution Prevention in Textile industry , Tanning industry, Electroplating, Pulp & Paper, Dairy, Chemical industries and service organizations.

TOTAL: 45 PERIODS 98

COURSE OUTCOMES:

On completion of the course, the student is expected to

CO1 Explain the various elements of Corporate Environmental Management systems and audits complying to international environmental management system standards

CO2 Apply the knowledge of science and engineering fundamentals to pollution prevention assessment and environmental performance evaluation

CO3 Develop environmental management systems for organizations

CO4 Conduct environmental management system audits taking into account the sustainability context

CO5 Conduct research pertinent to pollution prevention and communicate effectively to different stakeholders as well as engage in independent life-long learning

REFERENCES:

1. ISO 14001/14004:2016 Environmental management systems – Requirements and Guidelines – International Organisation for Standardisation, 2015

2. ISO 19011: 2018, "Guidelines for auditing Management Systems, International Organisation for Standardisation, 2018

3. ISO 14031:2021, Environmental management – Environmental performance evaluation Guidelines, International Organisation for Standardisation, 2015

4. Marek Bugdol and Piotr Jedynak, Integrated Management Systems, Springer International, 2015.

5. Ryan Dupont, Kumar Ganesan, Louis Theodore, Pollution Prevention: Sustainability, Industrial Ecology, and Green Engineering, Second Edition, CRC Press, 2016

6. Paul L Bishop †Pollution Prevention: Fundamentals and Practice€, McGraw- Hill International, Boston,2004.

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7. Lennart Nilsson, Per Olof Persson, Lars Rydén, Siarhei Darozhka and Audrone Zaliauskiene,Cleaner Production Technologies and Tools for Resource Efficient Production, The Baltic University Environmental Management book series, Uppsala 2007

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20155E81C MEMBRANE SEPARATION FOR WATER AND WASTE WATER

L T P C

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OBJECTIVE:

To introduce the concept and principles of membrane separation and its applications in water and wastewater treatment.

UNIT I MEMBRANE FILTRATION PROCESSES 10

Solid Liquid separation systems- Theory of Membrane separation – mass Transport Characteristics - Cross Flow filtration - Membrane Filtration- Flux and Pressure drop -Types and choice of membranes, porous, non porous, symmetric and asymmetric – Plate and Frame, spiral wound and hollow fibre membranes – Liquid Membranes

UNIT II MEMBRANE SYSTEMS 10

Microfiltration principles and applications – Ultra filtration principles and applications - Nano Filtration principles and applications – Reverse Osmosis: Theory and design of modules, assembly, plant process control and applications – Electro dialysis : Ion exchange membranes, process design- Pervaporation – Liquid membrane – Liquid Pertraction – Supported Liquid Membrane and Emulsion Liquid membrane - Membrane manufactures – Membrane Module/Element designs – Membrane System components Design of Membrane systems - pump types and Pump selection – Plant operations – Economics of Membrane systems

UNIT III MEMBRANE BIOREACTORS 9

Introduction and Historical Perspective of MBRs, Biotreatment Fundamentals, Biomass Separation MBR Principles, Fouling and Fouling Control, MBR Design Principles, Design Assignment, Alternative MBR Configurations, Commercial Technologies, Case Studies

UNIT IV PRETREATMENT SYSTEMS 8

Membrane Fouling – Control of Fouling and Concentration Polarisation-Pretreatment methods and strategies – monitoring of Pretreatment – Langlier Index, Silt Density Index, Chemical cleaning , Biofoulant control

UNIT V CASE STUDIES 8

Case studies on the design of membrane based water and wastewater treatment systems – zero Liquid effluent discharge Plants – Desalination of brackish water.

TOTAL : 45 PERIODS

OUTCOMES:

On Completion of the Course the student will be familiar with main membrane processes, principles, separation mechanisms, and applications

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- Understand the selection criteria for different membrane processes
- Know the principle of the most common membrane applications and
- Carry out design of project for a particular membrane technology application.

REFERENCES:

1. Anthony Wachinski, Membrane Processes for water reuse, McGraw Hill, USA, 2013
2. WEF, Membrane Bioreactors, WEF manual of Practice No.36, Water Environment Federation, USA.2012.
3. Symon Jud, MBR Book – "Principles and application of MBR in water and wastewater treatment", Elservier, 2006.
4. Yamamoto K. and Urase T, "Membrane Technology in Environmental management", special issue, Water Science and technology, Vol.41, IWA Publishing, 2000.
5. Jorgen Wagner, "Membrane Filtration handbook, Practical Tips and Hints, 2nd Edition, Revision2, Osmonics Inc., 2001.
6. Baker, R.W., "Membrane technology and applications", 2nd., John Wiley 2004 7 Noble, R.D. and Stern, S.A., "Membrane Separations Technology: Principles and Applications", Elservier,Netherlands,1995.

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20155E81D THEORY AND PRACTICE OF INDUSTRIAL WASTEWATER TREATMENT

L T P C
3 0 0 3

OBJECTIVES:

To impart knowledge on the concept and application of Industrial pollution prevention, cleaner technologies, Industrial wastewater treatment and residue management.

- Understand principles of various processes applicable to industrial wastewater treatment
- Identify the best applicable technologies for wastewater treatment from the perspective of yield production.

UNIT I INTRODUCTION 8

Industrial scenario in India– Industrial activity and Environment - Uses of Water by industry – Sources and types of industrial wastewater – Nature and Origin of Pollutants - Industrial wastewater and environmental impacts – Regulatory requirements for treatment of industrial wastewater – Industrial waste survey – Industrial wastewater monitoring and sampling - generation rates, characterization and variables –Toxicity of industrial effluents and Bioassay tests – Major issues on water quality management.

UNIT II INDUSTRIAL POLLUTION PREVENTION & WASTE MINIMISATION 8

Prevention vis a vis Control of Industrial Pollution – Benefits and Barriers – Waste management Hierarchy - Source reduction techniques – Periodic Waste Minimisation Assessments – Evaluation of Pollution Prevention Options – Cost benefit analysis – Pay back period – Implementing & Promoting Pollution Prevention Programs in Industries.

UNIT III INDUSTRIAL WASTEWATER TREATMENT 10

Flow and Load Equalisation Solids Separation – Removal of Fats, Oil & Grease- Neutralisation – Removal of Inorganic Constituents – Precipitation, Heavy metal removal, Nitrogen & Phosphorous removal, Ion exchange, Adsorption, Membrane Filtration, Eletrodialysis & Evaporation – Removal of Organic Constituents – Biological treatment Processes, Chemical Oxidation Processes, Advanced Oxidation processes – Treatability Studies.

UNIT IV WASTEWATER REUSE AND RESIDUAL MANAGEMENT 9

Individual and Common Effluent Treatment Plants – Joint treatment of industrial and domestic wastewater - Zero effluent discharge systems - Quality requirements for Wastewater reuse – Industrial reuse , Present status and issues - Disposal on water and land – Residuals of industrial wastewater treatment – Quantification and characteristics of Sludge – Thickening, digestion, conditioning, dewatering and disposal of sludge – Management of RO rejects.

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UNIT V CASE STUDIES

10

Industrial manufacturing process description, wastewater characteristics, source reduction options and waste treatment flow sheet for Textiles – Tanneries – Pulp and paper – metal finishing – Oil Refining–Pharmaceuticals–Sugar and Distilleries

TOTAL: 45 PERIODS

OUTCOMES:

After completion of this course, the students is expected to be able to, Define the Principles of pollution prevention and mechanism of oxidation processes

- Suggest the suitable technologies for the treatment of wastewater
- Discuss about the wastewater characteristics
- Design the treatment systems

REFERENCES:

1. "Industrial wastewater management, treatment & disposal, Water Environment" Federation Alexandria Virginia, Third Edition, 2008.

2. Lawrance K.Wang, Yung Tse Hung, Howard H.Lo and Constantine Yapijakis "handlook of Industrial and Hazardous waste Treatment", Second Edition, 2004.

3. Metcalf & Eddy/ AECOM, "water reuse Issues, Technologies and Applications", The Mc Graw- Hill companies, 2007.

4. Nelson Leonard Nemerow, " industrial waste Treatment", Elsevier, 2007.

5. Wesley Eckenfelder W., " Industrial Water Pollution Control", Second Edition, Mc Graw Hill, 1989.

6. Paul L. Bishop, „Pollution Prevention: - Fundamentals and Practice", Mc-Graw Hill International, Boston, 2000.

7. Waste water Treatment for pollution control and reuse by Soli. J. Arceivala, Shyam. R. Asolekar, Tata Megraw Hill, 2007

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20155E82A AIRPORT & WATERWAYS ENGINEERING

L T P C
3 1 0 4

OBJECTIVE:

The student develops skills on airport planning and design with the prime focus on runway and taxiway geometrics. Students become conversant with the definition, purpose, location and materials of coastal structures such as piers, breakwaters, wharves, jetties, quays and spring fenders. The students acquire knowledge on site investigation for location and planning of harbours.

UNIT I AIRPORT PLANNING AND DESIGN 8

Components of airports – Airport planning – Runway design – Orientation – Wind rose diagram – Taxiway design – Separation distances – Design speed – Drainage.

UNIT II AIRPORT AND LAYOUTS 10

Airport zoning – Clearance over highways and railways – Airport layouts – Apron – Hangars – Terminal buildings – Airports buildings – Passenger flow – Passenger facilities.

UNIT III AIR TRAFFIC CONTROL 8

Visual aids – Runway and taxiway markings – Wind direction indicators – Runway and taxiway lightings – Air traffic control network – Helipads – Service equipments.

UNIT IV CONVEYANCE FROM THE SOURCE 10

Water supply — intake structures — Functions: Pipes and conduits for water — Pipe materials — Hydraulics of flow in pipes — Transmission main design — Laying, jointing and testing of pipes — appurtenances — Types and capacity of pumps — Selection of pumps and pipe materials.

UNIT V COASTAL STRUCTURES 9

Piers – Sliways – Breakwaters – Wharves – Jetties – Quays – Spring fenders – Coastal shipping – Inland water transport – Container transportation – Pipe ways – Rope ways.

Total: 45 Periods

TEXT BOOKS

1. Khanna, S.K., Arora, M.G. and Jain, S.S., "Airport Planning and Design", Namchand and Brother,1999.

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2. Bindra, S.P., "A course in Docks and Harbour Engineering", Dhanpat Rai and Sons, 1993.

REFERENCES

1. Seetha Raman, S., "Docks and Harbour Engineering ", Umesh Publications, 1992.

2. Ranga Wala, S., "Airport Engineering ", Chasotar Publishing House, 1996.

3. Vazirani and Chandolas, S.P., "Transportation Engineering", Khanna Publications, 1991.

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20155E82B SURFACE WATER HYDROLOGY L T P C
3 0 0 3

OBJECTIVE:

This subject aims at making the students to understand the relevance of various components of hydrologic cycle, which are responsible for spatial and temporal distribution of water availability in any region.

UNIT I HYDROMETEOROLOGY 9

Hydrologic cycle – Global water budget – Practical applications – Hydrometeorology Constituents of atmosphere – Vertical structure of the atmosphere – general circulation – Transitory system – Air mass – Air front – cyclones – Formation of precipitation – Types and forms of precipitation – Climate and Weather – Meteorological Observations.

UNIT II PRECIPITATION 8

Measurement of rainfall – Rain gauges – Radar Measurement of rainfall - Rainfall Hyetograph – Intensity Duration and Frequency analysis – Consistency – Missing data – Rain gauge network – Average depth of rainfall analysis – Spatial analysis using GIS Annual rainfall of India and Tamilnadu

UNIT III ABSTRACTIONS 8

Water losses - Initial losses – Interception and depression storage – Evaporation – Evaporimeters – Estimation of Evaporation - Evapotranspiration – Field Measurement Empirical Equations - Infiltration – Infiltrometers – Infiltration Equations - Infiltration Indices.

UNIT IV STREAMFLOW MEASUREMENT 8

Stage and Velocity Measurement Gauges – Current meter and Doppler flow velocity meter - Discharge measurement – Area Velocity method - Area Slope method Discharge Measuring Structures - Dilution Technique – Stage Discharge relationship – Selection of a Stream Gauging Site.

UNIT V RUNOFF AND WATER CONSERVATION 12

Concept of catchment – Linear, Areal and Relief Aspects – Detailed study of Runoff process – Factors affecting Runoff – Hydrograph – Unit Hydrograph – Synthetic Hydrograph –Runoff estimation - Strauge and SCS methods – Water Conservation – Rain water and Runoff Harvesting in Rural and Urban Areas - Reservoir Sedimentation.

TOTAL: 45 PERIODS

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OUTCOMES

- The students obtain the complete knowledge on hydrologic cycle, hydrometeorology and formation of precipitation.

- The students are able to apply the various methods of field measurements and empirical formulas for estimating the various losses of precipitation, stream flow and runoff.

- The students know the various methods of rainwater and runoff harvesting.

- Then apply the knowledge of soil erosion and sedimentation to estimate the life of the reservoir.

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1. Chow V.T., Maidment D.R., Mays L.W., "Applied Hydrology', McGraw Hill Publications, New York, 1995.

2. Subramanya K., "Hydrology,Tata McGraw Hill Co., New Delhi, 1994.

3. Patra.K.C, "Hydrology and Water Resources Engineering", Narosa Publications, 2008, 2 nd Edition, New Delhi

. 4 Jeya Rami Reedy.P, "Hydrology, Laximi Publications, New Delhi, 2004

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20155E82D CONTRACTS MANAGEMENT L T P C 3 0 0 3

OBJECTIVES:

To study the various types of construction contracts and their legal aspects and provisions.

To study the of tenders, arbitration, legal requirement, and labour regulations.

UNIT I CONSTRUCTION CONTRACTS 9

Indian Contracts Act – Elements of Contracts – Types of Contracts – Features – Suitability – Design of Contract Documents – International Contract Document – Standard Contract Document – Law of Torts.

UNIT II TENDERS 9

Prequalification – Bidding – Accepting – Evaluation of Tender from Technical, Contractual and Commercial Points of View – Contract Formation and Interpretation – Potential Contractual Problems – World Bank Procedures and Guidelines – Tamilnadu Transparency in Tenders Act.

UNIT III ARBITRATION 9

Comparison of Actions and Laws – Agreements – Subject Matter – Violations – Appointment of Arbitrators – Conditions of Arbitration – Powers and Duties of Arbitrator – Rules of Evidence – Enforcement of Award – Costs.

UNIT IV LEGAL REQUIREMENTS 9

Insurance and Bonding – Laws Governing Sale, Purchase and Use of Urban and Rural Land – Land Revenue Codes – Tax Laws – Income Tax, Sales Tax, Excise and Custom Duties and their Influence on Construction Costs – Legal Requirements for Planning Property Law Agency Law – Local Government Laws for Approval – Statutory Regulations.

UNIT V LABOUR REGULATIONS 9

Social Security – Welfare Legislation – Laws relating to Wages, Bonus and Industrial Disputes, Labour Administration – Insurance and Safety Regulations – Workmen's Compensation Act Indian Factory Act – Tamilnadu Factory Act – Child Labour Act - Other Labour Laws.

TOTAL : 45 PERIODS

OUTCOME: On completion of this course the students will know different types of contracts in construction, arbitration and legal aspect and its provisions.

REFERENCES:

1. Gajaria G.T., "Laws Relating to Building and Engineering" Contracts in India,
2. Jimmie Hinze, "Construction Contracts", McGraw Hill, 2001.
3. Joseph T. Bockrath, "Contracts and the Legal Environment for Engineers and Architects', McGraw Hill, 2000.

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4. Kwaku, A., Tenah,P.E. Jose M.Guevara, P.E.,"Fundamentals of Construction Management and Organisation", Printice Hall, 1985.M.M.Tripathi Private Ltd., Bombay, 1982.

5. Patil. B.S, "Civil Engineering Contracts and Estimates", Universities Press (India) Private Limited, 2006.

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20155E82E SUSTAINABLE CONSTRUCTION

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OBJECTIVE: To impart knowledge about sustainable construction and to understand the concepts of sustainable materials, energy calculations, green buildings and environmental effects.

UNIT I INTRODUCTION 9

Introduction and definition of Sustainability - Carbon cycle - role of construction material: concrete and steel, etc. - CO2 contribution from cement and other construction materials.

UNITII MATERIALS USED IN SUSTAINABLE CONSTRUCTION 9

Construction materials and indoor air quality - No/Low cement concrete - Recycled and manufactured aggregate - Role of QC and durability - Life cycle and sustainability.

UNITIII ENERGY CALCULATIONS 9

Components of embodied energy - calculation of embodied energy for construction materials - Energy concept and primary energy - Embodied energy via-a-vis operational energy in conditioned building - Life Cycle energy use

UNITIV GREEN BUILDINGS 9

Control of energy use in building - ECBC code, codes in neighboring tropical countries - OTTV concepts and calculations – Features of LEED and TERI – Griha ratings - Role of insulation and thermal properties of construction materials - influence of moisture content and modeling - Performance ratings of green buildings - Zero energy building

UNITV ENVIRONMENTAL EFFECTS 9

Non-renewable sources of energy and Environmental aspects – energy norm, coal, oil, natural gas Nuclear energy - Global temperature, Green house effects, global warming - Acid rain: Causes, effects and control methods Regional impacts of temperature change.

TOTAL: 45 PERIODS

OUTCOME:

On completion of the course, the student is expected to be able to

CO1 Summarize the various sustainable materials used in construction.

CO2 Explain the method of estimating the amount of energy required for building.

CO3 Interpret the features of LEED, TERI and GRIHA ratings of buildings.

CO4 Relate the concept and performance of zero energy buildings.

CO5 Select less carbon emission materials for construction.

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REFERENCES:

1. Charles J Kibert, Sustainable Construction : Green Building Design & Delivery, 4th Edition , Wiley Publishers 2016.

2. Steve Goodhew, Sustainable Construction Process, Wiley Blackwell,UK, 2016.

3. Craig A. Langston & Grace K.C. Ding, Sustainable Practices in the Built Environment, Butterworth Heinemann Publishers, 2011.

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ANNEXURE II
VALUE ADDED COURSES

INFRASTRUCTURAL MODELLING

S.No	Topics	Minimum
1.	Introduction to Infrastructure.	5hrs
2.	Asset Management Process.	5hrs
3.	Inventory, Inspection and Condition Assessment.	5hrs
4.	Deterioration Modeling.	5hrs
5.	Optimization And Decision Making.	5hrs
6.	Performance, Usage, Budget and Cost Functions.	5hrs
7.	Interdependence, Resiliency and Security.	5hrs
8.	Contract and Workflow Management.	5hrs
9.	Benchmarking and Best Practices.	5hrs

Duration of the Course: 45 hours.

Learning outcomes:

1. The role of school infrastructure in [illegible] student success cannot be overstated. This provides students with both a [illegible] example of what they will be expected to do. Create, manipulate and edit 2D drawings and figures.
2. Utilize the power and precision of AutoCAD as a drafting and design tool used in the mechanical design and manufacturing industries.
3. A learning model is a specific application or representation of a learning theory. As a result, learners [illegible] and [illegible].

STADD PRO V8i

S.NO	TOPICS	MINIMUM
1.	Introduction to Staad Pro V8i.	5 hrs
2.	Model Generation and Editing.	5 hrs
3.	Introduction to Loading and Automatic Load Generation.	5 hrs
4.	Concrete Design.	5 hrs
5.	Seismology.	5 hrs
6.	FEM / FEA.	5 hrs
7.	Steel design.	5 hrs
8.	Report Generation	5 hrs
9.	Foundation Design.	5 hrs

Duration of the Course: 45 hours.

Learning outcomes:

1. Students will be able to complete object oriented instinctive 2D/3D graphic model.
2. Students will know to make isometric & perspective views and 3D.
3. This course will introduce one to STAAD Pro's state-of-the-art user interface, prevailing analysis and design engines with sophisticated finite element (FEM), visualization tools, and dynamic analysis capabilities.
4. Students will learn how to achieve user-specified design parameters to optimize

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5. Students will know to perform code check, member selection, and optimized member selection consisting of analysis/design.

GEOTECHNICAL ENGINEERING

S.No	Topics	Minimum
1	Soil and rock mechanics	5hrs
2	Soil-structure interaction	5hrs
3	Constitutive modeling	5hrs
4	Computational geomechanics	5hrs
5	Foundation and earth structures engineering	5hrs
6	Ground improvement	5hrs
7	Slope stability and landslide stabilization	5hrs
8	Liquefaction of soils and earthquake engineering	5hrs
9	Laboratory characterization of geomaterials and soil reinforcement	5hrs

Duration of the Course: 45 hours

Learning outcomes:

1. Geotechnical design challenges in civil engineering, technologies used to install or construct geotechnical systems
2. Soil behaviour relevant to the [illegible] and serviceability limit states
3. Numerical and constitutive modelling methods used in geotechnical design.

PLASTIC WASTE MANAGEMENT

S.No	Topics	Minimum
1	To study various sources of plastic waste.	5hrs
2	To study waste disposal methods	5hrs
3	To perform plastic waste size reduction by mechanical method.	5hrs
4	To carry out separation of plastics using float-sink method.	5hrs
5	To study various separation methods of paper/plastic mixtures.	5hrs
6	To perform primary recycling of plastic using granulators.	5hrs
7	To study recycling by chemical modification of plastic waste.	5hrs
8	To study secondary recycling by co-extrusion and coinjection molding.	5hrs
9	To study quaternary recycling methods	5hrs

Duration of the Course: 45hours

Learning outcomes:

1. Apply strategies, tactics and Incident Command/Incident Management skills to emergency incidents
2. Application of management and leadership principles to Fire Department operations, inter-agency cooperation and implementation of policies and procedures
3. Development of skills and education for employment and advancement in Fire and Emergency Service

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF MICROBIOLOGY

Minutes of Board of Studies Meeting

The Board of Studies meeting for the department of Microbiology is held on 30.07.2020 at 10.30 am. Video Conference Media: ZOOM, PRIST Deemed to be University, Thanjavur under the chairmanship of Dr. A.Bakrudeen Ali Ahamed.

The following members were present:

1. DR. Bakrudeen Ali Ahamed Prof & HOD., PRIST (Chairman , BOS)
2. DR. L.Chinnappa / Dean, PRIST (BOS, Member)
3. Dr. S. Ramesh, Professor, PRIST (Member, BOS)
4. Dr.S.Mohanraj /Associate Professor. (BOS, Member)
5. Dr. T. Ushadevi/ Associate Professor PRIST (Member, BOS)
6. Dr. K. Sundar / Assistant Professor, PRIST (Member, BOS)
7. Dr. R. Sathya/Assistant Professor, PRIST (Member, BOS)
8. Dr.A.Xavier Fernandes /Assistant Professor, PRIST (Member, BOS)
9. Dr. P. Anantharaman Professor, CAS in Marine Biology, Annamalai University (External Member, BOS)
10. Dr. Rajkumar, Managing Director, Cell Zyme Biotech, Chennai, External Member, BOS)

The Chairman (BOS) welcomed all the members and presented the feedback about existing curriculum received from various Stakeholders and also from the department academic advisory committee.

The members of the Board have unanimously discussed and carefully reviewed the existing syllabus for (B.Sc., Microbiology, M.Sc., Microbiology and M.Phil.,) in detail and made the necessary changes in upcoming (B.Sc., Microbiology, M.Sc., Microbiology and M.Phil.,) as mentioned below.

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1. **Resolved to introduce the following Audit Courses in the B.Sc., (Microbiology) programme curriculum with effect from 2020-21**

   Semester I: Universal Human Values - 2 credits

   Semester II : Communication Skills- 2 credits

   Semester III: Office automation- 2 credits

   Semester IV: Leadership and Management Skills- 2 credits

   Semester V: Professional Skills- 2 credits

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses as given in **Annexure-I**

2. **Resolved to introduce the following Audit Courses on Soft Skills in the B.Sc., (Microbiology) programme curriculum with effect from 2020-21**

   Year I: Basic Behavioral Etiquette: 2 Credits

   Year II : General Aptitude and Quantitative Ability: 2 Credits

   Year III: Interview Skills Training and Mock Test: 2 Credits

   Further resolved to approve the syllabus copy for the above mentioned Audit Courses on Soft Skills as given in **Annexure-II**

3. **Resolved to introduce Audit Course on "Community Engagement" with one credit in the 3rd year of B.Sc., (Microbiology) programme curriculum with effect from 2020-21 Annexure-I**

4. **Resolved to drop the courses on Communicative English Laboratories, Skill Based Elective Courses and Course on Extension Activities from the existing curriculum of B.Sc., (Microbiology) programme with effect from 2020-21.**

5. **Resolved to introduce** "Cell Biology /20116AEC34" and "Cell Biology Lab /20116AEC36L" in **B.Sc., III semester Annexure-III**

6. **Resolved to introduce** "Biostatistics and Bioinformatics /20116AEC44" and and "Biostatistics and Bioinformatics Lab /20116AEC47L" in **B.Sc., IV semester AnnexureIII**

7. Resolved to modify the Molecular Biology/20116AEC52 syllabus in Unit I,II,III,IV and V in B.Sc V semester **(Annexure III)**

8. Resolved to continue with the existing curriculum and syllabi for M Sc., Microbiology program without any change for the year 2020-21.

9. **Resolved to introduce a course on "Research and Publication Ethics" with 2 credits in the M.Phil., (Microbiology) programme curriculum with effect from 2020-21. Further resolved to approve the syllabus for the same as given in Annexure-IV**

10. **Resolved to introduce the following New value added courses** " Certificate course on Microbial Toxins and Fooc Protection -20516MTFP & Certificate Course on Appplication of microorganisms in food and microbial fermentation - 20516AMFMF

Members of the Board updated the panel of examiners and submitted the same to the Academic Counsel for its approval. **Annexure-V**

The Meeting concluded with thanks from the Board of Studies Chairman.

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF MICROBIOLOGY

Composition of Board of Studies 2020-2021

	Designation	Name	Qualification	Designation & Affiliation	Mail id
1	Chairperson/HoD	Dr.A.Bakrudeen Ali Ahamed	M.Sc., PhD	Professor, Department of Biochemistry, PRIST Deemed to be University, Vallam, Thanjavur	bakru24@gmail.com
2	External Expert-Academic	Dr. P. Anantharaman	M.Sc., PhD	Professor, CAS in Marine Biology, Annamalai University, Tamil Nadu, India	panantharaman@gmail.com
3	External Expert- Industry	Dr. Rajkumar	M.Sc., PhD	Managing Director, Cell Zyme Biotech, Chennai.	cellzymebiotech@gmail.com
4	Professor	Dr. S. Ramesh	M.Sc.,Ph.D.	Professor, PRIST Deemed to be University, Vallam, Thanjavur	ramesh@prist.ac.in
5	Associate Professor	Dr.S.Mohanraj	M.Sc.,Ph.D.	Associate Professor, PRIST Deemed to be University, Vallam, Thanjavur	sundar@prist.ac.in
6	Associate Professor	Dr. T. Ushadevi	M.Sc., M.Phil., B. Ed., Ph.D.	Associate Professor, PRIST Deemed to be University, Vallam, Tharjavur	ushadevi29@gmail.com
7	Assistant Professor	Dr.K. Sundar	M.Sc., Ph.D.	Assistant Professor, PRIST Deemed to be University, Vallam, Thanjavur	sundar@gmai..com
8	Assistant Professor	Dr. R. Sathya	M.Sc., M.Phil., PhD	Assistant Professor, PRIST Deemed to be University, Vallam, Thanjavur	sathyaram1984@gmail.com
9	Assistant Professor	Dr.A.Xavier Fernande	M.Sc., M. ED M.Phil. Ph.D.	Assistant Professor, PRIST Deemed to be University, Vallam, Thanjavur	a.xavierfernandes@gmail.com
10	Special Invitee-Dean	DR. L.Chinnappa	M.Sc., M.Phil., B. Ed., Ph.D.	Dean, School of Arts and Science, PRIST Deemed to be University, Vallam, Thanjavur	deanarts@prist.ac.in
11	Special Invitee-Alumnus/Alumna	T.Krishnaveni	PG	Student, PRIST Deemed to be University, Vallam, Thanjavur	anjali@gmail.com
12	Special Invitee -Current student - UG or PG	S. Sadhana	UG	Student	sadhana111@gmail.com

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The Meeting concluded with thanks from the Board of Studies Chairman.

Signature of the Chairman & Members

S.No	Designation	Name	Signature
1	Chairperson/HoD	Dr.A.Bakrudeen Ali Ahamed	
2	External Expert-Academic	Dr. P. Anantharaman	
3	External Expert- Industry	Dr. Rajkumar	
4	Professor	Dr .S. Ramesh	
5	Associate Professor	Dr.S.Mohanraj	
6	Associate Professor	Dr. T. Ushadevi	
7	Assistant Professor	Dr.K. Sundar	
8	Assistant Professor	Dr. R. Suthya	
9	Assistant Professor	Dr.A.Xavier Fernandes	
10	Special Invitee-Dean	DR. L.Chinnappa	
11	Special Invitee-Alumnus/Alumna	ANJALI.B	
12	Special Invitee -Current student - UG or PG	V.Chandravadhana	

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Annexure-I



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Annexure-I

SEMESTER I

UNIVERSAL HUMAN VALUES

Course Code	Course Title	L	T	P	C
201ACLSUHV	Universal Human Values	-	-	-	2

Aim:

This course aims at making learners conscious about universal human values in an integral manner, without ignoring other aspects that are needed for learner's personality development.

Course Objectives :

The present course deals with meaning, purpose and relevance of universal human values and how to inculcate and practice them consciously to be a good human being and realize one's potential.

Course Outcomes :

By the end of the course the learners will be able to:

1. Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
2. Learn from case studies of lives of great and successful people who followed and practised human values and achieved self-actualisation.
3. Become conscious practitioners of human values.
4. Realise their potential as human beings and conduct themselves properly in the ways of the world.

Unit I

- Introduction:What is love? Formsoflove—forself, parents, family, friend, spouse, community, nation, humanity and other beings, both for living and non-living
- Love and compassion and inter-relatedness
- Love, compassion, empathy, sympathy and non-violence
- Individuals who are remembered in history for practicing compassion and love.
- Narratives and anecdotes from history, literature including local folklore
- Practising love and compassion: What will learners learn gain if they practice love and compassion? What will learners lose if they don't practice love and compassion?
- Sharing learner's individual and/or group experience(s)
- Simulated Situations
- Casestudies

Unit II

- Introduction: What is truth? Universal truth, truth as value, truth as fact (veracity,

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sincerity, honesty among others)

- Individuals who are remembered in history for practicing thisvalue
- Narratives and anecdotes from history, literature including localfolklore
- Practicing Truth: What will learners learn/gain if they practice truth? What will learners lose if they don't practiceit?
- Learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

Unit III

- Introduction: What is non-violence? Its need. Love, compassion, empathy sympathy for others as pre-requisites for non-violence
- Ahimsa as non-violence and non-killing
- Individuals and organisations that are known for their commitment to non-violence
- Narratives and anecdotesaboutnon-violence from history,and literature including local folklore.
- Practicingnon-violence: What will learners learn/gain if they practice non-violence? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about non-violence
- Simulated situations
- Casestudies

Unit IV

- Introduction: What is righteousness?
- Righteousness and *dharma*, Righteousness and Propriety
- Individuals who are remembered in history for practicing righteousness
- Narratives and anecdotes from history, literature including local folklore
- Practicing righteousness: What will learners learn/gain if they practice righteousness? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

Unit V

- Introduction: What is peace? Its need, relation with harmony and balance
- Individuals and organisations that are known for their commitment to peace
- Narratives and Anecdotes about peace from history, and literature including local folklore
- Practicing peace: What will learners learn/gain if they practice peace? What will learners lose if they don't practice it?
- Sharing learner's individual and/or group experience(s) about peace
- Simulatedsituations
- Casestudies

Unit VI

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- Introduction: What is service? Forms of service for self, parents, family, friend, spouse, community, nation, humanity and other beings—living and non-living, persons in distress ordisaster.
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes dealing with instances of service from history, literature including local folklore
- Practicingservice: What will learners learn/gain gain if they practice service? What will learners lose if they don't practice it?
- Sharing learners' individual and/or group experience(s) regarding service
- Simulated situations
- Casestudies

Unit VII

- Introduction: What is renunciation? Renunciation and sacrifice. Self-restrainand Ways of overcoming greed. Renunciation with action as true renunciation
- Individuals who are remembered in history for practicing this value.
- Narratives and anecdotes from history and literature,including local folklore about individuals who are remembered for their sacrifice and renunciation.
- Practicing renunciation and sacrifice: What will learners learn/gain if they practice Renunciation and sacrifice? What will learners lose if they don't practiceit?
- Sharing learners' individual and/or group experience(s)
- Simulated situations
- Casestudies

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SEMESTER II

COMMUNICATION SKILLS

Course Code	Course Title	L	T	P	C
201ACLSCOS	Communication Skills	-	-	-	2

Course Objectives :

This course has been developed with the following objectives:

1. Identify common communication problems that may be holding learnersback
2. Identify what their non-verbal messages are communicating toothers
3. Understand role of communication in teaching-learningprocess
4. Learning to communicate through the digitalmedia
5. Understand the importance of empatheticlistening
6. Explore communication beyondlanguage.

Course Outcome :

By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.

Unit I

- Techniques of effectivelistening
- Listening andcomprehension
- Probing questions
- Barriers tolistening

Unit II

- Pronunciation
- Enunciation
- Vocabulary
- Fluency
- CommonErrors

Unit III

- Techniques of effective reading
- Gathering ideas and information from a given text
  - i. Identify the main claim of the text
  - ii. Identify the purpose of the text
  - iii. Identify the context of the text
  - iv. Identify the concepts mentioned
- Evaluating these ideas and information
  - i. Identify the arguments employed in the text
  - ii. Identify the theories employed or assumed into text
- Interpret the text
  - i. To understand what a text says

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ii. To understand what a textdoes
iii. To understand what a text means

Unit IV

- Clearly state the claims
- Avoid ambiguity, vagueness, unwanted generalisations and over simplification of issues
- Provide backgroundinfomation
- Effectively argue theclaim
- Provide evidence for theclaims
- Use examples to explainconcepts
- Followconvention
- Be properlysequenced
- Use proper signpostingtechniques
- Be well structured
  i. Well-knit logicalsequence
  ii. Narrativesequence
  iii. Categorygroupings
- Different modesofWriting
  i. E-mails
  ii. Proposal writing for HigherStudies
  iii. Recording the proceedings ofmeetings
  iv. Any other mode of writing relevant forlearners

Unit V

- Role of Digital literacy in professionallife
- Trends and opportunities in using digital technology inworkplace
- InternetBasics
- Introduction to MS Officetools
  i. Paint
  ii. Office
  iii. Excel
  iv. Powerpoint

Unit VI

- Introduction to social mediawebsites
- Advantages of socialmedia
- Ethics and etiquettes of socialmedia
- How to use Google searchbetter
- Effective ways of using SocialMedia
- Introduction to DigitalMarketing

Unit VII

- Meaning of non-verbalcommunication
- Introduction to modes of non-verbalcommunication
- Breaking the misbeliefs
- Open and Closed Bodylanguage

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- Eye Contact and FacialExpression
- HandGestures
- Do's andDon'ts
- Learning fromexperts
- Activities-BasedLearning

Reference:

1. SenMadhucchanda (2010), *An Introduction to Critical Thinking*, Pearson,Delhi
2. Silvia P. J. (2007), *How to Read a Lot*, American Psychological Association, Washington DC

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SEMESTER III

Course Code	Course Title	L	T	P	C
201ACLSOAN	OFFICE AUTOMATION	-	-	-	2

Course Objectives :

To provide an in-depth training in use of office automation, internet and internet tools. The course also helps the candidates to get acquainted with IT.

Course Outcomes:

After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet.

UNIT I

Knowing the basics of Computers

UNIT II

Word Processing (MS word)

UNIT III

Spread Sheet (MS XL)

UNIT IV

Presentation (MS Power Point)

UNIT V

Communicating with Internet

Reference:

1. Fundamentals of computers - V.Rajaraman - Prentice- Hall of india
2. Microsoft Office 2007 Bible - John Walkenbach,Herb Tyson,Faithe Wempen,cary N.Prague,Michael R groh,Peter G.Aitken, and Lisa a.Bucki -Wiley India pvt.ltd.
3. Introduction to Information Technology - Alexis Leon, Mathews Leon, and Leena Leon, Vijay Nicole Imprints Pvt. Ltd., 2013.
4. Computer Fundamentals - P. K. Sinha Publisher: BPB Publications
5. https://en.wikipedia.org
6. https://wiki.openoffice.org/wiki/Documentation
7. http://windows.microsoft.com/en-in/windows/windows-basics-all-topics

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SEMESTER IV

Course Code	Course Title	L	T	P	C
20IACLSLMS	Leadership and Management Skills	-	-	-	2

Aim:

The aim of the course cultivating and nurturing the innate leadership skills of the youth so that they may transform these challenges into opportunities and become torch bearers of the future by developing creative solutions.

Course Objective:

The Module is designed to:

- Help students to develop essential skills to influence and motivate others
- Inculcate emotional and social intelligence and integrative thinking for effective leadership
- Create and maintain an effective and motivated team to work for the society
- Nurture a creative and entrepreneurial mindset
- Make students understand the personal values and apply ethical principles in professional and social contexts.

Course Outcomes :

Upon completion of the course students will be able to:

1. Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
2. Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.
3. Understand the basics of entrepreneurship and develop business plans
4. Apply the design thinking approach for leadership
5. Appreciate the importance of ethics and moral values for making of a balanced personality.

UNIT I- Leadership Skills

a. **Understanding Leadership and its Importance**
   - What is leadership?
   - Why Leadership required?
   - Whom do you consider as an ideal leader?

b. ***Traits and Models of Leadership***
   - Are leaders born or made?
   - Key characteristics of an effective leader
   - Leadership styles
   - Perspectives of different leaders

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c. ***Basic Leadership Skills***

- Motivation
- Team work
- Negotiation
- Networking

UNIT II - Managerial Skills

a. **Basic Managerial Skills**

- Planning for effective management
- How to organise teams?
- Recruiting and retaining talent
- Delegation of tasks
- Learn to coordinate
- Conflict management

b. Self Management Skills

- Understanding self concep:
- Developing self-awareness
- Self-examination
- Self-regulation

UNIT III - Entrepreneurial Skills

a. **Basics of Entrepreneurship**

- Meaning of entrepreneurship
- Classification and types of entrepreneurship
- Traits and competencies of entrepreneur

b. Creating Business Plan

- Problem identification and idea generation
- Idea validation
- Pitch making

UNIT IV - Innovative Leadership and Design Thinking

a. **Innovative Leadership**

- Concept of emotional and social intelligence
- Synthesis of human and artificial intelligence
- Why does culture matter for today's global leaders

b. Design Thinking

- What is design thinking?
- Key elements of design thinking
  - Discovery
  - Interpretation
  - Ideation
  - Experimentation
  - Evolution.
- How to transform challenges into opportunities?

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- How to develop human-centric solutions for creating social good?

UNIT V- Ethics and Integrity

a. Learning through Biographies

- What makes an individual great?
- Understanding the persona of a leader for deriving holistic inspiration
- Drawing insights for leadership
- How leaders sail through difficult situations?

b. Ethics and Conduct

- Importance of ethics
- Ethical decision making
- Personal and professional moral codes of conduct
- Creating a harmonious life

Bibliography and Suggested Readings :

Books

- Ashokan, M. S. (2015). *Karmayogi: A Bhiography of E. Sreedharan*. Penguin, UK.
- Brown, T. (2012). *Change by Design*. Harper Business
- Elkington, J., & Hartigan, P. (2008). *The Power of Unreasonable People: How Social Entrepreneurs Create Markets that Change the World*. Harvard Business Press.
- Goleman D. (1995). *Emotional Intelligence*. Bloomsbury Publishing India Private Limited
- Kalam A. A. (2003). *ignited Minds: Unleashing the Power within India*. Penguin Books India
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SEMESTER V

Course Code	Course Title	L	T	P	C
201ACLSPSL	Professional Skills	-	-	-	2

Course Objectives :

The Objectives of the course are to help students/candidates:

1. Acquire career skills and fully pursue tc partake in a successful career path
2. Prepare good resume, prepare for interviews and group discussions
3. Explore desired career opportunities in the employment market in consiceration of an individual SWOT.

Course Outcomes :

At the end of this course the students will be able to:

1. Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax
2. Participate in a simulated interview
3. Actively participate in group discussions towards gainful employment
4. Capture a self - interview simulation video regarding the job role concerned
5. Enlist the common errors generally made by candidates in an interview
6. Perform appropriately and effectively in group discussions
7. Explore sources (online/offline) of career opportunities
8. Identify career opportunities in consideration of their own potential and aspirations
9. Use the necessary components required to prepare for a career in an identified occupation (as a case study).

Unit I: Resume Skills

Resume Skills : Preparation and Presentation

- Introduction of resume and its importance
- Difference between a CV, Resume and Bio data
- Essential components of a good resume

ii. Resume skills : common errors

- Common errors people generally make in preparing their resume
- Prepare a good resume of her/his considering all essential components

Unit II: Interview Skills

i. **Interview Skills : Preparation and Presentation**

- Meaning and types of interview (F2F, telephonic, video, etc.)
- Dress Code, Background Research, Do's and Don'ts

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- Situation, Task, Approach and Response (STAR Approach) for facing an interview
- Interview procedure (opening, listening skills, closure, etc.)
- Important questions generally asked in a job interview (open and closed ended questions)

ii. ***Interview Skills : Simulation***

- Observation of exemplary interviews
- Comment critically on simulated interviews

iii. ***Interview Skills : Common Errors***

- Discuss the common errors generally candidates make in interview
- Demonstrate an ideal interview

Unit-III: Group Discussion Skills

Meaning and methods of Group Discussion

- Procedure of Group Discussion
- Group Discussion- Simulation
- Group Discussion - Common Errors

Unit IV: Exploring Career Opportunities

Knowing yourself – personal characteristics

- Knowledge about the world of work, requirements of jobs including self-employment.
- Sources of career information
- Preparing for a career based on their potentials and availability of opportunities

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SEMESTER VI

Course Code	Course Title	L	T	P	C
201ACLSCET	Community Engagement	-	-	-	1

Course Objectives:

- To develop an appreciation of rural culture, life-style and wiscom amongst students
- To learn about the status of various agricultural and rural development programmes
- To understand causes for rural distress and poverty and explore solutions for the same
- To apply classroom knowledge of courses to field realities and thereby improve quality of learning

Course Outcomes:

After completing this course, student will be able to

- Gain an understanding of rural life, culture and social realities
- Develop a sense of empathy and bonds of mutuality with local community
- Appreciate significant contributions of local communities to Indian society and economy
- Learn to value the local knowledge and wisdom of the community
- Identify opportunities for contributing to community's socio-economic improvements

UNIT I - Appreciation of Rural Society

Rural life style, rural society, caste and gender relations, rural values with respect to community, nature and resources, elaboration of "soul of India lies in villages" (Gandhi), rural infrastructure.

UNIT II- Understanding rural economy & livelihood

Agriculture, farming, landownership, water management, animal husbandry, non-farm livelihoods and artisans, rural entrepreneurs, rural markets

UNIT III Rural Institutions

Traditional rural organisations, Self-help Groups, Panchayati raj institutions (Gram Sabha, Gram Panchayat, Standing Committees), local civil society, local administration

UNIT IV Rural Development Programmes

History of rural development in India, current national programmes: Sarva Shiksha Abhiyan, Beti Bachao, Beti Padhao, Ayushman Bharat, Swatchh Bharat, PM AwaasYojana, Skill India, Gram Panchayat Decentralised Planning, NRLM, MNREGA, etc.

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Annexure-II

Year I: Basic Behavioral Etiquette: 2 Credits

Year II : General Aptitude and Quantitative Ability: 2 Credits

Year III: Interview Skills Training and Mock Test: 2 Credits

Annexure-III

Course Code	Course Title	L	T	P	C
20116AEC34	Cell Biology	4	1	0	5

Aim:

Students will understand the cellular basis of life and their importance.

Objectives:

- Students will understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles
- Students will understand how these cellular components are used to generate and utilize energy in cells

Outcomes:

To grasp the significance of cell and its components in living systems

- To understand the and describe the structures and basic components of prokaryotic and eukaryotic cells
- To understand the cyclical events of cell division and types of cell division
- To acquire the knowledge of cell biology for understanding various physiological process
- To understand the synthesis of cellular compounds and cell signaling

Unit - I

History of cell biology, cell as basic unit of life, cell theory, protoplasm theory and organismal theory, broad classification of cell types, Bacteria, Archaea (prokaryotic) and eukaryotic cells and their similarities and differences.

Unit - II

Cell Organelles- Nucleus, Endoplasmic Reticulum(link is external), Golgi Apparatus, Mitochondria(link is external), Chloroplast(link is external), Lysosome, Peroxisome – Protein Sorting & Transport – Cytoskeleton(link is external) & Cell Movement – The Plasma Membrane

Unit - III

Biogenesis of Cellular organelles – Biosynthesis of mitochondria, chloroplast, ER, Golgi complex; Biosynthetic process in ER and golgi apparatus; Protein synthesis and folding in the cytoplasm; Degradation of cellular componerts.

Unit - IV

Cell cycle - An overview of cell cycle; Components of cell cycle control system; Intracellular and Extra-cellular control of cell division, Programmed cell death (Apoptosis), intrinsic & extrinsic pathways of cell death, Apoptosis in relation with Cancer and Viral disease

Unit - V

Cell communication – overview – types of cell signaling – signal molecules – signal amplification – receptor types – quorum sensing.

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Course Code	Course Title	L	T	P	C
20116AEC36L	Cell Biology Lab	0	0	3	2

Aim:

Students will understand the cellular basis of life and their importance.

Objectives:

- Students will understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles
- Students will understand how these cellular components are used to generate and utilize energy in cells

Outcomes:

- To grasp the significance of cell and its components in living systems
- To understand the and describe the structures and basic components of prokaryotic and eukaryotic cells
- To understand the cyclical events of cell division and types of cell division

1. Separation of nucleic acid bases by paper chromatography
2. Mitosis in onion root
3. Meiosis in flower bud
4. Normal human karyotyping
5. preparation of polytene chromosome
6. Isolation of chloroplast from spinach leaves
7. Isolation of protoplast
8. Life cycle of Drosophila
9. Culture of Human, Plant & Animal cells
10. Identification and study of cancer cells- Slides/Photomicrographs

REFERENCE:

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Course Code	Course Title	L	T	P	C
20116AEC44	Biostatistics and Bioinformatics	5	1	0	5

Aim

- To introduce the basic knowledge on Biostatistics and Bioinformatics tools and its applications

Objective

- The basic objective is to give students an introduction to the biostatistics and bioinformatics.
- Emphasis will be given to the application of biostatistics, bioinformatics and biological databases to problem solving in real research problems.

Outcome

- To understand the importance of principal concepts about biostatistics
- To know the knowledge about statistics and its relation with other science and research aspects
- To obtain the knowledge on bioinformatics databases, perform text- and sequence-based searches
- To become familiar with the use of a wide variety of internet applications, biological database and will be able to apply these methods to research problems.

Unit I

Concepts in statistics, Types of Data, presentation of data, types of graphics, relative frequency, cumulative frequency, Measurement of central tendency, Measures of variation, coefficient of variation, Measures of Skewness and Kurtosis, Probability and its applications, Laws of Addition and Multiplication, Compound probability, Baye's Theorem.

Unit II

Random Variables and Distributions. Binomial, Poisson, Exponential and Normal Distributions and their applications. Samples and Sampling Distribution, Standard Error, significance level. Degrees of freedom, Tests of significance, tests for proportion, t and F tests Confidence. Correlation: Simple, Partial and Multiple Correlation. Regression Analysis. Analysis of variance for one and two way classification

UNIT III

Biological Databases: Structure, Sequence and literature databases. Protein sequence database - PIR, SWISS-PROT, MIPS. Protein structure database - PDB, SCOP. DNA sequence databases – Gen Bank, ENBL, MBL, DDBJ. Literature data base – Med Line, PubMed. Patterns, motifs and profile Databases: Metabolic Pathway Databases.

UNIT IV

Sequence Alignment and Analysis: Local and Global alignment. Scoring matrices. Database Similarity Searches: BLAST, FASTA, PSI-BLAST algorithms; Pair wise sequence alignment - NEEDLEMAN and Wunsch, Smith Waterman algorithms; Multiple sequence alignments - CLUSTAL, PRAS; Patterns, motifs and Profiles in sequences.

UNIT V

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Important parameters in Drug Discovery and the role of computational methods. Process of drug discovery – Target identification, target validation, lead identification, lead optimization and preclinical pharmacology and toxicology. Computer Aided Drug Design (CADD). Molecular docking - Concept of receptor and target. Receptor binding and activation. Ligand-receptor interaction, non-covalent bonds. Ligand into the binding site.

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1. Andreas D. Baxevanis And B. F. Francis Ouellette. 2001. **Bioinformatics.**A Practical Guide to the Analysis of Genes and Proteins (Second Edition). John Wiley & Sons, Inc.
2. Arthur M. LESK, 2003 Introduction to Bioinformatics Oxford University Press
3. Attwood T. K. And Parry-Smith D. J. 2003. Introduction to Bioinformatics. Pearson Education (Singapore) Pvt. Ltd.
4. Balasubramanian, D., Bryce, C. F. A., Dharmalingam, K., Green, J. And Kunthala Jayaraman. 1996. Concepts in Biotechnology (Edts.) University Press (India) Ltd.
5. Basu, O., S.K. Thukral. 2007. Bioinformatics-Databases, Tools and Algorithms. Oxford University Press, New Delhi.
6. Bryan Bergeron, M.D. 2006. Bioinformatics Computing. 2006. Prentice Hall of India Pvt Limited, New Delhi.
7. Gautham, N. 2006. Bioinformatics- Databases and Algorithms, Narosa Publishing House Hall of India Pvt. Ltd, New Delhi.
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Course Code	Course Title	L	T	P	C
20116AEC47L	Biostatistics and Bioinformatics Lab	0	0	3	2

Aim

To introduce the basic knowledge on Biostatistics and Bioinformatics tools and its applications

Objective

- The basic objective is to give students an introduction to the biostatistics and bioinformatics.
- Emphasis will be given to the application of biostatistics, bioinformatics and biological databases to problem solving in real research problems.

Outcomes

CO1. To Read and learn statistical measures individually.

CO2- To analysis the data from experiments and interpretation of the *results*

CO3- To study the multivariate analysis in biostatistics

CO4 - To understand the nucleotide sequence data of the given species using NCBI / EMBL / DDBJ.

CO5 - To identify the protein sequence of the species using PIR and Swissprot / UniProt

1. Mean and Standard deviation using biological samples
2. Chi – Square test, Student 't' test and Correlation coefficient
3. Regression Coefficient and regression lines
4. Pairwise alignment using FASTA, BLAST.
5. Multiple alignments using Clustal W.
6. Study of internet resources in Bioinformatics – NCBI, ENBL, EBI.

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Course Code	Course Title	L	T	P	C
20116AEC52	Molecular Biology	4	1	0	3

UNIT – I

Historical and conceptual background - Discovery of DNA as genetic material, Griffith's experiment, Hershy and Chase warring blender experiment, Chargaff's rule. Structures of DNA and RNA: Types of genetic material. DNA Structure: Salient features of double helix, types of DNA. RNA Structure. Denaturation and renaturation, cot curves. DNA topology: linking number, topoisomerases. DNA organization in prokaryotes, viruses, eukaryotes

UNIT – II

DNA replication in prokaryotes: Replicons – models of DNA replication – origin and termination of replication – rolling circle replication – proof for semi conservative replication (Meselson and Stahl Experiment) – enzymes and proteins involved in DNA replication (nucleases, polymerases, ligases, helicases, gyrases, single strand binding protein, replisome and primosome) – mechanism of semi discontinuous replication.

UNIT – III

Transcription: Steps involved in transcription of prokaryotes, promoters, transcription factors, RNA polymerases I, II and III – ribosomal RNA transcription and processing – genetic code, deciphering the genetic code, characteristics of genetic code, Wobble hypothesis, central dogma of life and reversal of central dogma.

UNIT – IV

Translation: Steps involved in translation of prokaryotes – role of proteasomes in protein degradation – mechanism of action of antibiotics on protein synthesis (puromycin, chloramphenicol and streptomycin). Regulation of gene expression in prokaryotes – polycistronic mRNA and operons (lac operon and trp operon and attenuation mechanism).

UNIT – V

Mutation: spontaneous and induced mutations – UV and X - rays – mechanism of action of base analogues, alkylating agents, intercalating agents and teratogens – reversion suppressor mutations and mutation rate – repair of damaged DNA - excision repair, SOS, photoreactivation – CRISPR and their role in genome stability

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Annexure-IV

RESEARCH AND PUBLICATION ETHICS

Course Code	Course Title	L	T	P	C
CPE_RPE	**Research and publication ethics**				2

THEORY

Unit I: PHILOSOPHY AND ETHICS (3 hours)

1. Introduction to philosophy, definition, nature and scope, concept, braches.
2. Ethics: definition, moral philosophy, nature of moral judgements and reactions.

Unit II: SCIENTIFIC CONDUCT (5 hours)

1. Ethics with respect to science and research.
2. Intellectual honesty and research integrity.
3. Scientific misconducts: Falsification, Fabrication and Plagiarism (FFP)
4. Redundant publications: duplicate and overlapping publications, salami slicing.
5. Selective reporting and misrepresentation of data.

Unit III : PUBLICATION ETHICS (7 hours)

1. Publication ethics: definition, introduction and importance
2. Best practices / standards setting initiatives and guidelines: COPE, WAME, etc.
3. Conflicts of interest.
4. Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types.
5. Violation of publication ethics, authorship and contributorship.
6. Identification of publication misconduct, complairts and appeals.
7. Predatory publishers and journals.

PRACTICE

Unit IV: OPEN ACCESS PUBLISHING (4 hours.)

1. Open access publications and initiatives.
2. SHERPA/RoMEO online resourse to check publisher copyright & self-archiving policies.
3. Software too. to ideitify predatory publications developed by SPPU.
4. Journal finder / journal suggestion tools viz, JANE, Elsevier Journal Folder, Springer Journal Suggester, etc.

UNIT V : PUBLICATION MISCONDUCT (4 hours)

A. **Group Discussions (2 hours)**

1. Subject specific ethical issues, FFP, authorship
2. Conflicts of interest.
3. Complaints and appeals: examples and fraud from India and abroad.

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B. **Software tools (2 hours)**

Use of plagiarism software like Turnitin, Urkund and other open source software tools.

UNIT VI: DATABASES AND RESEARCH METRICS (7 hours)

A. **Databases (4 hours)**

1. Indexing databases.
2. Citation database: Web of Science, Scopus etc.

B. **Research Metrices (3 hours)**

1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP,Cite Score.
2. Metrices: h-Index g index, i10 index, altmetrics.

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Annexure-V

LIST OF MEMBERS -2020-2021

1. DR. Bakrudeen Ali Ahamed Prof & HOD., PRIST (Chairman , BOS)
2. DR. L.Chinnappa / Dean, PRIST (BOS, Member)
3. Dr. S. Ramesh, Professor, PRIST (Member, BOS)
4. Dr.S.Moharraj /Associate Professor. (BOS, Member)
5. Dr. T. Ushadevi/ Associate Professor PRIST (Member, BOS)
6. Dr. K. Sundar / Assistant Professor, PRIST (Member, BOS)
7. Dr. R. Sathya/Assistant Professor, PRIST (Member, BOS)
8. Dr.A.Xavier Fernandes /Assistant Professor, PRIST (Member, BOS)
9. Dr. P. Anantharaman Professor, CAS in Marine Biology, Annamalai University (External Member, BOS)
10. Dr. Rajkumar, Managing Director, Cell Zyme Biotech, Chennai, External Member, BOS)

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SCHOOL OF ARTS AND SCIENCE
DEPARTMENT OF MICROBIOLOGY

B. Sc., MICROBIOLOGY-REGULATION 2020
COURSE STRUCTURE

SEMESTER I					
Course Code	**Course Title**	**L**	**T**	**P**	**C**
THEORY					
20110AEC11/ 20111AEC11/ 20132AEC11/ 20135AEC11	Language-I (Tamil-I/ Advanced English-I/ Hindi-I/ French-I	4	0	0	2
20111AEC12	English-I	4	0	0	2
20116AEC13	Fundamentals of Microbiology	6	1	0	5
20115AEC14B	Bio Chemistry I	6	1	0	4
PRACTICAL					
20116AEC15L	Fundamentals of Microbiology Lab	0	0	3	2
20115AEC16BL	Bio Chemistry I Lab	0	0	3	2
	Total	**20**	**2**	**6**	**17**
AUDIT COURSE					
20IACLSICN	Indian Constitution	-	-	-	2
20IACLSUHV	Universal Human Values	-	-	-	2
SEMESTER – II					
Course Code	**Course Title**	**L**	**T**	**P**	**C**
THEORY					
20110AEC21/ 20111AEC21/ 20132AEC21/ 20135AEC21	Language-I (Tamil-II/ Advanced English-II / Hindi-II/ French-II)	4	0	0	2
20111AEC22	English-II	4	0	0	2
20116AEC23	Microbial Physiology	6	1	0	5
20115AEC24	Bio Chemistry II	6	1	0	4
PRACTICAL					
20116AEC25L	Microbial Physiology Lab	0	0	3	2
20115AEC26L	Bio Chemistry II Lab	0	0	3	2
RESEARCH SKILL BASED COURSE					
20116RLC27	Research Led Seminar	-	-	-	1
	Total	**20**	**2**	**6**	**18**
AUDIT COURSES					
20IACLSCOS	Communication Skills I	-	-	-	2
20IACSSBBE	Basic Behavioral Etiquette	-	-	-	2

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SEMESTER – III					
Course Code	**Course Title**	**L**	**T**	**P**	**C**
	THEORY				
20110AEC31/ 20111AEC31/ 20132AEC31/ 20135AEC31	Language-III (Tamil-III/ Advanced English-III / Hindi-III/ French-III)	4	0	0	2
20111AEC32	English-III	4	0	0	2
20116AEC33	Immunology	4	1	0	4
20116AEC34	Cell Biology	4	1	0	5
	PRACTICAL				
20116AEC35L	Immunology Lab	0	0	3	2
20116AEC36L	Cell Biology Lab	0	0	3	2
	RESEARCH SKILL BASED COURSE				
20116RMC37	Research Methodology	2	0	0	2
	Total	**18**	**2**	**6**	**19**
	AUDIT COURSE				
201ACLSOAN	Office Automation	-	-	-	2
	SEMESTER – IV				
Course Code	**Course Title**	**L**	**T**	**P**	**C**
	THEORY				
20110AEC41/ 20111AEC41/ 20132AEC41/ 20135AEC41	Language-IV (Tamil-IV/ Advanced English-IV/ Hindi-IV/ French-IV)	4	0	0	2
20111AEC42	English-IV	4	0	0	2
20116AEC43	Virology	4	1	0	4
20116AEC44	Biostatistics and Bioinformatics	5	1	0	5
20ENSTU45	Environmental studies	2	0	0	2
	PRACTICAL				
20116AEC46L	Virology Lab	0	0	3	2
20116AEC47L	Biostatistics and Bioinformatics Lab	0	0	3	2
	Total	**19**	**2**	**6**	**19**
	AUDIT COURSE				
201ACLSLMS	Leadership and Management Skills	-	-	-	2
201ACSSAQA	General Aptitude and Quantitative Ability	-	-	-	2
	SEMESTER – V				
Course Code	**Course Title**	**L**	**T**	**P**	**C**
	THEORY				
20116AEC51	Food and Dairy Microbiology	4	1	0	4
20116AEC52	Molecular Biology	4	1	0	3
20116AEC53	Agricultural and Environmental Microbiology	4	1	0	4
20116DSC54_	Discipline Specific Elective -I	4	1	0	3
	PRACTICAL				
20116AEC55L	Food and Dairy Microbiology and Molecular Biology Lab	0	0	3	2
20116AEC56L	Agricultural and Environmental Microbiology Lab	0	0	3	2

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RESEARCH SKILL BASED COURSE					
20116BRC57	Participation in Bounded Research	-	-	-	1
	Total	16	4	6	19
AUDIT COURSE					
201ACLSPSL	Professional Skills	-	-	-	2
SEMESTER – VI					
Course Code	**Course Title**	**L**	**T**	**P**	**C**
THEORY					
20116AEC61	Industrial Microbiology	4	1	0	4
20116SEC62	Clinical Microbiology	4	1	0	5
20116DSC63	Discipline Specific Elective - II	4	1	0	3
201—OEC (2 DIGIT COURSE Name)	Open Elective	4	0	0	2
PRACTICAL					
20116AEC64L	Industrial Microbiology Lab	0	0	3	2
20116SEC65L	Clinical Microbiology Lab	0	0	3	2
20116PRW66	Project Work	-	-	-	4
20116PROEE	Program Exit Examination	-	-	-	1
	Total	16	3	6	23
AUDIT COURSE					
201ACSSIST	Interview Skills Training and Mock Test	-	-	-	2
201ACLSCET	Community Engagement	-	-	-	1
Total Credits -Programme					115
Total Credits - Audit Courses					19

Discipline Specific Electives

Semester	Discipline Specific Elective Courses-I
V	a) 20116DSC54A - Proteomics b) 20116DSC54B - Bioinoculants
	Discipline Specific Elective Courses-I
VI	a) 20116DSC63A-Recombinant DNA Technology b) 20116DSC63B - Biocthics

Open Electives

Semester	Open Elective Courses
VI	a) 201TNOEC-Tamil Ilakkiya Varalaru b) 201ENOEC-Journalism c) 201MAOEC-Development of Mathematical Skills c) 201PHOEC-Instrumentation e) 201CEOEC-Food and Adulteration f) 201CSOEC – E-Learning g) 201CAOEC-Web Technology h) 201CMOEC-Banking service

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Credit Distribution

Sem	AEC	SEC	DSC	OEC	Research	Others	Total
I	17	-	-	-	-	-	17
II	17	-	-	-	1	-	18
III	17	-	-	-	2	-	19
IV	17	-	-	-	-	2	19
V	15	-	3	-	1	-	19
VI	6	7	3	2	4	1	23
Total	89	7	6	2	8	3	115

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School of Arts and Science

Department of Microbiology

M. Sc., Syllabus-Regulation 2020

Course Code	Course Title	L	T	P	C
	SEMESTER I				
20216SEC11	Prokaryotic Microbiology	6	1	0	5
20216SEC12	Eukaryotic Microbiology	6	1	0	5
20216SEC13	Microbial Physiology	6	1	0	4
20216SEC14L	Fundamentals of Microbiology Lab	0	0	4	2
20216DSC15	Discipline Specific Elective I	5	0	0	4
20216RLC16	Research Led Seminar	-	-	-	1
	Total	**23**	**3**	**4**	**21**
	SEMESTER II				
20216SEC21	Industrial Microbiology	5	1	0	5
20216SEC22	Environmental and Agricultural Microbiology	5	1	0	5
20216SEC23	Clinical Microbiology	5	0	0	4
20216SEC24L	Industrial, Clinical and Environmental and Agricultural Microbiology Lab	0	0	4	2
20216DSC25_	Discipline Specific Elective II	5	0	0	4
20216RMC26	Research Methodology	3	0	0	2
20216BRC27	Participation in Bounded Research	-	-	-	2
	Total	**23**	**2**	**4**	**24**
	SEMESTER III				
20216SEC31	Microbial Genetics	6	1	0	6
20216SEC32	Microbial Biotechnology	6	1	0	6
20216SEC33L	Microbial Genetics and Biotechnology Lab	0	0	5	3
20216DSC34_	Discipline Specific Elective III	5	0	0	4
202_OEC	Open Elective	4	0	0	4
20216SRC35	Design/Socio technical research	-	-	-	2
	Total	**21**	**2**	**5**	**24**
	SEMESTER IV				
20216SEC41	Pharmaceutical Microbiology	6	1	0	6
20216SEC42	Biostatistics and Bioinformatics	6	1	0	6
20216SEC43L	Pharmaceutical Microbiology Lab	0	0	5	3
20216SEC44_	Discipline Specific Elective IV	5	0	0	4
20216PRW45	Project Work	-	-	-	6
20216PEE	Programme exit examinations	-	-	-	2
	Total	17	2	5	27
	Total Credits for the Program				**96**

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Discipline specific Electives

Semester	Discipline specific Elective Courses-I
I	a) 20216DSC15A- Immunotechnology b) 20216DSC15B-Bioremediation and Waste Management
	Discipline specific Elective Courses-II
II	a) 20216DSC25A-Biomolecules b) 20216 DSC25B- Genomics and Proteomics
	Discipline specific Elective Courses-III
III	a) 20216DSC34A- Plant Tissue Culture b) 20216DSC34B-Nanotechnology
	Discipline specific Elective Courses-IV
IV	a) 20216DSC44A- Bioethics and IPR b) 20216DSC44B-Molecular Immunology

Open Electives

Semester	Open Elective Courses
III	a) 202ENOEC-Writing for the media b) 202MAOEC-Applicable Mathematics Techniques c) 202PHOEC-Bio-Medical Instrumentation d) 202CHOEC-Green Chemistry e) 202CSOEC – M-Marketing f) 202CMOEC- Financial Services

Credit Distribution:

Sem	SEC	DSC	GEC	RSB courses	Others	Total
I	16	4	-	1	-	21
II	16	4	-	4	-	24
III	15	4	3	2	-	24
IV	15	4	-	6	2	27
Total	**62**	**16**	**3**	**13**	**02**	**96**

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DEPARTMENT OF MICROBIOLOGY

M.PHIL MICROBIOLOGY SYLLABUS - REGULATION 2020

COURSE STRUCTURE

SEMESTER - I					
COURSE CODE	**COURSE TITLE**	**L**	**T**	**P**	**C**
203___11 (Commor Papér)	Research Methodology	2	2	0	2
203MBC12	Advanced Microbiolcgy	2	2	0	2
203MBC13_	A. Microbial Biotechnology B .Bioprocess and Enzyme Ergineering	2	2	0	2
CPE_RPE (Common Paper)	Research and Publication Ethics	2	2	0	2
	Total	**08**	**08**	**00**	**08**
SEMESTER - II					
203MBC21	Project Work				02

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SYLLABUS

Certificate course on Microbial Toxins and Food Protection

Subject code-20516 MTFP

Outcomes:

This course is designed on toxins produced by microorganisms in food, food protection by various methods including physical, chemical and most importantly food additives with emphasis on green technology for food preservation.

Unit I:

Microbial toxins (endotoxin and exotoxin) and toxoids, source and chemistry of microbial toxins in contamination of food grains and food products.

Unit II:

General principles of food protection: methods of food protection, asepsis, maintenance of anaerobic conditions, protection by use of high temperature : Thermal death time, heat resistance of microorganisms, determination of thermal death process, protection by use of low temperatures: Growth of microorganisms at low temperatures, effect of subfreezing and freezing temperatures on microorganisms.

Unit III:

Protection by drying: methods of drying, factors in the control of drying, microbiology of dried foods, food protection with modified temperature: definition, primary effect of CO2 on microorganism, the safety of Map foods, spoilage of Map and vacuum packaged meats.

Unit IV:

Protection by food additives: the ideal antimicrobial protection, food additives, added preservatives, developed preservatives, protection by Radiation: UltraViolet radiation, ionizing radiations, Gamma rays and Cathode rays, Microwave processing.

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SYLLABUS

Certificate course on Application of Microorganisms in Food and Microbial Fermentation

Subject code-20516AMFMF

Learning outcomes:

This course acquaints students with fermentation technology, types of fermentation that can be applied in Industry. Also they learn various production technologies for various industrial products where microbes are involved.

Unit I:

Microorganisms important in food microbiology (molds, yeasts and bacteria), oriental fermented foods.

Unit II:

Solid state and submerged fermentation, bioreactors, production and application of various organic acids (lactic acid, citric acid and acetic acid).

Unit III:

Production and application of various microbial enzymes (amylase, invertase, pectolytic, proteolytic, glucose oxidase, cellulase, glucoisomerase, lipase, lactase and catalase) and vitamins (B12, riboflavin, A).

Unit IV:

Concept of antibiosis, secondary metabolites, antibiotic fermentations ; production of β lactams (penicillins), semisynthetic pencillins and cephalosporins, amino-glycosides (streptomycin), macrolids (erythromycin) and quinines.

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