ACADEMIC YEAR
2018 – 2019

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THANJAVUR- 613 403 - TAMIL NADU

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ACADEMIC YEAR – 2018 - 2019

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SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

Date: 04/05/2018

Minutes of the Board of Studies meeting for UG & PG in the Department of Mechanical Engineering held on 04.05.2018 at 10:30 am.

Members present (Internal & External):

1	Dr. S. Dhanushkodi	Professor	Chairman
2	Dr.T.Madhusudhan	Professor, SJB Institute of Technology Bengaluru.	External Member
3	Mr.A.Leelavinothan	Addl.GM / BHEL,Trichy	External Member
4	Dr.S.Nithyanandam	DEAN	Invited Member
5	Dr.M.Senthilkumar	Professor	Internal Member
6	Dr V Yalini	Associate Professor	Internal Member
7	Dr.S.Sukumar	Associate Professor	Internal Member
8	Dr.TTM. Kannan	Associate Professor	Internal Member
9	M Abdul Ghani Khan	Associate Professor	Internal Member
10	R Tamizh Selvan	Assistant Professor	Internal Member
11	P Vijayakumar	Assistant Professor	Internal Member
12	R Baskaran	Assistant Professor	Internal Member
13	K Purushothaman	Assistant Professor	Internal Member
14	M Sudhahar	Assistant Professor	Internal Member
15	P.Sarath Kumar	Assistant Professor	Internal Member
16	N.Sivaharinathan	Assistant Professor	Internal Member
17	J.Rajesh	Assistant Professor	Internal Member
18	P.Renuka Devi	Assistant Professor	Internal Member
19	G Brithiviraj	Assistant Professor	Internal Member
20	J Selvamani	Assistant Professor	Internal Member

The Chairman, Board of Studies Department of Mechanical Engineering welcomed the members and briefed about the curriculum and syllabi.

The Committee carefully reviewed the curriculum and syllabi in detail and resolved to make the following necessary changes wherever required.

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B.Tech (Mechanical Engineering), Full Time Programme:

No Changes are made in the syllabi / Curriculum of the full time B.Tech-Mechanical Engineering courses.

B.Tech (Mechanical Engineering), Part Time Programme:

The curriculum and syllabi of B.Tech (Mechanical Engineering) Part Time Programme which is to be introduced from the Academic Year 2018-19 was scrutinized and approved.

M.Tech (Manufacturing Technology) Full Time Programme:

It is proposed to introduce the following three additional electives in the third semester.

1. Quantitative decision making
2. Advanced Heat Treatment of Metals
3. Modeling and Simulation

M.Tech (Manufacturing Technology) Part Time Programme:

The curriculum and syllabi of M.Tech (Manufacturing technology) Part Time Programme which is to be introduced from the Academic Year 2018-19 was scrutinized and approved.

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 HVAC
2. Certificate Course on Computer numerical Control Of Machine
3. Certificate Course on Internet Of Things
4. Certificate Course on Quality Assurance, Six Sigma And Lean Manufacturing
5. Certificate Course on Safety in petroleum industries
6. Certificate Course on CATIA

The members of the Board approved the introduction of activity based assignment from the academic year 2018-19.

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 concluded with thanks from the Board of Studies Chairman.

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Signature of the members:

1	Dr. S. Dhanushkodi	Chairman	
2	Dr.T.Madhusudhan	External Member	
3	Mr.A.Leelavinothan	External Member	
4	Dr.S.Nithyanandam	Invited Member	
5	Dr.M.Senthilkumar	Internal Member	
6	Dr V Yalini	Internal Member	
7	Dr.S.Sukumar	Internal Member	Granted leave of absence*
8	Dr.ITM. Kannan	Internal Member	
9	M Abdul Ghani Khan	Internal Member	
10	R Tamizh Selvan	Internal Member	
11	P Vijayakumar	Internal Member	
12	R Baskaran	Internal Member	
13	K Purushothaman	Internal Member	
14	M Sudhahar	Internal Member	
15	P.Sarath Kumar	Internal Member	
16	N.Sivaharinathan	Internal Member	
17	J.Rajesh	Internal Member	Granted leave of absence*
18	P.Renuka Devi	Internal Member	
19	G Brithiviraj	Internal Member	
20	J Selvamani	Internal Member	

Minutes prepared by: Prof. P.Vijayakumar, Department of Mechanical Engineering, PRIST Thanjavur.

* – Oral Inputs Received

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DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAMME HANDBOOK

M.Tech. – Manufacturing Technology
FULL TIME PROGRAMME
Regulation 2017

(For candidates admitted to M.Tech Manufacturing Technology programme from June 2013 onwards)

REGISTRAR,
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COURSE STRUCTURE

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Semester 1

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17248S11E	Advanced Engineering Mathematics	3	1	-	4
17254H12	Theory of Metal Cutting	3	1	-	4
17254H13	Advanced Manufacturing Processes	4	-	-	4
17254H14	Mechanical Metallurgy	4	-	-	4
17254H15	Automated Computer Integrated Manufacturing Systems	4	-	-	4
17254E16 (A To C)	Elective - I	4	-	-	4
17254HRS	Research Led Seminar	4	-	-	1
17254L17	CIM Lab	-	-	3	3
TOTAL NO. OF CREDITS					28

Semester 2

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254H21	Production Management	3	1	-	4
17254H22	MEMS and Nano Technology	4	-	-	4
17254H23	Manufacturing Metrology and Quality Control	3	1	-	4
17254E24 (A to C)	Elective - II	4	-	-	4
17254E25 (A to C)	Elective - III	4	-	-	4
17254HRM	Research Methodology	4	-	-	3
17254HBR	Participation in Bounded Research	1	-	-	2
17254L26	Automation Lab	-	-	3	3
172TECWR	Technical Writing/Seminar	-	-	3	3
TOTAL NO. OF CREDITS					31

Semester 3

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254H31	Metal Forming Process	4	-	-	4

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17254E32 (A to C)	Elective - IV	4	-	-	4
17254E33 (A to B)	Elective - V	4	-	-	4
17254E34 (A to B)	Elective - VI	4	-	-	4
17254HSR	Design Project /SOCIO Technical Project (scaffolded Research)	4	-	-	4
17254P35	Project Work Phase I	-	-	6	6
TOTAL NO. OF CREDITS					26

Semester 4

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254P41	Project Work Phase II	-	-	12	12
TOTAL NO. OF CREDITS					12

ELECTIVE -I

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E16A	Materials Management and Logistics	4	-	-	4
17254E16B	Tolerance Technology	4	-	-	4
17254E16C	Terotechnology	4	-	-	4

ELECTIVE -II

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E24A	Manufacturing of Products from Non-metallic Materials	3	1	-	4
17254E24B	Lean Manufacturing	4	-	-	4
17254E24C	Project Management	3	1	-	4

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ELECTIVE -III

Course Code	Title of Paper	L	T	P	C
17254E25A	Fracture Mechanics and Mechanisms	4	-	-	4
17254E25B	Maintenance Management	4	-	-	4
17254E25C	Theory of Plasticity	3	1	-	4

ELECTIVE -IV

17254E32A	Tool Engineering and Design	4	-	-	4
17254E32B	Instrumentation and Control Engineering	4	-	-	4
17254E32C	Polymers and Composite Materials	3	1	-	4
17254E32D	Quantitative decision Making	4	-	-	4

ELECTIVE -V

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E33A	Data Analytics	4	-	-	4
17254E33B	Fluid Power Automation	4	-	-	4
17254E33C	Advanced Heat Treatment Of Metals	4	-	-	4

ELECTIVE -VI

17254E34A	Advanced Material Technology	4	-	-	4
17254E34B	Entrepreneurship Development	4	-	-	4
17254E34C	Modelling and Simulation	4	-	-	4

Total No of Credits - 97

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DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAMME HANDBOOK

M.Tech. – Manufacturing Technology

PART TIME PROGRAMME

Regulation 2017

(for candidates admitted to M.Tech Mechanical Engineering programme from June 2017 onwards)

REGISTRAR,
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COURSE STRUCTURE

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Semester I

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17248S11EP	Advanced Engineering Mathematics	3	1	0	4
17254H12P	Theory of Metal Cutting	3	1	0	4
17254H13P	Advanced Manufacturing Processes	3	1	0	4
17254L14P	CIM Lab	0	0	3	3
17254CRSP	Research Led Seminar	0	0	0	1
TOTAL NO. OF CREDITS					16

Semester II

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254H21P	Production Management	3	1	0	4
17254H22P	MEMS and Nano Technology	4	0	0	4
17254E23—P (A to C)	Elective - I	4	0	0	4
17254L24P	Automation Lab	0	0	3	3
172TECWRP	Technical Writing/Seminar	0	0	3	3
17254CRMP	Research Methodology	4	0	0	3
17254CBRP	Participation in Bounded Research	0	0	0	2
TOTAL NO. OF CREDITS					23

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Semester III

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254H31P	Mechanical Metallurgy	3	1	0	4
17254H32P	Automated Computer Integrated Manufacturing Systems	3	1	0	4
17254E33—P (A to C)	Elective II	4	0	0	4
17254CSRP	Design Project /SOCIO Technical Project (scaffolded Research)	0	0	0	4
TOTAL NO. OF CREDITS					16

Semester IV

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254H41P	Manufacturing Metrology and Quality Control	4	0	0	4
17254H42P	Metal Forming Process	4	0	0	4
17254E43—P (A to B)	Elective III	4	0	0	4
17254P44P	Project Work Phase I	0	0	6	6
TOTAL NO. OF CREDITS					18

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Semester V

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E51—P (A to B)	Elective IV	4	0	0	4
17254E52—P (A to B)	Elective V	4	0	0	4
17254E53—P (A to B)	Elective VI	4	0	0	4
TOTAL NO. OF CREDITS					12

Semester VI

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254P61P	Project Work Phase II	0	0	12	12
TOTAL NO. OF CREDITS					12

TOTAL NO. OF CREDITS (I to VI) = 97

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List of Electives - Elective – I

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E23AP	Finite Element Application in Manufacturing	4	0	0	4
17254E23BP	Lean Manufacturing	4	0	0	4
17254E23CP	Design and Analysis of Experiments	4	0	0	4

Elective – II

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E33AP	Materials Management and Logistics	4	0	0	4
17254E33BP	Financial Management	4	0	0	4
17254E33CP	Manufacturing Information Systems	4	0	0	4

Elective – III

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E43AP	Advanced Metrology and Computer Aided Inspection	4	0	0	4
17254E43BP	Maintenance Management	4	0	0	4
17254E43CP	Optimization Techniques	3	1	0	4

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Elective – IV

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E51AP	Manufacturing Systems and Simulation	4	0	0	4
17254E51BP	Instrumentation and Control Engineering	4	0	0	4
17254E51CP	Artificial Intelligence and Neural Networks	3	1	0	4

Elective – V

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E52AP	Product Design and Development	4	0	0	4
17254E52BP	Fluid Power Automation	4	0	0	4

Elective – VI

Course Code	Title of Paper	Hours / Per Week			
		L	T	P	C
17254E53AP	Advanced Material Technology	4	0	0	4
17254E53BP	Industrial Ergonomics	4	0	0	4

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DEPARTMENT OF
MECHANICAL ENGINEERING

PROGRAM HANDBOOK

B.TECH
MECHANICAL ENGINEERING
PART TIME
[REGULATION 2017]

REGISTRAR,
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SEMESTER - I

Sl. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17148H11P	Transforms & Partial Differential Equations	3	1	0	4
2	17153H12P	Electrical drives and controls	3	0	0	3
3	17154H13P	Engineering Thermodynamics	3	1	0	4
4	17154H14P	Fluid Mechanics and Machinery	3	1	0	4
5	17154H15P	Foundry And Welding Technology	4	0	0	4
					Total No of Credits	19

SEMESTER - II

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17148H21P	Numerical Methods	3	1	0	4
2	17153H22P	Electronics and Microprocessors	3	0	0	3
3	17154H23P	Thermal Engineering	3	1	0	4
4	17154H24P	Strength of Materials	3	1	0	4
5	17154H25P	Engineering Materials and Metallurgy	4	0	0	4
					Total No of Credits	19

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SEMESTER – III

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17148H31CP	Probability and Statistics	3	1	0	4
2	17154H32P	Kinematics of Machinery	3	1	0	4
3	17154H33P	Machine Tool Technology	4	0	0	4
4	17154H34P	Engineering Metrology and Measurements	4	0	0	4
5	17154L35P	Computer Aided Simulation and Analysis Laboratory	0	0	3	2
					Total No of Credits	18

SEMESTER –IV

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17154H41P	Power Plant Engineering	4	0	0	4
2	17154H42P	Dynamics of Machinery	3	1	0	4
3	17154H43P	Design of Machine Elements	3	1	0	4
4	171--E44-P	Elective -I	4	0	0	4
5	17154L45P	Dynamics Laboratory	0	0	3	2
					Total No of Credits	18

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SEMESTER – V

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17154H51P	Heat and Mass Transfer	3	1	0	4
2	17154H52P	Design of Transmission Systems	3	1	0	4
3	17154H53P	Automobile Engineering	4	0	0	4
4	171--E54-P	Elective-II	4	0	0	4
5	17154L55P	Heat Transfer Laboratory	0	0	3	2
					Total No of Credits	18

SEMESTER –VI

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17154H61P	Finite Elements Analysis	3	1	0	4
2	17154H62P	Mechatronics	4	0	0	4
3	17154H63P	Computer Integrated Manufacturing	4	0	0	4
4	171--E64-P	Elective-III	4	0	0	4
5	17154L65P	Mechatronics Laboratory	0	0	3	2
					Total No of Credits	18

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SEMESTER -VII

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17160H71P	Total Quality Management	3	0	0	3
2	17154H72P	Process Planning and Cost Estimation	3	1	0	4
3	17154H73P	Applied Hydraulics and Pneumatics	4	0	0	4
4	171--E74-P	Elective-IV	3	0	0	3
5	17154P75P	Project Work	0	0	12	6
					Total No of Credits	20

TOTAL NO OF CREDITS FROM SEMESTER I TO VII - 130

LIST OF ELECTIVES

ELECTIVE I

SEMESTER - IV

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17154E44AP	Gas Dynamics and Jet Propulsion	3	1	0	4
2	17154E44BP	Refrigeration and Air Conditioning	3	1	0	4
3	17160E44CP	Marketing Management	4	0	0	4
4	17154E44DP	Renewable Sources of Energy	4	0	0	4

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ELECTIVE II

SEMESTER – V

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17158E54AP	Environmental Science and Engineering	4	0	0	4
2	17154E54BP	Composite Materials	4	0	0	4
3	17154E54CP	Robotics	4	0	0	4
4	17154E54DP	Design of Jigs, Fixtures and Press Tools	3	1	0	4

ELECTIVE III

SEMESTER – VI

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17160E64AP	Principles of Management	4	0	0	4
2	17154E64BP	Nuclear Engineering	4	0	0	4
3	17154E64CP	Thermal Turbo Machines	3	1	0	4
4	17148E64DP	Mathematics for Industrial Operations	3	1	0	4

ELECTIVE IV

SEMESTER – VII

S. No	Subject Code	Subject Name	Periods Per Week			C
			L	T	P	
1	17160E74AP	Quality Control and Reliability Engineering	3	0	0	3
2	17154E74BP	Vibration and Noise Control	3	0	0	3
3	17154E74CP	Unconventional Machining Process	3	0	0	3
4	17154E74DP	Industrial Engineering	3	0	0	3

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17254E32D QUANTITATIVE TECHNIQUE FOR DECISION MAKING

UNIT I: Introduction to Linear Programming (LP) 9

Relevance of Quantitative Techniques in Management Decision Making. Linear Programming-Formulation, Solution by Graphical and Simplex Methods (Primal - Penalty, Two Phase), Special Cases. Sensitivity Analysis.

UNIT II: Linear Programming Extensions 9

Transportation Models (Minimising and Maximising Problems) – Balanced and Unbalanced Problems – Initial Basic Feasible Solution by N-W Corner Rule, Least Cost and Vogel's Approximation Methods. Check for Optimality. Solution by MODI / Stepping Stone Method. Case of Degeneracy. Transhipment Models.

Assignment Models (Minimising and Maximising Problems) – Balanced and Unbalanced Problems. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman Problem. Crew Assignment Models.

UNIT III: Decision and Game Theories 9

Decision Making under Risk – Decision Trees – Decision Making under Uncertainty.

Game Theory-Two-Person Zero Sum Games-Saddle Point, Dominance Rule, Convex Linear Combination (Averages), Methods of Matrices, Graphical and LP Solutions.

UNIT IV: Inventory and Replacement Models 9

Inventory Models – EOQ and EBQ Models (With and without Shortages), Quantity Discount Models.

Replacement Models-Individual Replacement Models (With and without Time Value of Money) – Group Replacement Models.

UNIT V: Queuing Theory and Simulation 9

Queuing Theory - Single and Multi-Channel Models – Infinite Number of Customers and Infinite Calling Source.

Monte Carlo Simulation – use of Random Numbers, Application of Simulation Techniques

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17254E33C ADVANCED HEAT TRANSFER OF METALS

UNIT I CONDUCTION AND RADIATION HEAT TRANSFER 12

One dimensional energy equations and boundary condition - three-dimensional heat conduction equations - extended surface heat transfer- various pin profiles- pin optimization - transient conduction-- conduction with moving boundaries - radiation in gases and vapour. Gas radiation and radiation heat transfer in enclosures containing absorbing and emitting media – interaction of radiation with conduction and convection

UNIT II TURBULENT FORCED CONVECTIVE HEAT TRANSFER 12

Momentum and energy equations - turbulent boundary layer heat transfer - mixing length concept - turbulence model – k € model - analogy between heat and momentum transfer – Reynolds, Colburn, Prandtl turbulent flow in a tube - high speed flows.

UNIT – III PHASE CHANGE HEAT TRANSFER AND HEAT EXCHANGER 12

Condensation on bank of tubes - boiling – pool and flow boiling - heat Transfer Enhancement Techniques.

UNIT – IV HEAT EXCHANGERS 12

Heat Exchanger – €- NTU approach and design procedure – compact heat exchangers – Plate heat exchangers– Mini and Micro Channel heat exchangers, Heat transfer correlations for specific cases.

UNIT – V MASS TRANSFER 12

Mass transfer - vaporization of droplets - combined heat and mass transfers applications – Cooling Towers, Evaporative condensers, solar pond, Cooling and dehumidification systems – porous media heat transfer

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17254E34C **MODELLING AND SIMULATION**

Unit – I Introduction to Simulation: 9

Simulation, Advantages, Disadvantages, Areas of application, System environment, components of a system, Model of a system, types of models, steps in a simulation study. Simulation Examples: Simulation of Queuing systems, Simulation of Inventory System, Other simulation examples.

Unit – II General Principles: 9

Concepts in discrete - event simulation, event scheduling/ Time advance algorithm, simulation using event scheduling. Random Numbers: Properties, Generations methods, Tests for Random number- Frequency test, Runs test, Autocorrelation test.

Unit – III Random Variate Generation: 9

Inverse Transform Technique- Exponential, Uniform, Weibull, Triangular distributions, Direct transformation for Normal and log normal Distributions, convolution methods- Erlang distribution, Acceptance Rejection Technique Optimisation Via Simulation: Meaning, difficulty, Robust Heuristics, Random Search.

Unit – IV Analysis of Simulation Data Input Modelling: 9

Data collection, Identification and distribution with data, parameter estimation, Goodness of fit tests, Selection of input models without data, Multivariate and time series analysis. Verification and Validation of Model – Model Building, Verification, Calibration and Validation of Models.

Unit – V Output Analysis 9

Types of Simulations with Respect to Output Analysis, Stochastic Nature of output data, Measures of Performance and their estimation, Output analysis of terminating simulation, Output analysis of steady state simulations.

Simulation Softwares: Selection of Simulation Software, Simulation packages, Trend in Simulation Software.

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HEATING VENTILATION AND AIR CONDITIONING

Course Objectives:

- Thecourseaimstoemphasizetheimportanceofheatingandventilationsystems.
- This program includes heating, ventilation and airconditioning.
- Graduateswillpossesstheskillsnecessarytoobtainanentry-levelHVACTechnician position.
- Graduateswillhaveanunderstandingofsafe HVACpracticesandhowimportantthey are in the HVACenvironment.
- Graduates will understand the importance of professional behavior and life-long learning,andwillmeetthechallengesofcontinuedtechnologicalgrowthwithinthefield.

UNIT I

INTRODUCTION TO HVAC: Fundamentals-Modes of Heat Transfer-Sensible Heat and Latent Heat-**Basic Components of Air-Conditioning and Refrigeration machines**-Basic Refrigeration SystemorVaporCompressionCycle-Pressure –EnthalpyChart-Function&TypesofCompressor-Function & Types of Condenser-Function & Types of Expansion Valves, Function & Types of Evaporator-Accessories used in the System-Refrigerant andBrines

UNIT II

CLASSIFICATION OF AIR-CONDITIONING SYSTEM: Window A/C-Working of Window A/C with
Line Diagrams-Split A/C-Types - Working of Split A/C with Line Diagrams-**Ductable Split** A/CWorking
of Ductable Split A/C with Line Diagrams-Variable Refrigerant Volume (VRV)/ Variable Refrigerant Flow (VRF)-Ductable Package A/C-Working of Ductable Package A/C with Line Diagrams

UNIT III

STUDY OF PSYCHROMETRIC CHARTS: Dry Bulb Temperature-Wet Bulb Temperature-Dew Point
Temperature-Relative Humidity-Humidity Ratio-Processes, Heating, Cooling, Cooling and Dehumidification, Heating and Humidification

UNIT IV

LOADCALCULATION: SurveyofBuilding-CoolingLoadSteps-FindingTemperaturedifference(ΔT)-Wall, Glass, Roof, partition-Finding 'U' Factor-Wall, Glass, Roof, Partition-Finding Ventilation requirement for IAQ-Load Calculations (Manually using E-20 form)- ESHF, ADP & Air Flow Rate (CFM)Calculation

UNIT V

STATIC PRESSURE CALCULATION: Selection of Motor HP-Selection Fan/Blower RPM-**Hydronic**
System-ClassificationofWaterPiping-Pipesizingforchilledwatersystem-FittingsusedintheHVAC Piping System-Valves used in the HVAC Piping System-Function of Valves-Openings for CHW Pipes passing through Wall-Sectional drawing @ CHW Pipe supports-Pump Head Calculation-Selection of Pump

Course Outcomes:

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- Students will assist in the installations of Heating, Air Conditioning and Refrigeratio equipment.
- Perform preventive maintenance on heating and air conditioningsystems.
- Students will identify sitehazards.
- The student shall understand tne principles and working HVACsystems.
- To be able to study and analyze psychrometric chart in refrigeration systems. Develop problem solving skills through the application ofthermodynamics

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SAFETY IN PETROLEUM INDUSTRIES

UNIT 1: Safety in Chemical and Petroleum industry; Setting & layout of chemical plant. Forms of hazards: chemical, toxic, explosion, electrical, mechanical, radiation, noise hazards. Control and prevention of hazards.

UNIT 2: Toxicity, Asphyxiation, respiratory and skin effect of petroleum hydrocarbons, sour gases. Thresh-hold limits. Analysis of documented accidents: For Petroleum Engineering student only: Leakage of drilling, fracturing and completion fluids, Blow out, effect of corrosive atmosphere

UNIT 3: Characteristics of chemical with special reference to safe storage & handling. Layout of storage, modes of transport, associated hazards control and prevention. Safety audit: objective, procedure, engineering standards, Factories Act and Regulation, regulating agencies. Offshore safety. Offshore oil spill and oil spill control.

UNIT 4: Risk Analysis: hazard and operability (HAZOP) studies. hazard analysis (HAZAN), fault tree analysis, consequence analysis, scenario and probabilistic assessment. Onshore and Offshore Emergency Management Plans.

UNIT 5: Safety System: Manual & automatic shutdown system, blow down systems. Gas detection system. Fire detection and suppression systems.Personal protection system & measures.HSE Policies. Disaster & crisis management in Petroleum Industry.

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CATIA

UNIT – I INTRODUCTION TO COMPUTER GRAPHICS FUNDAMENTALS

Overview of Graphics systems: Video Display Devices, Raster-Scan System, Random-Scan Systems, Graphics Monitors and Workstations, Input Devices, Hard-Copy Devices, Graphics Software.
Output primitives: Line Drawing Algorithm - DDA, Bresenham's and Parallel Line Algorithm. Circle generating algorithm – Midpoint Circle Algorithm.
Geometric Transformations: Coordinate Transformations, Windowing and Clipping, 2D Geometric transformations-Translation, Scaling, Shearing, Rotation and Reflection, Composite transformation, 3D transformations.

UNIT – II CURVES AND SURFACES MODELLING

Introduction to curves - Analytical curves: line, circle and conics – synthetic curves: Hermite cubic spline- Bezier curve and B-Spline curve – curve manipulations.
Introduction to surfaces - Analytical surfaces: Plane surface, ruled surface, surface of revolution and tabulated cylinder – synthetic surfaces: Hermitebicubic surface- Bezier surface and B-Spline surface- surface manipulations.

UNIT – III NURBS AND SOLID MODELING

NURBS- Basics- curves, lines, arcs, circle and bi linear surface. Regularized Boolean set operations - primitive instancing - sweep representations - boundary representations - constructive solid Geometry - comparison of representations - user interface for solid modeling.

UNIT – IV VISUAL REALISM

Hidden Line removal, Hidden Surface removal, – Hidden Solid Removal algorithms - Shading – Coloring. Animation - Conventional, Computer animation, Engineering animation - types and techniques.

UNIT – V ASSEMBLY OF PARTS AND PRODUCT LIFE CYCLE MANAGEMENT

Assembly modeling – Design for manufacture – Design for assembly – computer aided DFMA - Inferences of positions and orientation - tolerances analysis –Center of Gravity and mass property Calculations - mechanism simulation. Graphics and computing standards - Data Exchange standards. Product development and management – new product develop

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COMPUTER NUMERICAL CONTROL OF MACHINE

OBJECTIVE:

- To implement CNC manufacturing concepts in the factories.

UNIT I INTRODUCTION:

Introduction to Numerical Control - Computer Aided Manufacturing – Components of CNC system – Types of CNC systems – Open loop and closed loop control systems, Drives and Controls – Interpolators; CNC machine tools - Constructional features – Design considerations – Tooling for CNC.

UNIT II AUTOMATION

Introduction to Automation – Goals of Automation, levels of automation, Hard Vs Soft Automation, Computer Aided manufacturing (CAM).Numerical Control - Introduction, Role of NC / CNC in CAM, Applications of NC / CNC, Benefits of NC / CNC, Limitations of CNC.

UNIT III

Basic Components of CNC system - Part programming, Machine control unit, Machine tool - Historical developments and their role in control of machine tools, Classification of NC / CNC systems - Based on type of Control (PTP\CL), method of programming, type of architecture - Hardwired / Softwired / Open.

UNIT IV

Machine Control Unit - Data processing Unit - elements and their functions - Interpolators and Sequential Controllers. Interpolators - Types and Stages of Interpolation, Principles of interpolation - Techniques employed for Interpolation Scheme, Requirements of interpolation algorithms, Interpolation schemes - Stairs approximation, Digital Differential Analyser, Direct function calculation; DDA - Hardware and Software; Software Interpolators

UNIT V

Part programming - Introduction; Part Program and its elements, Methods of Programming - Manual and Computer Assited Part programming - Custom Macro (Parametric Programming), APT and its variations, Concepts of CAM - Tool path generation and control methods- CNC Introduction G Codes and M codes-Drilling cycle Absolute system Incremental system- CNC Maintenance & Use coolant CNC Advantages - CNC Disadvantages

OUTCOMES:

1. Tooling for CNC concept.
2. Hard Vs Soft Automation, Computer Aided manufacturing
3. 007ANo student is to operate equipment without first checking with the instructor.
4. Students must sweep and clean their work areas before leaving.
5. Able to learn concept G Codes and M codes.

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REFERENCES

1. Catherine A. Ingle, "Reverse Engineering", Tata Mc Graw Hill Publication, 1994

2. David D. Bedworth, Mark R. Henderson, Philp M. Wolfe, "Computer Integrated Design and manufacturing", Mc Graw Hill International series, 1991

3. Donald R. Honra, "Co-ordinate measurement and reverse Engineering, American Gear Manufacturers Association.

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INTERNET OF THINGS (IOT)

Objective of the Course:

This Course focuses on hands-on IoT concepts such as sensing, actuation and communication. 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, world is going to witness. Today we live in an era of connected devices the future is of connected things.

Course Contents:

UNIT I: Introduction Introduction to computer, history, von-Neumann architecture, memory system (hierarchy, characteristics and types), H/W concepts (I/O Devices), S/W concepts (System S/W & Application S/W, utilities). Data Representation: Number systems, character representation codes, Binary, octal, hexadecimal and their interconversions. Binary arithmetic, floating point arithmetic, signed and unsigned numbers, Memory storage unit.

UNIT II: Programming in C History of C, Introduction of C, Basic structure of C program, Concept of variables, constants and data types in C, Operators and expressions: Introduction, arithmetic, relational, Logical, Assignment, Increment and decrement operator, Conditional, bitwise operators, Expressions, Operator precedence and associativity. Managing Input and output Operation, formatting I/O.

UNIT III: Fundamental Features in C C Statements, conditional executing using if, else, nesting of if, switch and break Concepts of loops, example of loops in C using for, while and do-while, continue and break. Storage types (automatic, register etc.), predefined processor, Command Line Argument.

UNIT IV: Arrays and Functions One dimensional arrays and example of iterative programs using arrays, 2-D arrays Use in matrix computations. Concept of Sub-programming, functions Example of user defined functions. Function prototype, Return values and their types, calling function, function argument, function with variable number of argument, recursion.

UNIT V: Advanced features in C Pointers, relationship between arrays and pointers Argument passing using pointers, Array of pointers. Passing arrays as arguments. Strings and C string library. Structure and Union. Defining C structures, Giving values to members, Array of structure, Nested structure, passing strings as arguments. File Handling

Learning Outcome:

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

References:

Kernighan & Ritchie, "C Programming Language", The (Ansi C Version), PHI, 2nd Edition. J. B Dixit, "Fundamentals of Computers and Programming in „C".

P.K. Sinha and Priti Sinha, "Computer Fundamentals", BPB publication.

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QUALITY ASSURANCE , SIX SIGMA AND LEAN MANUFACTURING

OBJECTIVES:

- To impart knowledge to enable the students to design and implement Statistical Process Control in any industry

UNIT I QUALITY FUNDAMENTALS 9

Importance of quality- evolution of quality- definitions of quality- dimensions of quality- quality control- quality assurance- areas of quality- quality planning- quality objectives and policiesquality costs- economics of quality- quality loss function- quality Vs productivity- Quality Vs reliability.

UNIT II SIX SIGMA METHODOLOGY– TOOLS & TECHNIQUES 9

Cost of Quality – Conformance and Non-Conformance cost – 7 Basic Quality Control Tools – Seven Management tools – FMEA

Need for Six Sigma – Six Sigma Team – DMAIC Methodology: Define, Measure, Analyse, Improve and Control – Lean Six Sigma

UNIT III EVOLUTION & OVERVIEW OF LEAN MANUFACTURING 9

Evolution of Mass production – Traditional vs. Mass production – Evolution of Toyota (Lean) Production System – Business Dynamics of Lean production – Principles of Lean production: Value, Value stream, Flow, Pull, Perfection.

UNIT IV LEAN MANUFACTURING – TOOLS & TECHNIQUES 9

Mr. Muda, Mura, Muri – 7 Wastes in Manufacturing – Lean Tools to eliminate Muda – 5S – Standardised work – TPM – SMED – Jidoka – Poka Yoke – JIT – Heijunka – Kanban – One piece production.

UNIT V VALUE STREAM MAPPING 9

Need for Value Stream mapping – Steps involved in Value stream mapping – Choose value stream – PQ and PR analysis – Current State map – Lean Metrics – Future State Map – Kaizen plans – Lean implementation – Cultural change – Lean in the Supply chain.

TOTAL: 45 PERIODS

OUTCOMES:

- Control the quality of processes using control charts for variables in manufacturing industries.
- The students should apply the various tools, techniques and methodology of lean manufacturing.
- six sigma concepts to the potential quality gaps in manufacturing / production industries.
- Able to learn concept of tool and technique.
- Lean the Supply chain concept.

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REFERENCES:

1. Pascal Dennis, "Lean Production Simplified: A plain Language Guide to the World's Most Powerful Production System", Productivity Press, 2007.

2. Issa Bass and Barbara Lawton, "Lean Six Sigma using Sigma XL and Minitab", Tata McGraw Hill, 2010.

3. Yasuhiro Monden, "Toyota Production System: An Integrated Approach to Just-in-Time", CRC Press, 2012.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

MEETING OF BOARD OF STUDIES IN ELECTRONICS AND COMMUNICATION ENGINEERING
(23.05.2018)

MINUTES OF THE MEETING

The Meeting of Board of Studies in the Department of Electronics and Communication Engineering was held on 23.05.2018 at 10.30 am in the ECE LAB at PRIST University, Vallam Campus under the Chairmanship of Prof. Dr. A. Rijuvana begum

The following members attended the meeting:

S.No	Designation	Name
1	Chairperson/HoD	Dr. A. Rijuvana begum
2	External Expert-Academic	Dr. Sishaj P. Simon
3	External Expert- Industry	Mr.B.Saravanan
4	Professor	Dr. Smitha elsa peter
5	Professor	Dr. S. Devi
6	Associate Professor	Dr. S. Audithan
7	Associate Professor	S. Lillypet
8	Assistant Professor	R. Savitha
9	Assistant Professor	D.Harikrishnan
10	Special Invitee-Dean	Prof.R.Tamizhselvan
11	Special Invitee-Alumnus/Alumna	M.kesavan
12	Special Invitee -Current student - UG or PG	Mr.B.Lenin

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.

- The members of the Board thoroughly scrutinized the existing curriculum and syllabi for both B.TECH-ECE (Full Time) and M.TECH-Communication Systems (Full Time) and feedbacks on curriculum obtained from various stakeholders and it is resolved to consider for the forthcoming syllabus revision.
- The Board unanimously recommended continuing with the existing curriculum and syllabi for the academic year 2018-19 for B.TECH-ECE.

Head Of the Department
Department Of Electronics and Communication Engineering
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- The members of the board also recommended continuing with the existing curriculum and syllabi for the academic year 2018-19 for M. Tech (FT) along with addition of new electives for M. Tech (FT).
- The List of Electives decided to add are as follows:
  - CAD for VLSI Circuits
  - Fundamentals of Operating Systems
  - Introduction to Web Technology
- After discussion, the subject for suggested subjects were assigned as follows:

S. No	Subject Code	Name of the Subject
1.	17271E32E	CAD for VLSI Circuits
2.	17271E33E	Fundamentals of Operating Systems
3.	17271E34E	Introduction to Web Technology

- The members of the Board recommended for the activity based assignment for the academic year 2018-19.
- From the consolidation of feedback obtained from various stake holders, members suggested to add the following courses as Value added courses for B.Tech (ECE) and M.Tech (Communication Systems)
  - Antenna Design
  - PCB Design
  - Certificate course Introduction to SCILAB Programming
  - Certificate course on PLC & SCADA
  - Certificate course VLSI DESIGN
- The members of the board also scrutinized and updated the panel of examiners for B. Tech (ECE) and M. Tech (Communication Systems). The same was submitted to the Academic Council Board for approval.

The meeting was concluded with thanks from Chairperson.

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Signature of the members,

S.No	Designation	Name	Signature
1	Chairperson/HoD	Dr. A. Rijuvana begum	
2	External Expert-Academic	Dr. Sishaj P. Simon	
3	External Expert- Industry	Mr.B.Saravanan	
4	Professor	Dr. Smitha elsa peter	
5	Professor	Dr. S. Devi	
6	Associate Professor	Dr. S. Audithan	
7	Associate Professor	S. Lillypet	
8	Assistant Professor	R. Savitha	
9	Assistant Professor	D.Harikrishnan	
10	Special Invitee-Dean	Prof.R.Tamizhselvan	
11	Special Invitee-Alumnus/Alumna	M.kesavan	
12	Special Invitee -Current student - UG or PG	Mr.B.Lenin	

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Vallam, Thanjavur

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF
ELECTRONICS & COMMUNICATION ENGINEERING

PROGRAM HANDBOOK

M.TECH – COMMUNICATION SYSTEMS
[FULL TIME]

[REGULATION 2017]

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PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: To provide students with strong fundamental concepts and also advanced techniques and tools to build various communication systems.

PEO2: To enable graduates to attain successful professional careers by applying their engineering skills in communication system design to meet out the challenges in industries and academia.

PEO3: To engage graduates in lifelong learning, adapt emerging technology and pursue research for the development of innovative products.

PROGRAMME SPECIFIC OBJECTIVES (PSOs):

PSO1: To inculcate the ability in graduates to design and analyze the subsystems such as RF, Signal processing, Modern communication systems and networks.

PSO2: To enhance problem solving skills in communication systems design using the latest hardware and software tools.

PSO3: To apply communication engineering principles and practices for developing products for scientific and business applications.

PROGRAM OUTCOMES (POS):

M.Tech students will be able to:

PO1: **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: **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.

PO3: **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.

PO4: **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.

PO5: **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.

PO6: **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.

PO7: **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.

PO8: **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: **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 [illegible] documentation, make effective presentations, and give and receive clear instructions.

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PO11: 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.

PO12: 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 (PEOs) WITH PROGRAMME OUTCOMES (POs):

The mapping between the Programme Educational Objectives (PEOs) and the Programme Outcomes (POs) is given in the following table:

PROGRAMME EDUCATIONAL OBJECTIVES	PROGRAMME OUTCOMES											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
PEO1	3	2	1	1	2	1	-	-	2	-	-	2
PEO2	3	3	2	3	3	2	1	1	2	2	1	1
PEO3	3	3	3	3	3	1	1	1	2	2	1	3

Contribution 1: Reasonable 2: Significant 3: Strong

MAPPING OF PROGRAM SPECIFIC OBJECTIVES (PSOs) WITH PROGRAMME OUTCOMES (POs):

A broad relation between the Programme Specific Objectives (PSOs) and the Programme Outcomes(POs) is given in the following table:

PROGRAMME SPECIFIC OBJECTIVES	PROGRAMME OUTCOMES											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
PSO1	3	2	1	1	1	1	1	-	1	-	-	1
PSO2	3	3	1	3	3	1	1	-	1	-	-	1
PSO3	3	3	2	3	2	3	2	2	2	2	2	2

Contribution 1: Reasonable 2: Significant 3: Strong

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M.TECH .COMMUNICATION SYSTEMS -FULL TIME-R2017

SEMESTER I

S.N	SUB CODE	SUBJECT	L	T	P	C
		Theory				
1	17248S11B	Applied mathematics for Electronics Engineering	3	1	0	4
2	17271H12	Statistical Signal Processing	4	0	0	4
3	17271H13	Modern Digital Communication Systems	4	0	0	4
4	17271S14	Communication Protocol Engineering	4	0	0	4
5	17271H15	Advanced Radiation Systems	4	0	0	4
6	17271E16_	Elective-I	4	0	0	4
		Practical				
8	17271L17	Communication Systems Lab - I	0	0	3	3
		Research Skill Development (RSD) Course				
7	17271CRS	Research Led Seminar	1	0	0	1
		Total Credits	28			

SEMESTER II

S.N	SUB CODE	SUBJECT	L	T	P	C
		Theory				
1	17271H21	Mobile Communication Networks	4	0	0	4
2	17271H22	Advanced Microwave Systems	4	0	0	4
3	17271H23	Fiber Optic Networking	4	0	0	4
4	17271E24_	Elective-II	4	0	0	4
5	17271E25_	Elective-III	4	0	0	4
		Practical				
6	17271L26	Communication Systems Lab - II	0	0	3	3
7	17TECWR	Technical Writing /Seminars	0	0	3	3
		Research Skill Development (RSD) Course				
8	17271CRM	Research Methodology	3	0	0	3
9	17271CBR	Participation in Bounded Research	2	0	0	2
		Total Credits	31			

SEMESTER III

S.N	SUB CODE	SUBJECT	L	T	P	C
		Theory				
1	17271H31	Wireless Sensor Networks	4	0	0	4
2	17271E32-	Elective – IV	4	0	0	4
3	17271E33-	Elective – V	4	0	0	4
4	17271E34-	Elective – VI	4	0	0	4
		Research Skill Development (RSD) Course				
5	17271P35	Project Phase – I	0	0	6	6
6	17271CSR	Participation in Scaffolded Research(Design/Societal Project)	4	0	0	4
		Total Credits	26			

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SEMESTER IV

S.N	SUB CODE	SUBJECT	L	T	P	C
1	17271P41	Project Phase – II	0	0	12	12
		Total Credits			12	

Elective-I (SEMESTER – I)

S.N	SUB CODE	SUBJECT	L	T	P	C
1.	17271E16A	Internetworking and Multimedia	4	0	0	4
2.	17271E16B	Digital Image Processing	4	0	0	4
3.	17271E16C	LASER Communication	4	0	0	4
4	17271E16D	MEMS and NEMS	4	0	0	4

Elective-II (SEMESTER – II)

S.N	SUB CODE	SUBJECT	L	T	P	C
1.	17271E24A	High Speed Switching Architecture	4	0	0	4
2.	17271E24B	DSP Processor Architecture and Programming	4	0	0	4
3.	17271E24C	Digital Speech Processing	4	0	0	4
4	17271E24D	ASIC and FPGA Design	4	0	0	4

Elective-III (SEMESTER – II)

S.N	SUB CODE	SUBJECT	L	T	P	C
1.	17271E25A	Digital Communication Receivers	4	0	0	4
2.	17271E25B	Soft Computing	4	0	0	4
3.	17271E25C	Communication Network Security	4	0	0	4
4.	17271E25D	Radar Signal Processing	4	0	0	4

Elective-IV (SEMESTER – III)

S.N	SUB CODE	SUBJECT	L	T	P	C
1.	17271E32A	Software Defined Radio	4	0	0	4
2.	17271E32B	Satellite Communication	4	0	0	4
3.	17271E32C	CDMA Systems	4	0	0	4
4	17271E32D	Speech Processing and Synthesis	4	0	0	4
5.	17271E32E	CAD for VLSI circuits	4	0	0	4

Elective-V (SEMESTER – III)

S.N	SUB CODE	SUBJECT	L	T	P	C
1.	17271E33A	Wavelets and MultiResolution Processing	4	0	0	4
2.	17271E33B	High performance Communication Networks	4	0	0	4
3.	17271E33C	Advanced Microprocessors and Microcontrollers	4	0	0	4
4	17271E33D	Reconfigurable Computing	4	0	0	4
5.	17271E33E	Fundamentals Of Operation Systems	4	0	0	4

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Elective-VI (SEMESTER – III)

S.N	SUB CODE	SUBJECT	L	T	P	C
1.	17271E34A	Simulation of Communication Networks	4	0	0	4
2.	17271E34B	Medical Imaging	4	0	0	4
3.	17271E34C	Mobile ADHOC networks	4	0	0	4
4	17271E34D	Ultra Wide Band Communication	4	0	0	4
5.	17271E34E	Introduction To Web Technology	4	0	0	4

M.TECH (FULL TIME) –CS – R2017

COURSE STRUCTURE AND CREDITS DISTRIBUTION

Semester	Foundation Course	Core Courses		Elective Courses		Others	Total
		Theory	Practical	Core Electives	Open Electives		
I	4	16	3	4	-	1	28
II	-	12	6	8	-	5	31
III	-	4	6	12	-	4	26
IV	-	-	12	-	-	-	12
TOTAL CGPA CREDITS							97

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17217E32E

CAD FOR VLSI CIRCUITS

L T P C

3 0 0 3

OBJECTIVES:

The design of all VLSI circuits is carried out by making extensive use Computer Aided Design (CAD)VLSI design tool. Due to continuous scaling of semiconductor technology, most of the VLSI designs employ millions of transistors and circuits of this size can only be carried out with the aid of CAD VLSI design tools.

The VLSI design professional needs to have a good understanding of the operation of these CAD VLSI design tools as these are developed primarily for and by the VLSI design professionals.

As part of the present introductory course the principles of operation of all the important modules that go into the construction of a complete VLSI CAD tool will be discussed. These include the design flow organization for VLSI, the standard cell based synthesis methodologies for digital VLSI, floor planning and placement principles and related topics willall be covered.

UNIT I VLSI DESIGN METHODOLOGIES 9

Introduction to VLSI Design methodologies - Review of Data structures and algorithms - Review of VLSI Design automation tools - Algorithmic Graph Theory and Computational Complexity – Tractable and Intractable problems - general purpose methods for combinatorial optimization.

UNIT II DESIGN RULES 9

Layout Compaction - Design rules - problem formulation - algorithms for constraint graph compaction - placement and partitioning - Circuit representation - Placement algorithms – partitioning

UNIT III FLOOR PLANNING 9

Floor planning concepts - shape functions and floor plan sizing - Types of local routing problems - Area routing - channel routing - global routing - algorithms for global routing.

UNIT IV SIMULATION 9

Simulation - Gate-level modeling and simulation - Switch-level modeling and simulation - Combinational Logic Synthesis - Binary Decision Diagrams - Two Level Logic Synthesis.

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UNIT V MODELLING AND SYNTHESIS 9

High level Synthesis - Hardware models - Internal representation - Allocation assignment and scheduling - Simple scheduling algorithm - Assignment problem - High level transformations.

TOTAL : 45 PERIODS

COURSE OUTCOMES:

CO1: Ability to comprehend and appreciate the significance and role of this course in thepresent contemporary world.

CO2: Apply VLSI design methodologies and design rules for digital circuits.CO3: Use floor planning and rooting concepts for digital circuits.

CO4: Apply Gate level and Switch level modelling and Simulation.CO5: Apply high level logic synthesis and scheduling.

TEXT BOOK:

1. S.H. Gerez, "Algorithms for VLSI Design Automation", John Wiley & Sons,2002.

REFERENCES:

1. N.A. Sherwani, "Algorithms for VLSI Physical Design Automation", Kluwer Academic Publishers,2002.

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17271E33E FUNDAMENTALS OF OPERATING SYSTEMS

L T P C

3 0 0 3

OBJECTIVES:

- To learn the concepts of operating systems.
- To learn about the various issues in operating systems.
- To familiarize with the important mechanisms in operating systems. To appreciate the emerging trends in operating systems

UNIT I OPERATING SYSTEMS OVERVIEW 9

Introduction to operating systems – Computer system organization, architecture – Operating system structure, operations – Process, memory, storage management – Protection and security

– Distributed systems – Computing Environments – Open-source operating systems – OS services – User operating-system interface – System calls – Types – System programs – OS structure – OS generation – System Boot – Process concept, scheduling – Operations on processes – Cooperating processes – Inter-process communication – Examples – Multithreadingmodels – Thread Libraries – Threading issues – OS examples

UNIT II PROCESS MANAGEMENT 9

Basic concepts – Scheduling criteria – Scheduling algorithms – Thread scheduling – Multiple- processor scheduling – Operating system examples – Algorithm Evaluation – The critical-section problem – Peterson's solution – Synchronization hardware – Semaphores – Classic problems of synchronization – Critical regions – Monitors – Synchronization examples – Deadlocks – Systemmodel – Deadlock characterization – Methods for handling deadlocks – Deadlock Prevention – Deadlock Avoidance – Deadlock detection – Recovery from deadlock

UNIT III STORAGE MANAGEMENT 9

Memory Management – Swapping – Contiguous memory allocation – Paging – Segmentation –Example: The Intel Pentium - Virtual Memory: Background – Demand paging – Copy on write –Page replacement – Allocation of frames – Thrashing.

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UNIT IV I/O SYSTEMS

File concept – Access methods – Directory structure – File-system mounting –Protection – Directory implementation – Allocation methods – Free-space management – Disk scheduling – Disk management – Swap-space management – Protection

9

UNIT V CASE STUDY

The Linux System – History – Design Principles – Kernel Modules – Process Management – Scheduling – Memory management – File systems – Input and Output – Inter-process Communication – Network Structure – Security – Windows 7 – History – Design Principles – System Components – Terminal Services and Fast User – File system – Networking.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

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

CO1: Articulate the main concepts, key ideas, strengths and limitations of operating systemsCO2: Explain the core issues of operating systems

CO3: Know the usage and strengths of various algorithms of operating systems

TEXT BOOK:

1. Abraham Silberschatz, Peter B. Galvin, Greg Gagne, "Operating System Concepts Essentials", John Wiley & Sons Inc., 2nd Edition, 2013.

REFERENCES:

1. Andrew S. Tanenbaum, "Modern Operating Systems", Addison Wesley, 2nd Edition, 2001.
2. Charles Crowley, "Operating Systems: A Design-Oriented Approach", Tata McGraw Hill Education, 1996.
3. M Dhamdhere, "Operating Systems: A Concept-based Approach", Tata Mc Graw-Hill Education, 2nd Edition, 2007
4. William Stallings, "Operating Systems: Internals and Design Principles", Prentice Hall, 7th Edition, 2011.

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17271E34E **INTRODUCTION TO WEB TECHNOLOGY** 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 impact and issues
- To introduce the features of object oriented programming languages using Java
- To design and create user interfaces using Java frames and applets
- To have a basic idea about network programming using Java
- To create simple Web pages and provide client side validation
- To create dynamic web pages using server side scripting

UNIT I JAVA FUNDAMENTALS 9

Java Data types – Class – Object – I / O Streams – File Handling concepts – Threads – Applets – Swing Framework – Reflection

UNIT II JAVA NETWORKING FUNDAMENTALS 9

Overview of Java Networking - TCP - UDP – InetAddress and Ports - Socket Programming - Working with URLs - Internet Protocols simulation - HTTP - SMTP - POP - FTP - Remote MethodInvocation - Multithreading Concepts

UNIT III CLIENT SIDE TECHNOLOGIES 9

XML - Document Type Definition - XML Schema - Document Object Model - Presenting XML - Using XML Parsers: DOM and SAX – JavaScript Fundamentals - Evolution of AJAX - AJAX Framework - Web applications with AJAX - AJAX with PHP - AJAX with Databases

UNIT IV SERVER SIDE TECHNOLOGIES 9

Servlet Overview - Life cycle of a Servlet - Handling HTTP request and response - Using Cookies - Session tracking - Java Server Pages - Anatomy of JSP - Implicit JSP Objects – JDBC - Java Beans - Advantages - Enterprise Java Beans - EJB Architecture - Types of Beans - EJB Transactions

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UNIT V APPLICATION DEVELOPMENT ENVIRONMENT 9

Overview of MVC architecture - Java Server Faces: Features - Components - Tags - Struts:Working principle of Struts - Building model components - View components- Controller components - Forms with Struts - Presentation tags - Developing Webapplications -Hibernate: Configuration Settings - Mapping persistent classes - Working withpersistent objects -Concurrency - transactions - Caching - Queries for retrieval of objects -Spring: Framework -Controllers - Developing simple applications

TOTAL: 45 PERIODS

COURSE OUT COMES:

CO1: Ability to comprehend and appreciate the significance and role of this course in the presentcontemporary world.

CO2: The students will gain knowledge about Java and basic Web concepts and enable thestudent to create simple Web based applications.

TEXT BOOK:

Deitel, Deitel, Goldberg, "Internet & World Wide Web How To Program", Pearson Education,5th Edition, 2006.

REFERENCES:

1. Marty Hall and Larry Brown, "Core Servlets And Javaserver Pages", 2nd Edition
2. Bryan Basham, Kathy Siegra, Bert Bates, Head First Servlets and JSP, 2nd Edition
3. Uttam K Roy, "Web Technologies", Oxford University Press, 2011.

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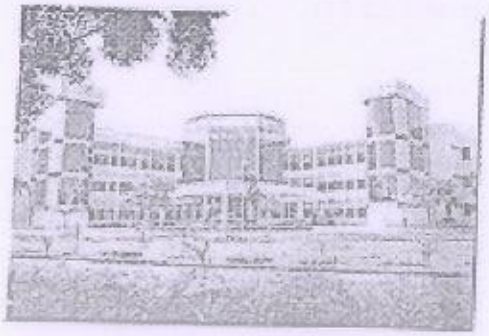

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INFORMATION BROCHURE

ADD ON COURSE- ANTENNA DESIGN

DIPLOMA COURSE

Module-2- DESIGN OF ANTENNA ARRAYS

General structure of phased array, linear array theory- analog beamforming matrices-Active modules, digital beam forming, MEMS technology in phased arrays-Retro directive and self-phased arrays, switched beam and adaptive arrays, Mutual Coupling in Finite Arrays.

Module-3-DESIGN OF EMC ANTENNA

Concept of EMC measuring antenna; Log periodic dipole, Biconical, Ridge guide, Multi turn loop: Design, simulation and analysis of different antennas for wireless applications.

Module-4-DESIGN OF MICROSTRIP ANTENNA

Radiation Mechanism and Excitation techniques: Microstrip dipole; Patch, Rectangular patch, Circular patch, and Ring antenna – Microstrip array and feed network; Reconfiguration Mechanisms; Computer Aided Design of Microstrip Antennas, Microstrip Reflectarray Antennas.

Module-5- DESIGN OF MODERN ANTENNAS

PIFA – Vivaldi Antennas - UWB Antennas - Leaky Wave Antennas – Plasma Antennas – Wearable Antennas – RFID Antennas - Automotive antennas, Reconfigurable antennas.

SOFTWARE TOOL USED: CST Microwave Studio

ELIGIBILITY

ECE students shall be eligible for the admission to the course.

COURSE DURATION: 45 Hours

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ABOUT THE INSTITUTION

Ponnaiyah Ramajayam Institute of Science and Technology (PRIST), a Deemed University (U/s 3 of the UGC Act 1956), is one of the renowned units of Ponnaiyah Ramajayam Institutions, which are serving for more than 25 years in promoting quality education and research for our Indian community, since its inception. The institution is now brimming with many social responsibilities, particularly in promoting quality education through research.

ABOUT THE DEPARTMENT

The department of Electronics and Communication Engineering came into existence in 2008 with an objective to impart quality education to meet today's competitive environment.

Department has well experienced and dedicated faculty with strong commitment to provide a vibrant learning environment to the students in order to help them excel.

To keep pace with the current technological trends, the department has a well-designed, constantly reviewed syllabus to incorporate all advancements in existing and emerging technologies which gives the students a holistic and pragmatic view of the present scenario of industry.

The Department has state-of-the-art laboratories, such as VLSI lab, Digital Image Processing Lab, Circuit Simulation Lab, Communication Lab, and higher end software like MATLAB, PSPICE., Xilinx, IAR, L-Sim & N-Sim.

The Department runs an undergraduate course in B. Tech - Electronics and Communication Engineering and postgraduate programme like M. Tech in Communication Systems. Department also offers part time programmes in B. Tech - Electronics and Communication Engineering and M.Tech-Communication systems.

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ABOUT THE COURSE

Examine and analyze some of the most popular antennas using relevant antenna theories, to see why they have become popular, what their major features and properties (including advantages and disadvantages) are, and how they should be designed.

COURSE OBJECTIVES

1. To enhance the students knowledge in the area of various antennas design to make them understand their radiation mechanism.
2. To impart knowledge about the state of art in antenna technology.

PRE-REQUISITES

Understand and design antenna systems for a variety of wireless communication, radar, and power transfer systems.

COURSE CONTENT

Module-1-DESIGN OF BASIC ANTENNAS

Antenna fundamental parameters - dipole, monopole, loop antenna; Mobile phone antenna- base station, handset antenna; Image; Induction ,reciprocity theorem, Balance to unbalance transformer.

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COURSE CONTENT –PCB FUNDAMENTALS SCHEMATIC CAPTURE

Module 1 – Introduction to PCB Design

Program overview outlining class schedule and options for accessing class material and assignments. An overview of the fundamentals of PCB Design and review of passive components. Lecture 1 will focus on passive components and basic electrical engineering equations.

Module 2 – Component Library Concepts

Creation of library components, including schematic symbol and PCB footprint generation, component parameters, and simulation models.

Module 3 – Basic Schematic Concepts

Proper structure and layout of a good schematic.
Key concepts include:

- Page sequencing
- Symbol placement
- Net naming
- Power / ground symbols
- IPC standards

Module 4 – Advanced Schematic Concepts

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- Port / off-sheet connections
- Circuit reuse
- Design hierarchy
- Circuit simulation
- Net classes
- Design rules
- Multi-channel design
- Differential nets
- Busses / wire harnesses

Module 5 – Schematic Documentation

Proper documentation of schematics and review application of IPC-26xx standards

Key concepts include:

- Use of standard title blocks
- Standard page sequencing
- Readability
- Standard notes
- ECO and revision history
- Annotation methodology
- Design rules
- Parts lists

SOFTWARE USED : ORCAD SOFTWARE

ELIGIBILITY : ECE & EEE students shall be eligible for the admission to the course.

COURSE DURATION: 45 Hours

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Introduction to Scilab Programming

powerful computing environment for engineering and scientific applications. Scilab is released as open source under the GPL License, and is available for download free of charge.

COURSE CONTENT

Module-1-A Learning fundamentals of Scilab

Scilab is an interpreted language, which implies that there is no need to declare a variable before using it. Variables are created at the moment where they are first set. In the following example, we create and set the real variable x to 1 and perform a multiplication on this variable..

Module-2-SIGNAL PROCESSING WITH SCILAB

Signal processing involves converting or transforming data in a way that allows us to see things in it that are not possible via direct observation. Signal processing allows engineers and scientists to analyze, optimize, and correct signals, including scientific data, audio streams, images, and video.Further features:

Data windowing.
Power spectral density estimation.
Digital FIR and IIR filter design.
Analog filter design.
Signal transforms including fftw.

Module-3-IMAGE PROCESSING USING SCILAB

SIP is a toolbox for processing images in Scilab. SIP is meant to be a free, complete, and useful image toolbox for Scilab. Its goals include tasks such as filtering, blurring, edge detection, thresholding, histogram manipulation, segmentation, mathematical morphology, and color image processing.

Module-4-PRATICAL EXAMPLES ON IMAGE & SIGNAL PROCESSING WITH SCILAB

SIP is a toolbox for processing images in Scilab. SIP is meant to be a free, complete, and useful image toolbox for Scilab. Its goals include tasks such as filtering, blurring, edge detection, thresholding, histogram manipulation, segmentation, mathematical morphology, and color image processing.There are several ways of using Scilab and the following paragraphs present three methods: • using the console in the interactive mode, • using the exec function against a file, • using batch processing. We also present the management of the graphical windows with the docking system.

Module-5-INTERFACING MATLAB® AND SCILAB

Scilab is one of the two major open-source alternatives to MATLAB, the other one being GNU Octave. Scilab puts less emphasis on syntactic compatibility with MATLAB than Octave does, but it is similar enough that some authors suggest that it is easy to transfer skills between the two systems.

SOFTWARE TOOL USED:

Scilab.Xcos. Model Customization & Modelica blocks creation Model building & edition Simulation Standard Palettes & Blocks.

Atoms.

ELIGIBILITY

ECE students shall be eligible for the admission to the course.

COURSE DURATION: 45 Hours

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

LEARNING OUTCOMES:

Scilab environment and programming language.
Use decision making control statements like if , if else and loops (for while) to develop programs.
Use data structures like arrays, struct and cell arrays available in scilab to manage and work with data .

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COURSE OBJECTIVE

The main objective of PLC & SC DA training programme is to make aspiring engineers ac ainted with the conceptual and practical knowledge of e industrial automation and latest them with a platform t work on, in make aspiring engineers acquainted with the nceptual and practical knowledge of the industrial a omation and latest them with a platform to work on, in th ure future.

COURSE OUTCOME

PLC or Programmable Logic Co oller is a computing system used to control ele mechanical processes.

SCADA stands for supervisory con l and data acquisition. It is a type of industrial control stem that is used to monitor and control facilities and i structure in industries.

The automation is an ever evolving ram, which requires constant innovation and technolog dvancement with the aim to instill a love and passion for ectronic and automation in the youth and provide them w h a platform to reach great heights!!

COURSE CONTE T

- Introduction t automation.
- Why we need automation?
- Introduction t PLCs.
- PLC fundam tals
- PLC hardwar and operation
- PLC program ing Basics
- PLC implem tation
- PLC advanta over microcontroller.
- Hands-on wi 2 or more major PLC brands
- Upload, dow ad to PLC
- Modify exist programs
- Sensor introd tion and their need.
- HMI introdu on and their need
- Introduction SCADA
- Detail study PLC & SCADA.
- Programming f PLC through SCADA
- PLCs I/Os basics, burning and interfacing concepts(Lad r logic,RSLogix)
- Downloadin a ladder program in PLC using RSLinx
- Hands on PL training kit and SCADA software

PRE-REQUISITE

- Electrical and lectronics basics
- Industrial con ol

COURSE DURATI N : 45 Hours

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ABOUT THE COURSE

With the continue scaling of transistor feature sizes, VLSI chip density continue increases. This results in a continue increase in the complexity VLSI technology where it has reached the point where billions of transistors are integrated on a single chip (like it is the case for System on Chip). To guarantee the satisfaction of the customers, the produced VLSI chips have to be reliable and fully tested.

Verification testing and production testing represents 50 to 60% of the cost of making VLSI chips, and are now the biggest cost of the technology.It has been known for a while that tackling the problems associated with testing VLSI chips at earlier design stage levels significantly reduces testing cost. Thus it is important for hardware designers to be exposed to concepts of VLSI testing which can help them design better product at lower cost.

This course is an introduction to the field of digital systems testing, which is an integral part of IC design and manufacturing. Importance of VLSI Testing, Test process and Automatic Test Equipment, Defects versus Fault models, Fault simulation, Logic simulation, Combinational Circuit Testing, Sequential Circuit Testing, Memory Testing, Design-for-Testability, Scan Design, Boundary Scan, Built-in-Self Test, Delay Test, Current Testing, VLSI Reliability, etc.

COURSE OBJECTIVES

This is an introductory course in VLSI Systems and Design. At the completion of this course, a student should be able to design and analyze digital circuits, incorporating into a VLSI chip. They should be able to design for low power and design for performance, work in small groups and bring together design components into a full custom chip.

COURSE OUTCOMES

- The knowledge of fundamentals of VLSI Design principles,
- Experience of designing a full custom Integrated circuit chip working in a design team.
- Skills to communicate their design experience through a detailed report and a short presentation to the class.

PRE-REQUISITES

Understand and design logic circuits using HDL.

COURSE CONTENT

Module-1- **DIGITAL LOGIC AND COMPUTER DESIGN**

Number systems, Boolean algebra, K-map two, four variables, logic gates, combinational logic, combinational logic with MSI and LSI.

Sequential logic – flip flops, triggering of flip flops, Registers – shift registers, Counters – ripple counter, synchronous counter, Memory – RAM, ROM, etc.

Processor logic design – design of arithmetic logic unit, design shift register PLDs, FPGA, ASIC Introduction to PLDs, ROMS, Logic Array (PLA)

Module-2- **VLSI DESIGN WITH VERILOG**

Design method ties, ports, Language elements, Lexical Conventions, Data types, Memories, Arrays, Tri-state, Operands, Expressions, Operator precedence.

Assignments – Continuous Assignment, Delays, Procedural Assignments, Procedural Continuous

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Assignments, Assign Design, Gate level modeling, Gate Types, Gate Delays, User Defined Primitives (UDPs), definition, Rules, state tables, Combinational UDPs, Sequential UDPs, Mixing level sensitive and edge-sensitive descriptions, instantiating UDP primitives.

Module-3-MODELING IN VLSI

Behavioral modeling- structured procedures, procedural assignments, procedural timing controls, block statements, continuous assignments Vs procedural assignments, conditional statements, multi-way decision statements, looping statements, task and functions-Distinctions between tasks and function, tasks, functions, Switch Level Modeling – Switch modeling elements, bi-directional switches, power and ground, Resistive switches.

Module-4- VLSI DESIGN WITH HDL

Introduction, basic terminology, entity declaration, architecture body, configuration declaration, package declaration, package body, model analysis, identifiers, data objects, data types, operators.

Behavioral Modeling – entity declaration, architecture body, process statement, variable, signal assignment, statements – wait, if, case, null, loop next, assertion, report, multiple process, Data modeling – concurrent signal assignment, delta delay, multiple drivers, block statements, Structural Modeling – component declaration, component instantiation.

SOFTWARE TOOL USED: Xilinx

ELIGIBILITY : EEE , ECE students shall be eligible for the admission to the course.

COURSE DURATION: 45 Hours

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

BOARD OF STUDIES

CIRCULAR & MINUTES OF MEETING

2018-2019

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BOARD OF STUDIES MEETING

CIRCULAR

13.06.2018

The BOS Meeting is scheduled on 19.06.2018 at 10.30 am in the Gallery Hall of "A" Block at PRIST Deemed to be University-Vallam, Campus 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. To scrutinize the stakeholders feedback on M.Tech Power Systems (FT).
5. To introduce the syllabus contents of Three newly added Elective courses.
6. To introduce the syllabus contents of newly added Value added courses.
7. To discuss upon the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) of B.Tech (FT) and M.Tech Power Systems (FT)
8. To recommend the panel of Examiners for M.Tech Power Systems (FT).

HOD/ EEE

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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	14
Date and Time	19.06.2018 @ 10.30 am
Venue	Gallery Hall, 'A' Block
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 M.Tech Power Systems (FT).
4.	To scrutinize the stakeholders feedback on B.Tech (FT).
5.	To introduce the syllabus contents of newly added Elective courses.
6.	To introduce the syllabus contents of newly added Value added courses.
7.	To discuss upon the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) M.Tech Power Systems (FT).
8.	To recommend the panel of Examiners for M.Tech Power Systems (FT).
9.	Any other matter.

Head of the Department
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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 was 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 stakeholder's feedback on existing curriculum and syllabi.
Discussion: To scrutinize the abstract of stakeholder's feedback on existing curriculum and syllabi for M.Tech-Power Systems (Full Time).
Resolution: The members of the Board thoroughly scrutinized the existing curriculum and syllabi and the abstract of stakeholders feedback on M.Tech - Power Systems (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. i) Elective –IV: 17272E32A- Power Electronics applications in Power systems ii) Elective –V: 17272E33A -Power Conditioning. iii) Elective –VI: 17272E34A -Software for Control system Design.
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. 185153MEE- Matlab For Electrical Engineers. 2. 185153PS-PLC AND SCADA. 3. 185153RTO-Real Time Operating Systems 4. 185153LAB – Labview 5. 185153ESE-Energy Scenario And Energy Forms 6. 185153PPA-Process Plant Automation. 7. 185153HNE 185153HNE- Hardware And Networking Essentials.

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8. 18515 3MEA-Making & Maintenance Of Electrical Appliances.
Resolution: The members of the Board scrutinized the syllabus contents of newly added value added courses and resolved to introduce the same.
Agendum 5: Discuss the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) of M.Tech Power Systems (FT).
Discussion: To discuss upon the Programme Educational Objectives (PEOs), Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) of M.Tech Power Systems (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 M.Tech Power System (FT).
Agendum 6:Recommend the panel of Examiners for M.Tech- Power Systems(FT)
Discussion: To recommend the panel of Examiners for M.Tech-Power Systems (FT).
Resolution: The members of the board also scrutinized the panel of examiners and recommended to continue with the same panel of examiners for M.Tech – Power Systems(FT).

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

Signature
(BOS Chairman Name)

Date:

BOS Chairman/HOD Seal

ANNEXURE-I

Head of the Department
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ATTENDANCE OF THE [-------- (Fourteenth)] BOARD OF STUDIES MEETING
Board: EEE

Date: 19.06.2018

Time: 10.30 am

Venue: Gallery Hall, 'A' Block

The following members were present for the Board of Studies meeting.

S.No.	Name/Degree/Designation	Institute/Organization/ Full address	Online/ Physical	Signature
1.	Prof. Dr. J.Saneevikumar Chairman	Dept of EEE, PRIST DU	Physical	
2.	Dr. M.P.Selvan, Professor, NIT - Trichy External Members	National Institute of Technology, Tiruchirappalli.	Physical	
3.	Mr. K. Kannadasan, AEE/TNEB, External Members	AEE / TNEB, 230KV SS, Thirukanurpatti, Vallam, Thanjavur.	Physical	
4.	Dr. Avinjamanjula- Professor.	Dept of EEE, PRIST DU	Physical	
5.	Mrs. M.R.Geetha Associate Professor	Dept of EEE, PRIST DU	Physical	
6.	Mr.R Elangovan, Assistant Professor	Dept of EEE, PRIST DU	Physical	
7.	Mrs. R. Prasannadevi, Assistant Professor	Dept of EEE, PRIST DU	Physical	
8.	Mr. D. Hariharan, Assistant Professor	Dept of EEE, PRIST DU	Physical	
9.	Dr. Smitha Elsa Peter, Professor.	Dept of ECE, PRIST DU	Physical	

Date:

BOS Chairman HOD

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

PROGRAMME: M.TECH-POWER SYSTEMS (FULL TIME)

CURRICULUM -REGULATION 2017

SEMESTER – I

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17248S110	Applied Mathematics For Electrical &Electronics Engineering	3	1	0	4
2	17272H12	System Theory	3	1	0	4
3	17272H13	Power System Modeling and Analysis	3	1	0	4
4	17272H14	Economic Operations of Power Systems-I	3	1	0	4
5	17272H15	High Voltage Direct Current Transmission System	3	1	0	4
6	17272E16	Elective-I	3	1	0	4
7	17272L17	Power System Simulation Lab-I	0	0	3	3
8	17272CR5	Research Led Seminar				1
		TOTAL				28

SEMESTER – II

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272H21	EHV power transmission	3	1	0	4
2	17272H22	Economic Operations of Power Systems-II	3	1	0	4

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3	17272E23	Power System Protection	3	1	0	4
4	17272E24	Elective –II	3	1	0	4
5	17272E25	Elective –III	3	1	0	4
6	17272L26	Power System Simulation Lab-II	0	0	3	3
7	1727ECWR	Technical Writing/Seminars	0	0	3	3
8	17272CRM	Research Methodology				3
9	17272CBR	Participation in Bounded Research				2
		TOTAL				31

SEMESTER – III

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272E31	Electrical Transients in power systems	3	1	0	4
2	17272E32	Elective –IV	3	1	0	4
3	17272E33	Elective –V	3	1	0	4
4	17272E34	Elective –VI	3	1	0	4
5	17272P35	Project work Phase-I	0	0	6	6
6	17272CSR	Design Project / Socio Technical Project (Scaffolded Research)				4
		TOTAL				26

SEMESTER – IV

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272P44	Project work Phase-II	0	0	12	12

Total Credits = 97

Elective -I

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SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272E16A	Analysis of Inverters	3	1	0	4
2.	17272E16B	Modeling and Analysis of Electrical Machines	3	1	0	4

Elective –II

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272E24A	Flexible AC Transmission system	3	1	0	4
2.	17272E24B	Power System Planning and Reliability	3	1	0	4

Elective –III

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272E25A	Wind Energy conversion systems	3	1	0	4
2.	17272E25B	AI Techniques to Power Systems	3	1	0	4

Elective –IV

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272E32A	Power Electronics applications in Power systems	3	1	0	4
2.	17272E32B	Power system Dynamics	3	1	0	4

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Elective -V

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272E33A	Power Conditioning	3	1	0	4
2.	17272E33B	Power system restructuring and deregulation	3	1	0	4

Elective -VI

SL.NO.	SUBJECT CODE	SUBJECT	L	T	P	C
1	17272E34A	Software for Control system Design	3	1	0	4
2.	17272E34B	Industrial Power system analysis and design	3	1	0	4

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NEWLY ADDED ELECTIVE COURSE SYLLABUS

ELECTIVES – IV

17272E32A - POWER ELECTRONICS APPLICATIONS IN POWER SYSTEMS

Objective of the Course:

This Course focuses on the application of these power electronics based solutions in power systems. The course will start with the recapitulation of some basic concepts and modeling of electrical power transmission systems. Then, the mathematical modeling of various FACTS devices will be discussed.

Learning Outcome:

After the completion of the course, the students will be able to enhancing the performances of power transmission systems

Detailed Course Syllabus:

Level 1: STATIC COMPENSATOR CONTROL

Theory of load compensation - voltage regulation and power factor correction - phase balance and PF correction of unsymmetrical loads - Property of static compensator - Thyristor controlled rectifier (TCR) - Thyristor Controlled Capacitor (TSC) -Saturable core reactor - Control Strategies.

Level 2: HARMONIC CONTROL AND POWER FACTOR IMPROVEMENT

Input power factor for different types of converters - power factor improvement using Load and forced commutated converters.

Level 3: VOLTAGE CONTROL USING STATIC TAP-CHANGERS

Conventional tap changing methods, static tap changers using Thyristor, different schemes -comparison

Level 4: STATIC EXCITATION CONTROL

Solid state excitation of synchronous generators - Different schemes - Gesserex excitation systems.

Level 5: UNINTERRUPTABLE POWER SUPPLY SYSTEM

Parallel, Redundant and non- redundant UPS - Ups using resonant power converters - Switch mode power supplies

Duration: 45 Hrs

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ELECTIVES – V: 17272E33A - POWER CONDITIONING

Objective of the Course:

This Course focuses on to protect sensitive electronic equipment from damage caused by power fluctuations and electrical noise. A surge protector, on the other hand, is specifically designed to protect electronic equipment from damage caused by power surges and spikes.

Learning Outcome:

After the completion of the course, the students will be able to improves the quality of power delivered to electrical loads.

Detailed Course Syllabus:

Level 1: INTRODUCTION

Introduction – Characterization of Electric Power Quality: Transients, short duration and long duration voltage variations, Voltage imbalance, waveform distortion, Voltage fluctuations, Power frequency variation, Power acceptability curves – power quality problems: poor load power factor, Non linear and unbalanced loads, DC offset in loads, Notching in load voltage, Disturbance in supply voltage – Power quality standards

Level 2: NON-LINEAR LOADS

Single phase static and rotating AC/DC converters, Three phase static AC/DC converters, Battery chargers, Arc furnaces, Fluorescent lighting, pulse modulated devices, Adjustable speed drives

Level 3: MEASUREMENT AND ANALYSIS METHODS

Voltage, Current, Power and Energy measurements, power factor measurements and definitions, event recorders, Measurement Error – Analysis: Analysis in the periodic steady state, Time domain methods, Frequency domain methods: Laplace's, Fourier and Hartley transform – The Walsh Transform – Wavelet Transform

Level 4: ANALYSIS AND CONVENTIONAL MITIGATION METHODS

Analysis of power outages, Analysis of unbalance: Symmetrical components of phasor quantities, Instantaneous symmetrical components, Instantaneous real and reactive powers, Analysis of distortion: On-line extraction of fundamental sequence components from measured samples – Harmonic indices – Analysis of voltage sag: Detorit Edison sag score, Voltage sag energy, Voltage Sag Lost Energy Index (VSLEI)- Analysis of voltage flicker, Reduced duration and customer impact of outages, Classical load balancing problem: Open loop balancing, Closed loop balancing, current balancing, Harmonic reduction, Voltage sag reduction

Level 5: POWER QUALITY IMPROVEMENT

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Utility-Customer interface –Harmonic filters: passive, Active and hybrid filters –Custom power devices: Network reconfiguring Devices, Load compensation using DSTATCOM, Voltage regulation using DSTATCOM, protecting sensitive loads using DVR, UPQC –control strategies: P- Q theory, Synchronous detection method – Custom power park –Status of application of custom power devices.

COURSE DURATION: 45 Hrs

ELECTIVES – VI

17272EMA - SOFTWARE FOR CONTROL SYSTEM DESIGN

Objective of the Course:

This Course focuses to Provide an overview of the control system design process and introduce how MATLAB and Simulink fit into that process. Outline the different analysis tools and functions available for understanding system behavior - such as system resonances, transient response, etc.

Learning Outcome:

The course exposes students to control design for continuous-time linear time-invariant (LTI) systems

Detailed Course Syllabus:

Level 1: INTRODUCTION TO DESIGN AND CLASSICAL PID CONTROL

Systems performance and specifications –Proportional, Integral and Derivative Controllers – Structure – Empirical tunings- Zeigler Nichols-Cohen Coon – Root Locus method – Open loop inversion— Tuning using ISE, IAE and other performance indices.

Level 2: COMPENSATOR DESIGN

Design of lag, lead, lead-lag compensators – Design using bode plots – Polar plots – Nichols charts – root locus and Routh Hurwitz criterion.

Level 3: MATLAB

Introduction – function description – Data types – Tool boxes – Graphical Displays – Programs for solution of state equations – Controller design – Limitations.- simulink-Introduction – Graphical user interface – Starting – Selection of objects – Blocks – Lines - simulation – Application programs – Limitations.

Level 4: MAPLE

Introduction – symbolic programming – Programming constructs – Data structure computation

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with formulae – Procedures – Numerical Programming.

Level 5: MATLAB

Programs using MATLAB software.

COURSE DURATION: 45 Hrs

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VALUE ADDED COURSE SYSLLABUS

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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185153PS-PLC AND SCADA

Outcomes:

- The Most Used Guiding Force Behind an Automated Industrial Plant Is A " Programmable Logic Controller & quot; Generally Known As A PLC.
- PLCs Along With Certain Other Necessary Ingredients Like Sensors, Motors, Actuators, Valves,Conveyors, Boilers, SCADA Systems, Computers & Many More, Makes A Real Automated Manufacturing Plant.

Session 1

- Presentation on Recent Trends in Industrial Automation & PLC-SCADA
- Introduction To Automation
- Why We Need Automation
- Evolution In Industrial Automation (A Brief History)
- Different Type Of Industrial Control Mechanisms)
- Introduction to PLCs
- PLC Advantages over Microcontrollers
- Area of Applications
- DATA Flow During Automation
- Motor Drives Introduction & Their Need
- Sensors Introduction & Their Need
- HMI Introduction & Its Need
- SCADA Introduction& Its

Session 2

- Detail study of PLC & SCADA
- PLC
- SCADA
- PLC I/Os Basics, Burning & Interfacing Concepts
- Allen Bradley & Rockwell Automation's Details

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- Brief Description To Input/ Output Pins Of Micrologix-1000
- Ladder Diagram- Basics
- Introduction To RS Logix
- Downloading a Ladder Program in PLC Using RS Linx.
- How To Take Input from Panel
- How To Give Output To Panel
- Running First PLC Application

Session 3

- Hands on PLC Training Kit & SCADA Software
- Participants will perform hands on PLC training Kit which contain Allen Bradley Micrologix 1000
- PLC
- Software Used: RsLogix, RsLinx & amp; Wonder ware In Touch (SCADA)

COURSE DURATION: 45 Hours

185153R10 - REAL TIME OPERATING SYSTEMS

Level 1: Introduction To Real-Time Embedded Systems

Brief History of Real Time Systems, A brief history of Embedded Systems

Level 2: System Resources

Resource Analysis, Real-Time Service Utility, Scheduling Classes, The Cyclic Executive, Scheduler Concepts, Preemptive Fixed Priority Scheduling Policies, Real-Time OS, Thread-Safe Reentrant Functions.

Level 3: Processing:

Preemptive Fixed-Priority Policy, Feasibility, Rate Monotonic least upper bound, Necessary and Sufficient feasibility, Deadline – Monotonic Policy, Dynamic priority policies.

Level 4: I/O Resources, Memory

I/O Resources: Worst-case Execution time, Intermediate I/O, Execution efficiency, I/O Architecture, Memory: Physical hierarchy, Capacity and allocation, Shared Memory, I/O Memories, Flash file systems.

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Level 5 : Multi Resource Services Soft Real-Time Services

Multi resource Services: Blocking, Deadlock and livestock. Critical sections to protect - Shared resources, priority inversion. Soft Real-Time Services: Missed Deadlines, QOS. Alternatives to rate monotonic policy, mixed hard and soft real-time services.

COURSE OUTCOMES:

1. Analyze basic concepts of operating system and their structures
2. Analyze various issues related to inter process communication like process scheduling, Resource management and deadlocks.
3. Interpret the issues and challenges of memory management.
4. Synthesize the concepts of I/O management, file system implementation and problems Related to security and protection

COURSE DURATION : 45 Hrs

185153LAB - LABVIEW Syllabus

Level-1: Introduction Labview

What Exactly is Lab view-What can Lab view do for you- How does LabVIEW work-EvolutionofLabVIEW-WhatisDAQ-CommunicationusingSerialPort-LabVIEWaddontoolkits-LabVIEWRealTime, FPGA,PDA,and Embedded.

Level-2 : Labview Environment

Front panel, control and indicator- Block Diagram, Nodes , Wires, Data Flow Programming- Labview projects, Project Explorer window, project Explorer Toolbars-Building Application-Installers-Floating Pallets.

Level-3: Labview Foundation

Creating VI- Basic Controls- Indicators- Booleans- String- Paths- Decoration- CustomControlsandIndicators-Automaticwirerouting-AutomaticWiring-WiringComplicated Objects- Bad Wires - Wiring Tips- adding Constants- Controls and indicators -Keyboard

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Shortcuts-Cloningacdobject.

Level-4: Programming Execution with Structures

For Loop-The While Loop-Placing Objects inside Objects-Counting the Loops-Shift Registers-Caseexplicers-Dialogs-TheSequenceStructures-Timing-TimedStructures-Formula Node-Expression Node

Level-5:Virtual Displays : Charts & Graph

Wave form Charts -XY Graphs-Chart and Graph Components.

Level-6: Embedded Combining With Labview

VISA concept-Baudrate Calculation-Measurement and Automation Explorer-Serial Communication with Microcontrollers.

Software Tools in the Course

1. Microvisionkeil
2. Labview
3. Measurement &mutomation Explorer
4. ProteusSimulator
5. Proload

Total Duration : 45 Hrs

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18S1S3ESE -ENERGY SCENARIO AND ENERGY FORMS

Course objective:

- To know the present status of Indian and global energy scenario
- To learn the various solar energy technologies and its applications.
- To educate the various wind energy technologies.
- To explore the various bio-energy technologies.
- To study the ocean and geothermal technologies

ENERGY SCENARIO:

Indian energy scenario in various sectors-domestic, industrial, commercial, agriculture, transportation and others – Present conventional energy status – Present renewable energy status-Potential of various renewable energy sources-Global energy status-Per capita energy consumption – Future energy plans

SOLAR ENERGY

Solar radiation – Measurements of solar radiation and sunshine – Solar spectrum – Solar thermal collectors – Flat plate and concentrating collectors – Solar thermal applications – Solar thermal energy storage – Fundamentals of solar photo voltaic conversion – Solar cells – Solar PV Systems-Solar PV applications.

WIND ENERGY

Wind data and energy estimation – Betz limit – Site selection for wind farms – characteristics – Wind resource assessment – Horizontal axis wind turbine – components – Vertical axis wind turbine – Wind turbine generators and its performance – Hybrid systems-Environmental issuesApplications.

BIO-ENERGY

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Bio resources – Biomass direct combustion – thermochemical conversion – biochemical conversion- mechanical conversion – Biomass gasifier – Types of biomass gasifiers – Cogeneration Carbonization – Pyrolysis – Biogas plants – Digesters –Biodiesel production – Ethanol production –Applications.

OCEAN AND GEOTHERMAL ENERGY

Small hydro –Tidal energy –Wave energy–Open and closed OTEC Cycles–Limitations –Geothermal energy–Geothermal energy sources – Types of geothermal power plants – Applications Environmental impact.

COURSE DURATION : 45 HRS

185153PPA–PROCESS PLANT AUTOMATION

Course Outcomes:

- Understand the need of automation.
- Classify various types of automated transmission lines and components of automation
- List and understand various material handling systems.
- Design various types of automated assembly systems.
- Explain various automatic inspection systems CO6 Develop simple automation programs using PLCs.

Unit-I: Introduction Automation in Production System, Principles and Strategies of Automation, Basic Elements of an Automated System, Advanced Automation Functions, Levels of Automation, Production Economics.

Unit-II: Detroit-Type Automation Automated Flow lines, Methods of Work-part Transport, Transfer Mechanism, Buffer Storage, Control Functions, and Automation for Machining Operations, Design and Fabrication Considerations.

Unit-III: Material handling and Identification Technologies The material handling function,

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Types of Material Handling Equipment, Analysis for Material Handling Systems, Design of the System, Conveyor Systems, Automated Guided Vehicle Systems, Automated Storage Systems, Storage System Performance, Automated Storage/Retrieval Systems, Work-in-process Storage, Interfacing Handling and Storage with Manufacturing.

Unit-IV: Control Technologies in Automation Industrial Control Systems, Process Industries Verses Discrete- Manufacturing Industries, Continuous Verses Discrete Control, Computer Process Control and its Forms, Computer Based Industrial Control.

Unit-V: Automated Inspection and Testing Inspection and testing, Statistical Quality Control, Automated Inspection Principles and Methods, Sensor Technologies for Automated Inspection, Coordinate Measuring Machines, Other Contact Inspection Methods, Machine Vision, Other optical Inspection Methods.

COURSE DURATION:

45 Hours

185153HNE - HARDWARE AND NETWORKING ESSENTIALS

Course objectives

- Understand the Mathematical logics and Predicate Calculus
- To learn the mathematical foundations applicable to computing
- Understand the basics of language and its Grammar.

Syllabus

UNIT – I MATHEMATICAL LOGIC:

Statements and notation – Connectives – Negation – Conjunction – Disjunction – Statement formulae and truth tables – Conditional and Biconditional – Well formed formulas – Tautologies – Equivalences of formula– Duality Law. Predicate Calculus: Predicates – Statement functions – variables – Quantifiers – predate formulae – free &bound variables.

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UNIT – II BASIC CONCEPTS OF SET THEORY:

Notation – Inclusion of equality of sets – power set – operation on sets – Venn diagrams – Cartesian products. Relations and Ordering: Relations – Properties of Binary relation in a set – Relation matrix and graph – Equivalence relations – Composition of binary relations – Partial Ordering.

UNIT – III GROUPS:

Definition and examples – Sub groups – Homomorphism – Cosets – Normal Subgroups

UNIT – IV GRAPH THEORY:

Basic Definitions – Paths, Reachability Connectedness – Matrix Representation of graphs – Trees.

UNIT – V GRAMMARS AND LANGUAGES:

Introduction – alphabet, words, languages – regular expressions, regular languages - Finite state Automata – Grammars – Gödel Numbers.

COURSE DURATION: 45 Hours

18S153MCA - MAKING & MAINTENANCE OF ELECTRICAL APPLIANCES

Course Objectives

- To understand the key elements of electrical and electronics appliances.
- To understand the domestic wiring and layout.
- To understand the basic safety practices.
- To understand the various principles of domestic equipment's.
- To predict the goodness or age estimation of domestic equipment's.
- To perform layman checks and rectify minor defects.
- To troubleshoot the defects of the most common household equipment's.
- To understand the techniques involved in advanced repairing of household equipment's.

Syllabus

Unit: I

Basic safety practices: Safety Practices; Fires in electrical Circuits & Precautions. Fire Extinguishers & its types, General Safety of Tools & equipment. Rescue of person who is in contact with live wire. Treat a person for electric shock/ injury. Protective clothing leather or asbestos gloves, flame proof aprons, flame proof overalls buttoned to neck, cuffless (without folds), trousers, reinforced footwear.

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Unit: II

General idea on Various Electrical Measuring Instruments/ Components Types, Multimeter (Digital/ Analog), Energy meter (Digital/analog), Insulation Tester (Megger), Earth tester, Ammeter, Voltmeter, Different types of switches, fuse, thermostat, heating elements, registers, contactors, insulators, capacitors, wires and cables (for up to 15 amp) symbol of various components

Unit: III

Demonstration of Heating and Magnetic Appliances Demonstration of Heating Appliances and Their applications (Heating Appliances –type, Working Principle, Uses) Demonstration of Magnetic Appliances and their applications (Magnetic Appliances Type, working principle, uses)

Unit: IV

Maintenance and Repair of heating and motorized appliances identification, working and specification of each part. Repairing for some common problems, replacement of coil, insulators, thermostat etc. for the following: (a) Repair & maintenance of room heater (b) Repair & maintenance of electric iron.

Unit: V

Assemble of Some Appliances Assemble different type of Inverters circuit & its measurements. Assemble battery charger circuit used in inverter with protection circuit. Assemble Online Offline UPS & its measurements.

Course Outcomes:

By the end of the course, the students will be able to

1. Understand, maintenance and try to set up solar cell.
2. Understand, maintenance and try to set up photovoltaic solar cell.
3. Understand to use software tools for design of solar thermal system.
4. Understand to use software tools for design of solar photovoltaic systems, case studies.

COURSE DURATION: 45 Hours

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

Date: 02.07.2018

CIRCULAR

The Board of Studies meeting is scheduled on 03.07.2018 at 10.00 a.m. in the Dean's Chamber at School of Agriculture, PRIST University, Thanjavur under the Chairmanship of Dr. A. Sathyavelu, (HOD). All are requested to attend without fail.

Agenda of the meeting

S.No	Subject
Welcome Address	
1.	Welcome Address by the Council Chairman
Confirmation of Minutes	
2.	To confirm the minutes of the Board of studies meeting held on 03.07.2018
Action taken with regard to the resolutions passed	
3.	To report and record the action taken on the resolutions passed in the Board of Studies Meeting held on 16.05.2018
Items for reporting to the Board of Studies Meetings	
4.	To consider the suggestions revealed by faculty members and students for the revision of B.Sc. (Ag) 2017-2018 courses.
5.	Finalizing the list of courses for 1 year (2018-2022 Batch).
6.	Finalizing the syllabi.

Dean
School of Agriculture.

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BOARD OF STUDIES MEETINGS

Date: 03.07.2018 (10.00 am) Venue: School of Agriculture

AGENDA

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Welcome Address	
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Confirmation of Minutes	
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Ponnaiyah Ramajayam Institute of Science & Technology [PRIST]

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School of Agriculture

MEETING OF BOARD OF STUDIES (03.07.2018)

MINUTES OF THE MEETING

The Meeting of Board of Studies in School of Agriculture was held on Tuesday, 03rd July 2018 at 10.00 A.M. under the Chairmanship of Dr. A. Sathiyavelu, (HOD), School of Agriculture.

The following members were present:

Name and Designation	Signature
Chairman	
1. Dr. A. Sathiyavelu Head of the Department School of Agriculture PRIST University	
Members:	
1. Dr. B. Chandrasekaran Dean School of Agriculture PRIST University	
2. Prof. N. Ilanchezhian Professor School of Agriculture PRIST University	
3. Dr. V. Shanthi Associate Professor (Agricultural Microbiology) School of Agriculture PRIST University	

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4. Ms. J.U. Jamusia
Assistant Professor (Agricultural Extension)
School of Agriculture
PRIST University

5. Mr. A. Mathesh
Assistant Professor (Soil Science)
School of Agriculture
PRIST University

Signature

External Members:

Industrial Expert:

1. Mr. S. Saravanan,
Seed Production and seed processing Unit,
Kumbakonam

Academic Expert:

1. Dr. C. Rathinasabapathy,
Professor (Pathology),
PAJANCOA,
Karaikal
Puducherry

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The minutes of the meeting are as follows,

1. The board of Studies approved the adoption of new nomenclature B.Sc. (Hons) Agriculture Degree Programme as per ICAR 5th Dean's Committee recommendation instead of B.Sc. (Ag) Degree Programme.

2. The Board of Studies approved the adoption of ICAR 5 Dean's Committee recommended National syllabus for the B.Sc. (Hons) Agriculture during the Academic year 2018-19 year onwards.

3. The board suggested to change the code of PBG into G&PB according to ICAR pattern.

4. The board has accepted for certain inclusion in the syllabus of Agronomy, Plant breeding. Pathology, Extension.

5. The board minimally accepted to change the name of B.Sc., (Ag) degree programme as B.Sc., (Hons. Ag) on par with TNAU & PAJANCOA University. Since ICAR has approved these degree as a technical degree.

6. The board compared the credit hours conducted in various Universities and approved 105 working days adopted in PRIST as optional.

7. The Board of Studies approved the adding new value added course

List of new courses :

- Agricultural Heritage (non gradial)*
- Human Values & Ethics (non gradial)*
- Introductory Biology
- NSS/NCC/Physical Education & Yoga Practices
- Irrigation Water Management
- Intellectual Property Rights
- Protected Cultivation and Secondary Agriculture

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List of new value added course :

- Certificate course on Integrated Pest and Disease Management
- Certificate course on Agri-Tourism
- Certificate course on Herbal science
- Certificate course on Farm machinery and its maintenance
- Certificate course on Green house technology
- Certificate course on fruit culture and propagation

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Programme educational objectives

The educational objectives are intended to impart high quality education so as to produce not just agricultural graduates but agro technocrats with practical and conceptual skills. With precise and deliberate course modules, which provides education, research and training along with first hand field experiences, the students would sure be transformed as skilled human resources.

During the programme of four year duration, the students will undergo 65 courses in the domain of agriculture, horticulture, agricultural engineering, and information technology including linguistics. The students would gain in depth expertise in scientific farm management and post harvest technologies. The students are also taught with elective courses on mushroom cultivation, sericulture, tissue culture crops and bio fertilizer production, which could explore the graduates' entrepreneurial skills and also add students 'competitive values' in job market.

Programme outcome

At the end of the programme, the graduate should be able to:

1. Recognize the importance of agriculture in providing food, fibre and income as well as nation building.
2. Understand scientific methods of cultivation of field crops and horticultural crops along with animal production.
3. Establish agro based start-ups for the upliftment of rural community
4. Initiate rural enterprises there by providing jobs for the jobless
5. Carry out basic and applied research geared towards augmentation of crop and animal production
6. Transfer of agro technologies to the farming community via public and private sector stakeholders.
7. Pursue advanced courses and trainings in International and National institutions

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Semester – wise distribution of courses

I Semester

S. No.	Course Code	Course Title	Credit Hours
1	18 AGR 101	Fundamentals of Agronomy	3(2+1)
2	18 AGR 102	Agricultural Heritage*	1(1+0)
3	18 AGR 103	Introduction to Forestry	2(1+1)
4	18 AEX 101	Rural Sociology & Educational Psychology	2(2+0)
5	18 AEX 102	Human Values & Ethics (non gradial)	1(1+0)
6	18 GPB 101	Introductory Biology	2(1+1)
7	18 HOR 101	Fundamentals of Horticultre	2(1+1)
8	18 SAC 101	Fundamentals of Soil Science	3(2+1)
9	18 BIC 101	Fundamentals of Plant Biochemistry and Biotechnology	3(2+1)
10	18 ENG 101	Comprehension & Communication Skills in English	2(1+1)
11	18 NSS 101	NSS/NCC/Physical Education & Yoga Practices	2(0+2)
		Total	23(14+9)

II Semester

S. No.	Course Code	Course Title	Credit Hours
1	18 AGR 104	Introductory Agro-meteorology & Climate Change	2(1+1)
2	18 AEC 101	Fundamentals of Agricultural Economics	2(2+0)
3	18 AEN 101	Fundamentals of Entomology	3(2+1)
4	18 AEX 103	Fundamentals of Agricultural Extension Education	3(2+1)
5	18 AGM 101	Agricultural Microbiology	2(1+1)
6	18 GPB 102	Fundamentals of Genetics	3(2+1)
7	18 CRP 101	Fundamentals of Crop Physiology	2(1+1)
8	18 PAT 101	Fundamentals of Plant Pathology	3(2+1)
9	18 SWE 111	Soil and Water Conservation Engineering	2(1+1)
		Total	22(14+8)

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III Semester

S. No.	Course Code	Course Title	Credit Hours
1	18 AGR 201	Crop Production Technology - I (Kharif Crops)	2(1+1)
2	18 AGR 202	Education of Tour	1(0+1)
3	18 AEC 201	Agricultural Finance and Co-operation	2(1+1)
4	18 AMP 201	Livestock and Poultry Management	3(2+1)
5	18 ENS 201	Environmental Studies and Disaster Management	3(2+1)
6	18 FMP 201	Farm Machinery and Power	2(1+1)
7	18 GPB 201	Fundamentals of Plant Breeding	3(2+1)
8	18 HOR 201	Production Technology for Vegetables and Spices	2(1+1)
9	18 COM 201	Agro-Informatics	2(1+1)
10	18 MAT 201	Statistical Methods	2(1+1)
11	18 AGR 203	Farming System & Sustainable Agriculture	1(1+0)
Total			23(13+10)

IV Semester

S. No.	Course Code	Course Title	Credit Hours
1	18 AGR 204	Crop Production Technology - II (Rabi Crops)	2(1+1)
2	18 AGR 205	Irrigation Water Management	2(1+1)
3	18 AEC 202	Agricultural Marketing Trade & Prices	3(2+1)
4	18 AEX 201	Communication Skills and Personality Development	2(1+1)
5	18 ERG 211	Renewable Energy and Green Technology	2(1+1)
6	18 HOR 202	Production Technology for Fruit and Plantation Crops	2(1+1)
7	18 PAT 201	Principles of Integrated Pest and Disease Management	3(2+1)
8	18 SAC 201	Problematic Soils and their Management	2(1+1)
9	18 SST 201	Principles of Seed Technology	3(2+1)
10	18 OPT 201	Elective Course	3(2+1)
Total			24(14+10)

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V Semester

S. No.	Course Code	Course Title	Credit Hours
1	18 GPB 301	Crop improvement - I (Kharif Crops)	2(1+1)
2	18 AGR 301	Rainfed Agriculture & Watershed Management	2(1+1)
3	18 AGR 302	Practical Crop Production - I (Kharif Crops)	2(1+1)
4	18 AEN 301	Pests of Crops and Stored Grain and their Management - I	3(2+1)
5	18 AEX 301	Entrepreneurship Development and Business Communication	2(1+1)
6	18 HOR 301	Production Technology for Ornamental Crops, MAP and Landscaping	2(1+1)
7	18 PAT 302	Diseases of Field and Horticultural Crops and their Management - I	3(2+1)
8	18 SAC 301	Manures, Fertilizers and Soil Fertility Management	3(2+1)
9	18 IPR 301	Intellectual Property Rights	1(1+0)
10	18 OPT301	Elective Course	3(2+1)
Total			23(14+9)

VI Semester

S. No.	Course Code	Course Title	Credit Hours
1	18 AGR 303	Geoinformatics and Nano-technology and Precision Farming	2(1+1)
2	18 GPB 302	Crop Improvement - II (Rabi Crops)	2(1+1)
3	18 AGR 304	Practical Crop Production - II (Rabi Crops)	2(1+1)
4	18 AGR 305	Principles of Organic Farming	2(1+1)
5	18 AEC 301	Farm Management, Production & Resource Economics	2(1+1)
6	18 AEN 302	Pest of Horticulture Crops and Management of Beneficial Insects	2(1+1)
7	18 FSN 301	Principles of Food Science and Nutrition	2(2+0)
8	18 HOR 302	Post-Harvest Management and Value Addition of Fruits and Vegetable	2(1+1)
9	18 PAT 302	Diseases of Field and Horticultural Crops and their Management - II	2(1+1)
10	18 PCA 301	Protected Cultivation and Secondary Agriculture	2(1+1)
11	18 OPT 302	Elective Course	3(2+1)
Total			23(13+10)

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VII Semester

VII Semester				
No.	Course Code	Rural Agricultural Work Experience and Agro-industrial Attachment (RAWE & AIA)		
		Activites	No. of weeks	Credit Hours
1	18 AEX 401	General orientation & On campus training by different faculties	1	14
		Village attachment	8	
		Unit attachment in Univ./ College. KVK/ Research Station Attachment	5	
		Plant clinic	2	02
		Agro-Industrial Attachment	3	04
		Project Report Preparation, Presentation and Evaluation	1	02
		Total weeks for RAWE & AIA	20	20

- **Agro-Industrial Attachment:** The students would be attached with the agro-industries for a period of 3 weeks to get an experience of the industrial environment and working.
- Educational tour will be conducted in break between IV & V Semester or VI & VII Semester

RAWE Component-I

Village Attachment Training Programme

Sl. No.	Activity	Duration
1	Orientation and Survey of Village	1 week
2	Agronomical Interventions	1 week
3	Plant Protection Interventions	1 week
4	Soil Improvement Interventions (Soil sampling and testing)	1 week
5	Fruit and Vegetable production interventions	1 week
6	Food Processing and Storage interventions	
7	Animal Production Interventions	1 week
8	Extension and Transfer of Technology activities	1 week

RAWE Component-II

Agro Industrial Attachment

- Students shall be placed in Agro-and Cottage industries and Commodities Boards for 03 weeks.
- Industries include Seed/Sapling production, Pesticides-insecticides, Post harvest-processing-value addition, Agri-finance institutions, etc.

Activities and Tasks during Agro-Industrial Attachment Programme

- Acquaintance with industry and staff
- Study of structure, functioning, objective and mandates of the industry
- Study of various processing units and hands-on trainings under supervision of industry staff

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- Ethics of industry
- Employment generated by the industry
- Contribution of the industry promoting environment
- Learning business network including outlets of the industry
- Skill development in all crucial tasks of the industry
- Documentation of the activities and task performed by the students
- Performance evaluation, appraisal and ranking of students

Modules for Skill Development and Entrepreneurship: A student has to register 20 credits opting for two modules of (0+10) credits each (total 20 credits) from the package of modules in the **VIII Semester.**

VIII Semester

S. No.	Course Code	Course Title	Credit Hours
1	18 EXP 401	Experiential Learning - Module I	0+10
2	18 EXP 402	Experiential Learning - Module II	0+10

Experiential Learning: A student can select two experiential learning out of the following and offer during 8th semester.

S. No.	Title of the module	Credits
1	Production Technology for Bioagents and Biofertilizer	0+10
2	Seed Production and Technology	0+10
3	Mushroom Cultivatiuon Technology	0+10
4	Soil, Plant, Water and Seed Testing	0+10
5	Commercial Beekeeping	0+10
6	Poultry Production Technology	0+10
7	Commercial Horticulture	0+10
8	Floriculture and Landscaping	0+10
9	Food Processing	0+10
10	Agriculture Waste Management	0+10
11	Organic Production Technology	0+10
12	Commercial Sericulture	0+10

Elective Courses: A student can select three elective courses out of the following and offer during 4th, 5th and 6th semesters.

S. No.	Courses	Credit Hours
1	Agribusiness Management	3(2+1)
2	Agrochemicals	3(2+1)
3	Commercial Plant Breeding	3(1+2)
4	Landscaping	3(2+1)
5	Food Safety Issues	3(2+1)
6	Biopesticides & Biofertilizers	3(2+1)
7	Protected Cultivation	3(2+1)
8	Micro propagation Technologies	3(1+2)
9	Hi-tech. Horticulture	3(2+1)
10	Weed Management	3(2+1)
11	System Simulation and Agro-advisory	3(2+1)
12	Agricultural Journalism	3(2+1)

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18 GPB 101 **INTRODUCTORY BIOLOGY** **2 (1+1)**

Course outlines

Theory

Introduction to the living world. Diversity and characteristics of life,Origin of life, Evolution and Eugenics. Binomial nomenclature and classification, Cell and cell division. Morphology of flowing plants. Seed and seed germination. Plant systematic-viz; Brassicaceae, Fabaceae and Poaceae. Role of animals in agriculture.

Practical

Morphology off lowering plants - root, stem and leaf and their modifications. Inflorescence, flower and fruits. Cell. Tissues & cell division. Internal structure of root, stem and leaf. Study of specimens and slides. Description of plants- Brassicaceae, Fabaceae and Poaceae.

Lecture outlines

Theory

1. Introduction to living world - Properties of life or living things – Growth, development and reproduction, regulation and homoeostasis - Diversity of Life – Major domains/ kingdoms of living beings – Bacteria (Eubacteria), Archaea (Archebacteria) and Eukarya (Protista, fungi, plantae, animalia) - Concepts of prokaryotes and eukaryotes, unicellular and multicellular organisms, plants and animals, sporophyte and gametophyte, monocots and dicots - Salient features, classification and alternation of generations of the plants of the following groups – Algae, Bryophytes, Pteridophytes, Gymnosperms and Angiosperms - Evolutionary relationships and differences among different kingdoms, viruses, viroids, prions and lichens and their special features.

2. Origin of life – Theories of origin of life - Special creation, extra-terrestrial and spontaneous - Location of origin of life - Miller-Urey's experiment, Path of evolution of chemical molecules of living beings, theories of origin of cells – Endosymbiotic theory, Bubble theory.

3. Evolution and eugenics – Theories of evolution, eugenics - History, meanings and types.

4. Nomenclature of living beings - Basics in biological classification, need for classification, importance of classification, nomenclature – Polynomial, binomial and trinomial systems of nomenclature - Rules of binomial nomenclature, hierarchy of classification.

5. Cells – Cell structure and organization of plants and animals - Cell theory and cell as the basic unit of life - Overview of the cell. Prokaryotic cells, ultra structure of plant cell (structure in detail and functions in brief) - Cell membrane, cell wall, cell organelles - Morphology and function: Endoplasmic reticulum, mitochondria, plastids, ribosomes, golgi bodies, vacuoles, lysosomes, microbodies, centrosome and centriole, cilia, flagella, cytoskeleton and nucleus.

6. Chromosomes -Number, structural organization -Nucleosome.

7. Cell cycle, cell division - Somatic cell division or mitosis – Stages and phases - Reproductive cell division or meosis – Stages and phases and significance.

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8. Morphology of flowering plants - Roots - Characters, types and modifications of roots, basic external and internal structural organization of root in monocots and dicots.
9. Morphology of flowering plants - Stems - Characters, functions and modification of stems - Basic external and internal structural organization of stem in monocots and dicots.
10. Morphology of flowering plants - Leaf - Parts, functions, types and modifications of leaves - Leaf venation and phyllotaxy.
11. Morphology of flowering plants - Inflorescence - types of inflorescences, types of racemose inflorescence, types of cymose inflorescence - Special types of inflorescences.
12. Morphology of flowering plants - Flower - Structure and parts of flower, types of flowers based on sex distribution, structural symmetry, position of gynoecium, aestivation - Description of types of calyx, corolla, stamens and ovary; Seed - Structure and organization of seed in monocots and dicots - Seed germination - Necessary conditions for germination.
13. Plant systematics – Brassicaceae - Distribution, important plants, economic importance, vegetative and floral characters, pollination, fruit and seed characters.
14. Plant systematics - Fabaceae - Distribution, important plants, economic importance, vegetative and floral characters, pollination, fruit and seed characters.
15. Plant systematics - Poaceae - Distribution, important plants, economic importance, vegetative and floral characters, pollination, fruit and seed characters.
16. Role of animals in agriculture–Animals of draught and milch, fur, wool, etc. - Different animal products used as manure.

Practical

1. External morphology of monocot roots - Rice and maize.
2. External morphology of dicot roots - Brassica and any legume.
3. External morphology of monocot stem - Rice and maize.
4. External morphology of dicot stem - Brassica and any legume.
5. External morphology of monocot leaf - Rice and maize.
6. External morphology of dicot leaf – Brassica and any legume.
7. Structure and organization of plant cell.
8. Study of different types of tissue systems - Parenchyma, collenchyma and sclerenchyma.
9. Study of mitosis through onion root tip cells.
10. Study of meiosis through onion anther cells.
11. Internal anatomy of monocot stems and roots - Rice and maize.
12. Internal anatomy of dicot stems and roots - Brassica and any legume.
13. Internal anatomy of ovary of monocots and dicots - Any millet and legume.
14. Description of Brassicaceae with live specimens.
15. Description of Fabaceae with live specimens.
16. Description of Poaceae with live specimens.

References1. *Biology* – Raven P, Mason Johnson G B, Losos J. B, Singer. S.S , 10th edition, 2014. McGraw Hill Publications.

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18 AGR 102 **AGRICULTURE HERITAGE** **1(1+0)**

Course outlines

Theory

Introduction of Indian agricultural heritage, status of farmers in society, advice by sages to kings on their duties towards farmers, soil management in ancient, medieval & pre-modern India and its relevance in modern day sustainable agriculture, heritage of crop & water management, plant growth and development & plant protection through vrikshayurveda and traditional knowledge. Heritage of medicinal plants and their relevance today, seed health in ancient & medieval history and its relevance to present day agriculture, description of Indian civilization and agriculture by travelers from China, Europe and United States, our journey in agriculture, green revolution and its impact and concerns, vision for the future.

Lectures outlines

Theory

1. Introduction to Indian agricultural heritage – Definition of heritage, agriculture heritage - Need to study agriculture heritage
2. Genesis of agriculture and its chronological arrangement - Homes of evolution of agriculture and "old and new" world - Early indigenous domestications.
3. Status of farmers in society and specific role of women in ensuring food security- Farming systems in ancient periods.
4. Status of agriculture and advice by sages to kings on their duties towards farmers- Importance of farmers - Ancient agricultural practices and scientific basis.
5. Soil management in ancient, medieval, pre- modern India - Historical background - Soil management and its relevance in pre-modern India and modern day sustainable agriculture - Use of amendments - Land management, Piercing, tillage, puddling and pre-plant submergence, mulching, fallowing.
6. Soil concept - Ancient systems of soil classification - Ancient systems of soil management - Medieval and pre modern soil management.
7. Heritage of crop and water management – Ancient and pre-historic period; Medieval period.
8. Plant growth and development- Heritage of plant protection through vrikshayurveda and traditional Knowledge
9. Plant protection in ancient India - Plant disorders – Cause, symptoms, treatment materials.
10. Traditional knowledge in crop production and water management
11. Heritage of medicinal plants and their relevance today
12. Seed health in ancient and medieval history and its relevance to present day agriculture-seed health in Hellenistic age – seed health in India – Materials recommended for seed treatments.
13. Description of Indian civilization and agriculture by travellers from China, Europe and USA.
14. Pre-historic cropping patterns.

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15. Our journey in agriculture-Green revolution and its impact and concerns.
16. Vision for the future – Challenges ahead.

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1. Choudary S.L, Sharma, G.S, and Nene, Y.L (eds). 2000. Ancient and Medieval History of Indian agriculture and its relevance to sustainable agriculture in the 21st century; Proceedings of the summer school held from 28 May to 17 June 1999. Rajasthan college of Agriculture, Udaipur 313001.

2. Nene, Y.L (Ed). 2005. Agricultural Heritage of Asia proceedings of the international conference, 6-8 December 2004, Asian-Agri history Foundation, Secunderabad- 500 009, Andhra Pradesh, India.

3. Nene, Y.L 2007. Glimpses of Agricultural heritage of India. Asian- Agri- History Foundation, 47 – ICRISAT Colony-1 Brig sayeed Road, Secunderabad -500009 A.P India 901PP ISBN-81-903963-0-7.

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18 AEX 101 RURAL SOCIOLOGY AND EDUCATIONAL PSYCHOLOGY 2 (2+0)

Objective

This course will enable students to acquire knowledge on basics concepts related to rural sociology and educational psychology. Students will also learn the practical applications of important sociological and psychological concepts.

Theory

UNIT I

Introduction to Sociology, Social groups, Culture and Social Values

Sociology and Rural Sociology – definitions; Society – rural and urban, characteristics, differences and relationships, important characteristics of Indian rural society; Social groups – definition, classification, role of social groups in extension; Culture – concept, cultural traits, characteristics, functions, Ethnocentrism, Acculturation, Cultural lag, Cultural diffusion, Marginal man, Ethos. Social Values – definition, values and norms, characteristics of values, functions;

UNIT II

Social Structure, Social Stratification and Migration

Structure of Rural Society – patterns of rural settlement, social institutions, social organizations, ecological entities (Region, Community, Neighbourhood, Family); Social Stratification – concept, functions, types, differences between class and caste system; Migration – concept, factors influencing migration.

UNIT III

Social Control, Social Customs

Social Control – definition; Customs – conventions, folkways, mores, rituals, taboos; Social Interaction Process – definition, basic social processes; Social Change – concept, factors influencing social change, indicators of social change; Social development :

UNIT IV

Introduction to Educational Psychology, Intelligence, Teaching-Learning Process;

Education – Psychology – Educational Psychology – Social Psychology – definitions, importance in extension; Basic principles of Human behaviour – Sensation, Attention, Cognitive, affective, psychomotor domain Perception – meaning, characteristics; Intelligence – concept, types, measurement, factors affecting intelligence; Personality – concept, types, measurement, factors influencing personality; Teaching–Learning Process – Teaching – definition, meaning, principles of teaching, steps in extension teaching; Learning – definition, meaning, principles, types of learning, learning situation.

UNIT V

Motivation, Attitude

Motivation – concept, Maslow's hierarchy of needs, intrinsic and extrinsic motivation, techniques of

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motivation, importance in extension; Attitude – concept, factors influencing the development of attitudes.

Theory Schedule

1. Sociology and Rural Sociology – Definitions, nature of rural sociology,
2. Importance of rural sociology in extension education.
3. Society – rural and urban, characteristics, differences and relationship, important characteristics of Indian rural society;
4. Social Groups – definitions, classification, role of social groups in extension.
5. Culture – concept, cultural traits, characteristics, functions,
6. Ethnocentrism, Acculturation, Cultural lag, Cultural diffusion, Marginal man, Ethos.
7. Structure of Rural Society – patterns of rural settlement,
8. Social institutions, Social organizations and ecological entities - Region, Community, Neighbourhood, and Family.
9. Social Stratification – concept, functions, types, differences between class and caste system; Social Values – definition, values and norms, characteristics of values, functions.
10.
11. Migration – concept, factors influencing migration.
12. Social Control – definition;
13. Customs – conventions, folkways, mores, rituals, taboos;
14. Social Interaction Process – definition, basic social processes.
15. Social Change – concept, theories, factors and indicators of social change.
16. Social development
17. Mid semester Examination.
18. Education – Psychology – Educational Psychology –definitions, importance in extension.
19. Social Psychology – Definitions, importance in extension.
20. Basic principles of Human behaviour –
21. Cognitive, affective, psychomotor domain
22. Perception – meaning, characteristics.
23. Sensation, Attention
24. Intelligence – concept, types,
25. Intelligence - measurement, factors affecting intelligence;
26. Personality – concept, types,
27. Personality measurement- factors influencing personality
28. Teaching–Learning Process – Teaching – definition, meaning,
29. Principles of teaching, steps in extension teaching.
30. Learning – definition, meaning, principles,
31. Types of learning, learning situation.
32. Motivation – concept, Maslow's hierarchy of needs (including selfless-service), intrinsic

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and extrinsic motivation.

33. Techniques of motivation, importance of motivation in extension.

34. Attitude – concept, factors influencing the development of attitudes.

Suggested Readings (Textbooks, Reviews, Journals)

- Adivi Reddy, A. 2001. Extension Education, Sree Lakshmi Press, Bapatla, Andhra Pradesh.
- Chatterjee, S. 2000. Advanced Educational Psychology, Books & Allied (P) Ltd., Calcutta.
- Chauhan, S.S. 2001. Advanced Educational Psychology, Vikas Publishing House Pvt. Ltd., New Delhi.
- Chitambar, J.B.1997. Introductory Rural Sociology, New Age International (P) Ltd., Publishers, New Delhi.
- Dahama, O.P. and O.P. Bhatnagar. 2007. Education and Communication for Development, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
- Kundu, C.L and Tutoo, D.N. 2001. Educational Psychology, Sterling Publishers Pvt. Ltd., New Delhi.
- Lester Crow, D and Alice Crow. 1973. Educational Psychology, Eurasia Publishing House Pvt. Ltd., New Delhi.
- Madumita Gupta. 2011. Fundamentals of Sociology, Pacific Publications, New Delhi.
- Mangal, S.K. 2000. Educational Psychology, Prakash Brothers, Ludhiana.
- Shankar Rao, C.N. 2012. Sociology – Principles of Sociology with an Introduction to Social Thought, S.Chand & Co. Ltd., New Delhi.
- Sharma, R.N. 1968. Principles of Sociology, Asia Publishing House, New Delhi.
- Supe. S.V. 2012. Text book of Extension Education, Agrotech Publishing Academy, Udaipur.
- Usha Rao. 2008. Advanced Educational Psychology, Himalaya Publishing House, New Delhi.
- Vidya Bhushan and Sachdeva, D.R. 2003. An Introduction to Sociology, Kitab Mahal, Allahabad.

Journals

- Indian Journal of Social Research
- Journal of Rural Development
- Journal of Social Sciences
- Journal of Advances in Social Work
- Journal of Asian Social Sciences
- Journal of Social Sciences and Research
- Journal of Current Research in Social Psychology
- Journal of Rural Sociology
- Journal of Extension Education – Coimbatore

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18 AEX 102 **HUMAN VALUES AND ETHICS** **1 (1+0)**

Course outlines

Theory

Universal human aspirations: Happiness and prosperity; Human values and ethics: Concept, definition, significance and sources; Fundamental values: Right conduct, peace, truth, love and non-violence; Principles and Philosophy. Self Exploration. Self Awareness. Self Satisfaction. Decision Making. Motivation. Sensitivity. Success. Selfless Service. Case Study of Ethical Lives. Positive Spirit. Body, Mind and Soul. Attachment and Detachment. Spirituality Quotient. Examination.
Ethics: professional, environmental, ICT; Sensitization towards others particularly senior citizens, developmentally challenged and gender.
Spirituality, positive attitude and scientific temper; Team work and volunteering; Rights and responsibilities; Road safety; Human relations and family harmony; Modern challenges and value conflict: Sensitization against drug abuse and other social evils; Developing personal code of conduct (SWOT Analysis); Management of anger and stress.

Lecture outlines

Theory

1. Universal human aspirations, happiness and prosperity
2. Human values and ethics - Concept, definition, significance and sources - Fundamental values - Right conduct, peace, truth, love and non-violence.
3. Principles and philosophy – Self exploration, self awareness, self satisfaction, decision making, motivation, sensitivity, success, selfless service.
4. Case study of ethical lives.
5. Positive spirit, body, mind and soul - Attachment and detachment.
6. Spirituality and spirituality quotient.
7. Examinations.
8. Ethics - Professional, environmental, ICT - Sensitization towards others particularly senior citizens, developmentally challenged and gender.
9. Positive attitude and scientific temper.
10. Team work and volunteering.
11. Rights and responsibilities.
12. Road safety.
13. Human relations and family harmony, modern challenges and value conflict.
14. Sensitization against drug abuse and other social evils.
15. Developing personal code of conduct (SWOT/SWOC/SNAC Analysis).
16. Management of anger and stress.

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2. Mathur SS. 2010. *Education for Values, Environment and Human Rights*. RSA International.
3. Sharma RA. 2011. *Human Values and Education – Axiology, Inculcation and Research*. R. Lall Book Depot.
4. Sharma RP and Sharma M. 2011. *Value Education and Professional Ethics*. Kanishka Publishers.
5. Srivastava S. 2011. *Human Values and Professional Ethics*. S K Kataria and Sons.
6. Srivastava S. 2011. *Environmental Science*. S K Kataria & Sons.
7. Tripathi A.N. 2009. *Human Values*. New Age International (P) Ltd Publishers.
8. R.S. Nagarajan. *Text Book on Professional Ethics & Human Values*.
9. D.R. Kiran. *Professional Ethics & Human Values*
10. Veerendra Kumar. *Human Values and Professional Ethics*.
11. M.Govindarajan. *Engineering Ethics*.

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18 NSS 100 NSS/NCC/PHYSICAL EDUCATION & YOGA PRACTICES 2 (0+2)

Course outlines

Introduction and basic components of NSS, NSS programmes and activities, Understanding youth, Community mobilization, Social harmony and national integration, Volunteerism and shramdan, Citizenship, constitution and human rights, Family and society, Importance and role of youth leadership, Life competencies, Youth development programmes, Health, hygiene and sanitation, Youth health, lifestyle, HIV AIDS and first aid, Youth and yoga , Vocational skill development, Issues related environment, Disaster management, Entrepreneurship development, Formulation of production oriented project, Documentation and data reporting, Resource mobilization, Additional life skills, Activities directed by the Central and State Government

Lecture outlines

1 Introduction and basic components of NSS – Orientation - History, objectives, principles, symbol, badge; regular programmes under NSS, organizational structure of NSS, code of conduct for NSS volunteers, points to be considered by NSS volunteers awareness about health 2 NSS programmes and activities - Concept of regular activities, special camping,
day camps, basis of adoption of village/slums, conducting survey, analysing guiding financial patterns of scheme, youth programme/ schemes of GOI, coordination with different agencies and maintenance of diary

3 Understanding youth - Definition, profile, profile, categories, issues and challenges of youth; and opportunities for youth who is agent of the social change

4 Community mobilization -Mapping of community stakeholders, designing the message as per problems and their culture; identifying methods of mobilization involving youth-adult partnership

5 Social harmony and national integration - Indian history and culture, role of youth in nation building, conflict resolution and peace-building

6 Volunteerism and shramdan - Indian tradition of volunteerism, its need, importance, motivation and constraints; shramdan as part of volunteerism

7 Citizenship, constitution and human rights - Basic features of constitution of India, fundamental rights and duties, human rights, consumer awareness and rights and rights to information

8 Family and society - Concept of family, community (PRIs and other community based organisations) and society

9 Importance and role of youth leadership - Meaning, types and traits of leadership, qualities of good leaders; importance and roles of youth leadership

10 Life competencies - Definition and importance of life competencies, problemsolving and decision-making, inter personal communication

11 Youth development programmes - Development of youth programmes and policy at the national level, state level and voluntary sector; youth-focused and youthled organstions

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12 & Health, hygiene and sanitation - Definition needs and scope of health education,
13 role of food, nutrition, safe drinking water, water born diseases and sanitation (Swachh Bharat
Abhiyan) for health; national health programmes and reproductive health
14 Youth health, lifestyle, HIV AIDS and first aid - Healthy lifestyles, HIV AIDS, drugs and
substance abuse, home nursing and first aid
15 & Youth and yoga - History, philosophy, concept, myths and misconceptions about
16 yoga; yoga traditions and its impacts, yoga as a tool for healthy lifestyle, preventive and curative
method
17 & Vocational skill development - To enhance the employment potential and to set
18 up small business enterprises skills of volunteers, a list of 12 to 15 vocational skills will be
drawn up based on the local conditions and opportunities. Each volunteer will have the option to
select two skill-areas out of this list
19 Issues related environment - Environmental conservation, enrichment and sustainability,
climatic change, natural resource management (rain water harvesting, energy conservation,
forestation, waste land development and soil conservations) and waste management
20 & Disaster management - Introduction and classification of disaster, rehabilitation
21 and management after disaster; role of NSS volunteers in disaster management.
22 Entrepreneurship development - Definition, meaning and quality of entrepreneur; steps in
opening of an enterprise and role of financial and support service institution
23 Formulation of production oriented project - Planning, implementation, management and impact
assessment of project
24 Documentation and data reporting - Collection and analysis of data, documentation and
dissemination of project reports
25 & Youth and crime - Sociological and psychological factors influencing youth crime,
26 cyber crime, pear mentoring in preventing crime and awareness for juvenile justice
27 & Civil/self defence - Civil defence services, aims and objectives of civil defence;
28 needs and training of self defence
29 & Resource mobilisation - Writing a project proposal of self fund units (SFUs) and its
30 establishment
31 & Additional life skills - Positive thinking, self confidence and esteem, setting life
32 goals and working to achieve them, management of stress including time
management.

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18AGR205 **IRRIGATION WATER MANAGEMENT** 2(1+1)

Course outlines

Theory

Irrigation : Definition and objectives; Water resources, Irrigation projects (major, medium & minor) in India and Andhra Pradesh; Soil - plant - water relationships; Methods of soil moisture estimation; Evapotranspiration and Crop water requirement; Duty of water; Conjunctive use of water; Scheduling of irrigation; Methods of irrigation - Surface, Subsurface, Sprinkler and Drip irrigation; Irrigation efficiency and Water use efficiency; Irrigation water quality criteria and its management; Waterlogging; Agricultural drainage.

Practical

Measurement of bulk density, study of soil moisture measuring devices, determination of field capacity and permanent wilting point, measurement of infiltration rate, irrigation water, scheduling of irrigation by IW/CPE ratio method, calculations on soil moisture, irrigation water needs, duty of water and irrigation efficiencies, layout of surface methods of irrigation, demonstration of drip and sprinkler irrigation, visit to micro irrigation systems in farmers fields ,water management practices in different crops.

Lecture outlines

Theory

1 Introduction – importance – definition and objectives - water resources of world.

2 Surface and ground water resources in India and Andhra Pradesh–important major irrigation projects in India and Andhra Pradesh.

3 Soil-water relations – physical properties of soil viz., depth, soil texture, soil structure, particle density, bulk density and porosity influencing water retention, movement and availability.

4 Water retention in soil – adhesion and cohesion – soil moisture tension – pF – soil moisture characteristic curves- Water movement in soils – infiltration – percolation – seepage – permeability – hydraulic conductivity – saturated and unsaturated water flow.

5 Kinds of water in soil – gravitational water – capillary water – hygroscopic water – their importance in crop production - Soil moisture constants – saturation – Field capacity (FC) – Permanent Wilting Point (PWP) – Available Soil Moisture (ASM) – hygroscopic coefficient – theories of soil water availability.

6 Plant-water relationships – rooting characteristics – effective root zone depth – moisture extraction pattern – moisture sensitive periods of crops – Soil Plant Atmospheric Continuum (SPAC).

7 Evapotranspiration – evaporation – transpiration – factors influencing evapotraspiration – Reference crop evapotraspiration (ETo) – Crop coefficient – Crop Evapotranspiration (ETc) - daily, seasonal and peak period consumptive use.

8 Crop water requirement – irrigation requirement – net and gross irrigation requirement – irrigation interval – irrigation period – seasonal water requirement of important crops – duty of

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water – base period – relation between duty and base period – conjunctive use of water – advantages of conjunctive use.

9 Scheduling of irrigation – different criteria – soil moisture regime approach – feel and appearance method – soil moisture tension and depletion of available soil moisture method - climatological approach – Irrigation Water (IW) / Cumulative Pan Evaporation (CPE) ratio method.

10 Scheduling of irrigation – plant indices approach – visual symptoms – soil cumsand mini plot technique – growth rate – relative water content – plant water potential – canopy temperature – indicator plants and critical growth stages.

11 Methods of irrigation - surface methods – wild flooding check basin, ring basin, border strip, furrow and corrugations – advantages and disadvantages- Sub surface irrigation.

12 Micro irrigation systems - sprinkler irrigation – merits and demerits – system components and layout – suitable crops – rain guns.

13. Drip irrigation (surface and sub surface) – merits and demerits – system components and layout – suitable crops - fertigation and maintenance of micro irrigation systems.

14. Water Use Efficiency (WUE) – crop and field water use efficiency – factors influencing WUE – climatic, genetic and management (agronomic) factors - Irrigation efficiencies – water conveyance efficiency, water application efficiency, water storage efficiency, water distribution efficiency and project efficiency.

15. Quality of irrigation water – salinity hazard, sodium hazard, residual sodium carbonate and boron toxicity – criteria and threshold limits – management practices for using poor quality water.

16. Water logging – causes for waterlogging – drainage- surface and sub-surface drainage systems – relative merits.

Practical

1. Determination of bulk density
2. Determination of soil moisture content by gravimetric and volumetric method
3. Installation and working with tensiometer and resistance blocks
4. Determination of infiltration rate
5. Determination of field capacity by field method
6. Measurement of soil moisture content by moisture probe
7. Measurement of irrigation water through flumes, weirs and V notches
8. Scheduling of irrigation by IW / CPE ratio method
9. Calculation of irrigation water requirements
10. Lay out of surface irrigation methods
11. Problems on duty of water and irrigation efficiencies
12. Demonstration of drip irrigation system (filter cleaning, flushing of laterals and fertigation)
13. Demonstration of operation of sprinkler irrigation system
14. Visit to micro irrigation systems in farmers fields.
15. Water management practices in rice, wheat and maize.
16. Water management practices in groundnut, sunflower and sugarcane

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2. Reddy, S.R. 2016.Irrigation Agronomy 3 rd Edition.Kalyani Publishers, Ludhiana.
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18 IPR 301 **INTELLECTUAL PROPERTY RIGHTS** **1(1+0)**

Course outlines

Theory

Introduction and meaning of intellectual property; brief introduction to GATT, WTO, TRIPs and WIPO; Treaties for IPR protection: Madrid protocol, Berne Convention, Budapest treaty, etc.;Types of Intellectual Property and legislations covering IPR in India: Patents, Copyrights,Trademark, Industrial design, Geographical indications, Integrated circuits, Trade secrets; Patents Act 1970 and Patent system in India, patentability, process and product patent, filing of patent, patent specification, patent claims, Patent opposition and revocation, infringement, Compulsory licensing, Patent Cooperation Treaty, Patent search and patent database;Origin and history including a brief introduction to UPOV for protection of plant varieties; Protection of plant varieties under UPOV and PPV&FR Act of India; Plant breeders rights; Registration of plant varieties under PPV&FR Act 2001; breeders, researcher and farmers rights; Traditional knowledge-meaning and rights of TK holders;Convention on Biological Diversity; International treaty on plant genetic resources for food and agriculture (ITPGRFA). Indian Biological Diversity Act, 2002 and its salient features, access and benefit sharing.

Lecture outlines

Theory

1 Introduction and meaning of intellectual property.

2 Brief introduction to GATT, WTO, TRIPs and WIPO.

3 Treaties for IPR protection: Madrid protocol, Berne Convention, Budapest treaty, etc.

4-6 Types of Intellectual Property and legislations covering IPR in India: Patents and Copyrights, Trademark, Industrial design, Geographical indications, Integrated circuits, Trade secrets.

7 Patents Act 1970.

8 Patent system in India, patentability, process and product patent, filing of patent, patent specification, patent claims, Patent opposition and revocation, infringement, Compulsory licensing, Patent Cooperation Treaty, Patent search and patent database

9 Origin and history including a brief introduction to UPOV for protection of plant varieties.

10 Protection of plant varieties under UPOV and PPV&FR Act of India, Plant breeders rights.

11 Registration of plant varieties under PPV&FR Act, 2001.

12 Breeders, researcher and farmers rights.

13 Traditional knowledge-meaning and rights of TK holders.

14 Convention on Biological Diversity.

15 International treaty on plant genetic resources for food and agriculture (ITPGRFA).

16 Indian Biological Diversity Act, 2002 and its salient features, access and benefit sharing.

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THANJAVUR - 613 403. TAMIL NADU

18 PCA 301 PROTECTED CULTIVATION AND SECONDARY AGRICULTURE
2(1+1)

Course outlines

Theory

Greenhouse technology – Introduction - Types of greenhouses - Plant response to greenhouse environment - Planning and design of greenhouses - Design criteria of green house for cooling and heating purposes - Green house equipments - Materials of construction for traditional and low cost green houses - Irrigation systems used in greenhouses - Typical applications - Passive solar greenhouse - Hot air greenhouse heating systems - Greenhouse drying - Cost estimation and economic analysis.

Important engineering properties such as physical - Thermal and aerodynamic properties of cereals - Pulses and oilseeds - Their application in PHT equipment design and operation - Drying and dehydration - Moisture measurement – EMC - Drying theory - Various drying methods - Commercial grain dryer (deep bed dryer, flat bed dryer, tray dryer, fluidized bed dryer, re-circulatory dryer and solar dryer) - Material handling equipment - Screw conveyer and bucket elevator - Their principle - Working and Selection - Primary processing of cereals, pulses and oilseed, like cleaning, grading, packaging etc.

Practical

Study of different type of greenhouses based on shape - Determine the rate of air exchange in an active summer winter cooling system - Determination of drying rate of agricultural products inside greenhouse - Study of greenhouse equipment - Visit to various post harvest laboratories - Determination of moisture content of various grains by oven drying & infrared moisture methods - Determination of engineering properties (shape and size, bulk density and porosity of biomaterials) - Determination of moisture content of various grains by moisture meter - Exposure to primary processing equipment like dalmills, graders, cold storages etc. - Field visit to seed processing plant.

Lecture outlines

Theory

1. Introduction to green houses - History, definition, greenhouse effect, advantages of green houses.
2. Brief description of types of green houses - Greenhouses based on shape, utility, construction, covering materials and cost, shade nets.
3. Plant response to greenhouse environments - Light, temperature, relative humidity, ventilation and carbon dioxide and environmental requirement of agriculture and horticulture crops inside green houses.
4. Equipment required for controlling green house environment – Summer cooling and winter cooling, natural ventilation, forced ventilation and computers.
5. Planning of green house facility - Site selection and orientation, structural design and covering

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CERTIFICATE COURSE

SUPPLY CHAIN MANAGEMENT

UNIT I

The concept of Supply Chain Management - The Supply Chain Revolution - Extended organization - Integrative Management – Responsiveness – Financial Sophistication – Globalization - Digital Business Transformation.

UNIT II

Building Blocks of a Supply Chain Network – Performance Measures – Decisions in the Supply Chain World – Models for Supply Chain Decision-making – Economic Order Quantity Model – Reorder Point Model.

UNIT III

Supply Chain Process - Supply Chain Planning – Supply Chain Facilities Layout – Capacity Planning – Inventory Optimization – Dynamic Routing and Scheduling.

UNIT IV

E-procurement – E-Logistics – Internet Auctions – E-Markets - E commerce advantages and disadvantages for SCM – EDI – Exchanges, hubs and marketplaces – ERP

UNIT V

Evolution of world class supply chains - Global Supply Chain Integration- Supply Chain Security-International Sourcing.

SUGGESTED READINGS:

1. Supply Chain Logistics Management - Bowersox, Closs & Cooper – McGraw-Hill, 2nd Indian ed.
2. World Class Supply Management - Burt, Dobbler, Starling, TMGH, 7th ed.

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Academic year: 2018-2019

COURSE: DIPLOMA IN PERSONAL FINANCE

Subject Code: 18002MPFC

AIMS: To emphases better performance than the overall Personal finance

Objectives:

- To find direction and guidance in one's financial decisions;
- To understand how each financial decision affects other areas of finance; and
- To ensure the financial stability for adapting to life changes.

OUTCOMES:

- The benefits of personal finance include an ability to effectively budget for costs, higher savings rates for retirement, and
- making prudent investment choices that will help the individual reach his or her financial goals.

UNIT I: Introduction : Savings-Investment-Advantes for Investment-Selection of Investment-Mix for Portfolio of Such selected Advances- Criterion to be considered for Investment-Type of Securities- Income tax and personal finance of an individual

UNIT II: Investment in Government Securities-PPF-NSC-NSS-Infra Structural-Bonds Regulations-Governance

UNIT III: Investment in Post office and Bank Deposits-All Types of post office related Deposits and all types of Bank Deposits including Deposits in corporate sector-Regulation Governance

UNIT IV: Investment in Traditional Products-Gold-Real estate-Mutual fund-return-Risk associated regulation Criteria to be considered

UNIT V: Investment in Equity shares-Meaning Criteria-Risk & Return Associated- How to Select Share-Formation Portfolio

Reference Books:

1. Personal finance management-Malhotra, Anup-Global Vision publishing house, new Delhi-2009

2. Contemporary personal finance- Boone Louis & Kurtz David L., Ra New Delhiom house business division, New Delhi.

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COURSE: CERTIFICATES IN ENTREPRENEURSHIP & INNOVATION

Subject Code: 18802CEIC

AIMS: To emphasis better performance than the overall entrepreneurship & innovation.

Objectives:
To enable the students to understand the conceptual and applied knowledge about Entrepreneurship.

OUTCOMES:

- Business success is the outcome of an entrepreneur starting a business and seeing it through to profitability and sustainability
- The facets of entrepreneurship are the areas where large, medium-sized, small and startup businesses must function for the benefit of the industry as a whole

Unit – I

Entrepreneurship – Definition, Concept, Nature, Characteristics, functions, Types and phases of EDP, Development of women and rural entrepreneurs – Women Central Schemes

Unit – II

The startup process, Project identification – selection of the project – project formulation – feasibility analysis, Project Report

Unit – III

Institutions in the development of entrepreneurs – DIC, SIDO, SSIC, SISNI DI – SSB, MSEO – ITCOT, IIE – KVIC

Unit – IV

Institutional finance to entrepreneurs: IFCI, SFC, TIIC, LIC and GIC, SIPCOT – SIDBI Commercial banks - Venture capital

Unit – V

Incentives and subsidies – Subsidised services – seed capital assistance – Taxation benefits to SSI. Role of entrepreneur in export promotion and import substitution.

Text and Reference Books

1. Dynamics of Entrepreneurial Development by Vasant Desai – Himalaya Publishing House, New Delhi.
2. Entrepreneurship & Small Business Management by Dr C.B. Gupta and Dr S.S.Khanka Sultan Chand & Sons, New Delhi.
3. Fundamentals of Entrepreneurship and Small Business by Renu Arora & S.K.Sood Kalyani Publishers, Chennai.
4. Entrepreneurial Development by Dr.S.S. Khanka – S.Chand & Co, New Delhi
5. Entrepreneurial Development by Dr. P. Saravanavel, Ezontech Press, Trichy
6. Entrepreneurial Development by Dr.S.G. Bhandhak- Himalaya Publishing House, New

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COURSE: CERTIFICATES IN BUSINESS DATA ANALYTICS

Subject Code: 18002CBDA

AIMS: To employees better performance than the overall Business data analytics

OBJECTIVES:

- To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making
- To become familiar with the processes needed to develop, report, and analyze business data.
- To learn how to use and apply Excel and Excel add-ins to solve business problems

OUTCOMES:

- It allows you to look at problems and find a solution. Effectively analyzing your business data will allow you to find down any problems and give you the tools to set up beneficial solutions.
- Business outcomes are the results of the actions and decisions made by a business. The business outcomes can include a variety of different tangible results such as financial performance, customer satisfaction, and overall business growth.
- I. Overview of Business Analytics
- Introduction to Analytics
- *Davenport article - "Competing on Analytics"*
- *LaValle et al. article - "Analytics: The New Path to Value"*
- II. Visualization/ Data Issues
- Organization/sources of data
- Importance of data quality
- Dealing with missing or incomplete data
- Data Classification
- *Davenport and Harris article - "The Dark Side of Customer Analytics"*
- III. Introduction to Data Mining
- Introduction to Data Mining
- Data Mining Process
- Data mining tool XLMiner (Excel add-in – free 15 day trial available at www.solver.com/xlminer-data-mining)
- *Lyncons article - "Diamonds in the Data Mine"*

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Minutes of Board of Studies Meeting

The Board of Studies meeting for the Department of Microbiology is held on 30th April, 2018 at 10 a.m in, PRIST Deemed to be University, Thanjavur under the chairmanship of HOD.

1. Dr. DR. Bakrudeen Ali Ahamed /Professor& HOD, PRIST (Chairman , BOS)
2. Dr. K. Saravanan / Dean, PRIST (Member, BOS)
3. Dr. S. Ramesh, Professor, PRIST (Member, BOS)
4. Dr.S.Mohanraj /Associate Professor. (BOS, Member)
5. Dr. T. Usha devi/ 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. N. Geetha /Associate Professor, Botany and Microbiology Bharathiyaar University (External Member, BOS).
9. Mr. Salavadi Easwaran, Academic Director, BIOCON (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. Microbiology & M.Sc. Microbiology in detail and decided to make the necessary changes in upcoming B.Sc. Microbiology & M.Sc. Microbiology as mentioned below.

- ✔ Input of PSOs Pos, CO in the upcoming regulation.
- ✔ Requirement of advanced courses
- ✔ Entrepreneurship related courses
- ✔ New value added courses.

The Meeting concluded with thanks from the Board of Studies Chairman.

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Composition of Board of Studies 2018-2019					
S.No	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 N Geetha	M.Sc., M.Phil., PhD	Professor, Department of Botany, Bharathiar University, Tamil Nadu	geetha@buc.edu.in
3	External Expert-Industry	Mr. Salavadi Easwaran	M.Sc.,	Academic Director, BIOCON	se.easwaran@bioconacademy.com
4	Professor	Dr. S. Ramesh	M.Sc.,Ph.D.	Professor, PRIST Deemed to be University, Vallam, Thanjavur	rameshs@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, Thanjavur	ushadevi29@gmail.com
7	Assistant Professor	Dr.K. Sneha	M.Sc., Ph.D.	Assistant Professor, PRIST Deemed to be University, Vallam, Thanjavur	sneha@gmail.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 Fernando	M.Sc., M. ED M.Phil, Ph.D.	Assistant Professor, PRIST Deemed to be University, Vallam, Thanjavur	a.xavierfernando@prist.com
10	Special Invitee-Dean	Dr. K. Saraswathi	M.Sc., PhD	Dean, School of Arts and Science, PRIST Deemed to be University, Vallam, Thanjavur	deanarts@prist.ac.in
11	Special Invitee-Alumnae/Alumna	G.Tamilvani	M.Phil	Assistant Professor, Idhaya college for Women, Kumbakonam	tami89999@gmail.com
12	Special Invitee -Current student - UG or PG	R.Thangam	PG	Student	thangamraj@gmail.com

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Signature of the Chairman & Members

S.No	Designation	Name	Signature
1	Chairperson/HoD	Dr.A.Baksudeen Ali Ahamed	
2	External Expert-Academic	Dr N.Geetha	
3	External Expert-Industry	Mr. Salavadi Easwaran	
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. Sathya	
9	Assistant Professor	Dr.A.Xavier Fernandez	
10	Special Invitee-Dean	Dr. K. Saravanan	
11	Special Invitee-Alumnus/Alumna	G.Tamilvani	
12	Special Invitee - Current student - UG or PG	R.Thangam	

HOD
Head of the Department
Department of Microbiology
School of Arts S

Dean

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B. Sc., Microbiology Regulation- 2017
COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
17110AEC11/ 17111AEC11/ 17132AEC11/ 17135AEC11	Language-I (Tamil-I/ Advanced English-I/ Hindi-I/ French-I	4	0	0	2
17111AEC12	English-I	4	0	0	2
17116AEC13	Fundamentals of Microbiology	6	1	0	6
17116AEC14L	Fundamentals of Microbiology Lab	0	0	3	2
17115AEC15	Bio Chemistry I	5	0	0	5
17115AEC16L	Bio Chemistry I Lab	0	0	3	1
171 SEC01	Skill Based Elective-I	0	0	2	1
17111SEC01L	Communicative English Lab-I	0	0	1	1
17INDCONS	Indian Constitution	1	0	0	1
	Total	**20**	**1**	**9**	**23**
	SEMESTER II				
17110AEC21/ 17111AEC21/ 17132AEC21/ 17135AEC21	Language-II (Tamil-II/ Advanced English-II / Hindi-II/ French-II)	4	0	0	2
17111AEC22	English-II	4	0	0	2
17116AEC23	Microbial Physiology	6	1	0	6
17116AEC24L	Microbial Physiology Lab	0	0	3	2
17115AEC25	Bio Chemistry II	5	0	0	5
17115AEC26L	Bio Chemistry II Lab	0	0	3	2
17116RLC27	Research LED Seminar	-	-	-	1
171 SEC02	Skill Based Elective –II	0	0	2	1
17111SEC02L	Communicative English Lab-II	0	0	2	1
	Total	**19**	**1**	**10**	**23**
	SEMESTER III				
17110AEC31/ 17111AEC31/ 17132AEC31/ 17135AEC31	Language-III (Tamil-III/ Advanced English-III / Hindi-III/ French-III)	4	0	0	2
17111AEC32	English-III	4	0	0	2
17116AEC33	Soil and Agriculture Microbiology	5	0	0	5
17116AEC34L	Soil and Agriculture Microbiology Lab	0	0	3	3
17112AEC35	Biostatistics	4	0	0	4
17112AEC36L	Biostatistics Lab	0	0	3	3

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17116RMC37	Research Methodology	3	0	0	3
171__SEC03	Skill based Elective- III	0	0	2	1
17111SEC03L	Communicative English Lab-III	0	0	2	1
	Total	**20**	**0**	**10**	**24**
	SEMESTER IV				
17110AEC41/ 17111AEC41/ 17132AEC41/ 17135AEC41	Language-IV (Tamil-IV/ Advanced English-IV/ Hindi-IV/ French-IV)	4	0	0	2
17111AEC42	English-IV	4	0	0	2
17116AEC43	Virology	6	0	0	6
17116AEC44L	Soil Microbiology and Virology Lab	0	0	3	3
17116AEC45	Bioinformatics	6	0	0	6
17116AEC46L	Bioinformatics Lab	0	0	3	3
171__SEC04__	Skill based Elective- IV	0	0	2	1
17111SEC04L	Communicative English Lab-IV	0	0	1	1
171ENVTSTU	Environmental Studies	1	0	0	1
	Total	**21**	**0**	**9**	**25**
	SEMESTER V				
17116AEC51	Food and Dairy Microbiology	5	0	0	5
17116AEC52	Molecular Biology	5	0	0	5
17116AEC53	Environmental Microbiology	4	1	0	5
17116AEC54L	Food and Dairy Microbiology and Molecular Biology Lab	0	0	3	3
17116AEC55L	Environmental Microbiology Lab	0	0	3	3
17116DSC56	Discipline Specific Elective-I	5	0	0	4
17116RRC57	Participation in Bounded Research	-	-	-	2
171__SEC05	Skill based Elective- V	0	0	2	1
17111SEC05L	Communicative English Lab-V	0	0	2	1
	Total	**19**	**1**	**10**	**27**
	SEMESTER VI				
17116AEC61	Industrial Microbiology	4	0	0	3
17116SEC62	Clinical Microbiology	4	0	0	4
17116AEC63L	Industrial Microbiology Lab	5	0	0	3
17116SEC64L	Clinical Microbiology Lab	0	0	3	3
17116DSC65	Discipline Specific Elective - II	4	0	0	4
171--GEC	General Elective	4	0	0	3
17116PRW67	Project Work	-	-	-	4
171__SEC06	Skill Based Elective –VI	0	0	2	1
17111SEC06L	Communicative English Lab-VI	0	0	2	1
17116EXACT	Extension activities	-	-	-	1
	Total	**21**	**0**	**7**	**28**
	Total Credits for the Programme				**150**

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Discipline Specific Electives

Semester	Discipline Specific Elective Courses-3
V	a) 17116DSC56A - Immunotechnology b) 17116DSC56B - Biosinsculants c) 17116DSC56C - Intellectual Property Rights
	Discipline Specific Elective Courses-4
VI	a) 17116DSC65A - a Microbial Genetics b) 17116DSC65B - Bioethics c) 17116DSC65C - Bioremediation

General Electives

Semester	General Elective Courses
V	a) 17111GEC-Journalism b) 17112GEC-Development of Mathematical Skills c) 17113GEC-Instrumentation d) 17114GEC-Food and Adulteration e) 17120GEC-Web Technology f) 17122GEC-E-Commerce and its application g) 17161GEC-Indirect Taxes

Skill based Electives

Semester	Skill based Elective Courses
I	a) 17120SEC01AL-Package Lab – I b) 17160SEC01B-Soft skill – I
II	a) 17120SEC02AL-Package Lab – II b) 17160SEC02B-Soft skill – II
III	a) 17120SEC03AL-Package Lab –III b) 17160SEC03B-Soft skill – III
IV	a) 17120SEC04AL-Package Lab –IV b) 17160SEC04B- Soft skill – IV
V	a) 17120SEC05AL-Package Lab –V b) 17160SEC05B-Soft skill - V
VI	a) 17120SEC06AL-Package Lab –VI b) 17160SEC06B-Soft skill – VI

Credit Distribution

Sem	AEC	SEC	BSC	GEC	Research	Others	Ext Act	Total
I	20	2	-	-	-	1	-	23
II	20	2	-	-	1	-	-	23
III	19	2	-	-	3	-	-	24
IV	22	2	-	-	-	1	-	25
V	19	2	4	-	2	-	-	27
VI	08	9	4	2	4	-	1	28
Total	108	19	8	2	10	2	1	150

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COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
17216SEC11	Prokaryotic Microbiology	5	0	0	4
17216SEC12	Eukaryotic Microbiology	5	0	0	4
17216SEC13	Microbial Physiology	5	0	0	4
17216SEC14L	Fundamentals of Microbiology Lab	0	0	5	4
17216DSC15	Discipline Specific Elective	5	0	0	4
17216RLC16	Research Led Seminar	0	0	0	1
	Total	20	0	5	21
	SEMESTER II				
17216SEC21	Industrial Microbiology	5	0	0	4
17216SEC22	Environmental and Agricultural Microbiology	5	0	0	4
17216SEC23	Clinical Microbiology	5	0	0	4
17216SEC24L	Industrial, Clinical and Agricultural Microbiology Lab	0	0	5	4
17216DSC25	Discipline Specific Elective	4	0	0	4
17216RMC26	Research Methodology	3	0	0	3
17216IRC27	Participation in Rounded Research	0	0	0	2
	Total	22	0	5	25
	SEMESTER III				
17216SEC31	Microbial Genetics	5	0	0	4
17216SEC32	Molecular Biology and Microbial Biotechnology	5	0	0	4
17216SEC33	Biostatistics and Bioinformatics	5	0	0	4
17216SEC34L	Microbial Biotechnology Lab	4	0	5	4
17216DSC35_	Discipline Specific Elective	0	0	0	3
172_GEC	General Elective	3	0	0	3
17216SRC37	Participation in Scaffold Research (Design/Societal Project)	0	0	0	2
	Total	22	0	0	24
	SEMESTER IV				
17216PRW41	Project Work	0	0	30	20
	Total	0	0	30	20

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Discipline specific Electives

Semester	Discipline specific Elective Courses-I
I	a)17216DSC15A- Immunotechnology b)17216DSC15B- Bioremediation and Waste Management
	Discipline specific Elective Courses-II
II	a)17216DSC25A- Food and Diary Microbiology b)17216 DSC25B- Bioreactor
	Discipline specific Elective Courses-III
III	a)17216DSC35A- Pharmaceutical Microbiology b)17216DSC35B- Genetics and Genetic Engineering

General Electives

Semester	General Elective Courses
III	a) 17211GEC-Writing for the Media b) 17212GEC-Applicable Mathematics Techniques c) 17213GEC-Bio-medical Instrumentation d) 17214GEC-Green Chemistry e) 17320GEC-Internet and Web Design f) 17261GEC- Insurance Services g) 17280GEC-Counselling Psychology

Credit Distribution:

Sem	AEC	SEC	DSC	GEC	Research	Total
I	0	16	4	-	1	21
II	0	16	4	-	5	25
III	0	16	4	2	2	24
IV	-	-	-	-	20	20
Total	0	48	12	2	28	90

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M.PHIL MICROBIOLOGY SYLLABUS - REGULATION 2017
COURSE STRUCTURE

SEMESTER – I					
COURSE CODE	COURSE TITLE	L	T	P	C
173RMG11 (Common Paper)	Research Methodology	2	2	0	2
173MBC12	Advanced Microbiology	2	2	0	2
173MBE13_	A. Microbial Biotechnology and Medical Microbiology	2	2	0	2
	B .Bioprocess and Enzyme Engineering				
CPE_RPE (Common Paper)	Research and Publication Ethics	2	2	0	2
	Total	08	08	00	08
SEMESTER - II					
173MBC21	Project Work				02

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Syllabus

Certificate Course on Mushroom Technology

Course code: 18516MUT

Academic Year 2018-2019

Corse Structure and Duration

Course is 6 month duration and will be of 45 hrs imparted training programme covering theoretical and practical aspects of Mushroom Technology. This course consist of one theory examination and practical will be conducted.

Program Outcome

Students enrolled for the certificate course in Mushroom Technology will follow the opportunities

Students will demonstrate knowledge of scientific principles related to agriculture.

- Appreciate the importance of embarking on self-employment and has developed the confidence and personal skills for the same
- Indentify business opportunities in chosen sector / sub-sector and plan and market and sell products / services
- Start a small business enterprise by liaising with different stake holders
- Effectively manage small business enterprise
- Take up Mushroom Cultivation and run it profitably
- Selection of important types of Mushroom and their cultivation
- Maintain Mushroom farm in a hygienic and scientific way

Work out the economics of Mushroom Cultivation

PAPER- Mushroom Technology

Unit -I Introduction to Mushroom

Unit - II Mushroom cultivation methods

Unit -III Selection of cultivation

Unit -IV Bagging and Spawning

Unit - V Harvesting Mushroom

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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 30.04.2018 at 10 a.m. in, PRIST Deemed to be University, Thanjavur under the chairmanship of Dr. Baksudeen Ali Ahamed (Chairperson, BOS)

The following members were present:

1. Dr. Baksudeen Ali Ahamed, Professor (Chairperson, BOS)
2. Dr. K. Saravanan / 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. Shajahan, Assistant Professor (Member, BOS)
7. Dr. G. Venkatkumar, Assistant Professor (Member, BOS)
8. Dr. R. V. Shalini, Assistant Professor (Member, BOS)
9. Dr. N. Geetha, Professor, Department of Biotechnology, Bharathidasan University, Trichy (External Academic Expert, BOS)
10. Mr. Salavadi Easwaran, Director BIOCON (External Member, BOS)
11. Mr. S. Vijay, Special Invitee Alumna, Office, MNC, Chennai
12. Ms. M. Abinaya, B. Sc Biotechnology, PRIST Deemed to be University, Thanjavur

The Chairman of the Board of Studies for UG and PG in Biotechnology welcomed the members. Members analyzed the feedback from various stakeholders and the follow up actions taken. Feedback from alumni that self-learning can be given to students will be taken into consideration when the curriculum is due for change.

Head of the Department
Department of Biotechnology
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The chairman briefed about the programmes and the curriculum. The committee carefully reviewed the curriculum and suggested to make necessary changes in upcoming B. Sc and M. Sc Biotechnology as mentioned below.

- New value added and Certificate courses (Annexure I)

The committee prepared the list of examiners and submitted the above for the academic council.

The Meeting concluded with thanks from Board of Studies Chairman.

Signature of the Chairman & Members

1. Dr. Basheedeen Ali Ahamed	
2. Dr. K. Saravanan / Dean	
3. Dr. P. Manoramani	
4. Dr. Arjun Pandian	
5. Dr. C. Anusha	
6. Dr. A. Shajahan	
7. Dr.G. Venkatkumar	
8. Dr. R. V. Shalini	
9. Dr. N. Geetha	
10. Mr. Salavadi Easwaran	
11. Mr. S. Vijay	
12. Ms. M. Abinaya	

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Annexure I - Revised Value added courses

LIST OF NEW VALUE ADDED COURSES

1. Diploma course in Fermentation Technology
2. Certificate Course in Shrimp Culture
3. Certificate Course in Bioentrepreneurship

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B.Sc.BIOTECHNOLOGY

(For the candidates admitted from the academic year 2017-2018 onwards)

COURSE STRUCTURE

CourseCode	CourseTitle	L	T	P	C
	SEMESTER I				
17110AEC11/ 17111AEC11/ 17132AEC11/ 17135AEC11	Language-I(Tamil-I/ AdvancedEnglish-I/ Hindi-I/ French-I)	4	0	0	2
17111AEC12	English-I	4	0	0	2
17117AEC13	Fundamentals of Biological System	6	1	0	5
17117AEC14L	Fundamentals of Biological System Lab	0	0	3	3
17115AEC15	Biological Chemistry	5	0	0	5
17115AEC16L	Biological Chemistry Lab	0	0	3	3
17158EC01	SkillBasedElective-I	0	0	2	1
17111SEC01L	CommunicativeEnglishLab-I	0	0	1	1
17116UCONS	IndianConstitution	1	0	0	1
	Total	20	1	9	23
	SEMESTER II				
17110AEC21/ 17111AEC21/ 17132AEC21/ 17135AEC21	Language-II(Tamil-II/ AdvancedEnglish-II/ Hindi-II/ French-II)	4	0	0	2
17111AEC22	English-II	4	0	0	2
17117AEC23	Cell Biology and Genetics	6	1	0	6

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17117AEC24L	Cell Biology and Genetics Lab	0	0	3	2
17116AEC25	Microbiology	5	0	0	5
17116AEC26L	Microbiology Lab	0	0	3	3
17117RLC27	ResearchLEDSeminar	-	-	-	1
17ISEC02____	Skill BasedElective-II	0	0	2	1
17111SEC02L	CommunicativeEnglishLab-II	0	0	2	1
	Total	19	1	10	23
	SEMESTER III				
17110AEC31/ 17111AEC31/ 17132AEC31/ 17135AEC31	Language-III(Tamil-III/ AdvancedEnglish-III/ Hindi-III/ French-III)	4	0	0	2
17111AEC32	English-III	4	0	0	2
17117AEC33	Plant Physiology	5	0	0	5
17117AEC34L	Plant Physiology Lab	0	0	3	3
17117AEC35	Immunology	4	0	0	4
17117AEC36L	Immunology Lab	0	0	3	3
17117RMC37	ResearchMethodology	3	0	0	3
17ISEC03____	SkillbasedElective-III	0	0	2	1
17111SEC03L	CommunicativeEnglishLab-III	0	0	2	1
	Total	20	0	10	24
	SEMESTER IV				
17110AEC41/ 17111AEC41/ 17132AEC41/ 17135AEC41	Language-IV(Tamil-IV/ AdvancedEnglish-IV/ Hindi-IV/ French-IV)	4	0	0	2
17111AEC42	English-IV	4	0	0	2
17117AEC43	Animal Physiology	6	0	0	6
17117AEC44L	Animal Physiology Lab	0	0	3	3
17117AEC45	Bioinformatics and Biostatistics	6	0	0	6
17117AEC46L	Bioinformatics and Biostatistics Lab	0	0	3	3
17ISEC04____	SkillbasedElective-IV	0	0	2	1
17111SEC04L	CommunicativeEnglishLab-IV	0	0	1	1
17ENVTSTU	EnvironmentalStudies	1	0	0	1
	Total	21	0	9	25
	SEMESTER V				
17117AEC51	Development Biology	5	0	0	5
17117SEC52	Cell and Tissue Culture	5	0	0	5
17117AEC53	Enzyme and Enzyme Technology	4	1	0	5
17117AEC54L	Development Biology, Tissue Culture Lab	0	0	3	3
17117AEC55L	EnzymesandEnzyme TechnologyLab	0	0	3	3
17117DSC56__	DisciplineSpecificElective-I	5	0	0	4
17117BRC57	ParticipationinBoundedResearch	-	-	-	2

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171SEC05_____	SkillBasedElective-V	0	0	2	1
17111SEC05L	CommunicativeEnglishLab-V	0	0	2	1
	Total	**19**	**1**	**10**	**27**
	SEMESTERVI				
17117AEC61	Plant and animal Biotechnology	4	0	0	5
17117SEC62	Applied Biotechnology	4	0	0	4
17117SEC63L	Plant, Animal and Applied Biotechnology Lab	5	0	0	3
17117AEC64L	Environmental Biotechnology Lab	0	0	3	3
17117DSC65_	DisciplineSpecificElective-II	4	0	0	4
171GEC_	GeneralElective	4	0	0	2
17117PRW67	Project Work	-	-	-	4
171SEC06_____	SkillBasedElective-VI	0	0	2	1
17111SEC06L	CommunicativeEnglishLab-VI	0	0	2	1
17117EXACT	ExtensionActivities	-	-	-	1
	Total	**21**	**0**	**7**	**28**
	TotalCreditsfortheProgramme				**150**

DisciplineSpecificElectives

Semester	DisciplineSpecificElectiveCourses-I
V	a) 17117DSC56A-rDNATechnology b) 17117DSC56B-MolecularBiology
	DisciplineSpecificElectiveCourses-II
VI	a)17117DSC65A-Environmental Biotechnology b)17117DSC65B-EnvironmentalManagement

GeneralElectives

Semester	GeneralElectiveCourses
V	a) 17113GEC-Journalism b) 17112GEC-DevelopmentofMathematicalSkills c) 17113GEC-Instrumentation d) 17114GEC-FoodandAdulteration e) 17120GEC-WebTechnology f) 17122GEC-E-Commerceandtsapplication g) 17161GEC-IndirectTaxes

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SkillbasedElectives

Semester	SkillbasedElectiveCourses
I	a) 17120SEC01AL-PackageLab-I b) 17160SEC01B-Soft skill-I
II	a) 17120SEC02AL-PackageLab-II b) 17160SEC02B-SoftskiIl-II
III	a) 17120SEC03AL-PackageLab –III b) 17160SEC03B-SoftskiIl-III
IV	a) 17120SEC04AL-PackageLab –IV b) 17160SEC04B- SoftskiIl-IV
V	a) 17120SEC05AL-PackageLab-V b) 17160SEC05B-Soft skill-V
VI	a) 17120SEC06AL-PackageLab-VI b) 17160SEC06B-SoftskiIl-VI

17117 EXACT EXTENSION
ACTIVITIESFLEXIBILITYINFUSEDCRED
ITSYSTEM

CreditDistribution

Sem	AEC	SEC	DSC	GEC	Research	Others	Ext Act	Total
I	20	2	-	-	-	1	-	23
II	20	2	-	-	1	-	-	23
III	19	2	-	-	3	-	-	24
IV	22	2	-	-	-	1	-	25
V	14	7	4	-	2	-	-	27
VI	08	9	4	2	4	-	1	27
Total	103	24	8	2	10	2	1	150

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M.Sc., BIOTECHNOLOGY
-SYLLABUS-REGULATION2017
COURSESTRUCTURE

Course Code	CourseTitle	L	T	P	C
	SEMESTERI				
[illegible]	General Microbiology	[illegible]			
[illegible]	Molecular Genetics				
[illegible]	Biochemistry	5	0	0	4
17212SEC14L	Microbiology & Molecular Genetics – Lab	0	0	5	3
17217DSC15_	Disciplinespecificelective	5	0	0	4
17217RLS16	ResearchLed Seminar	0	0	0	1
	Total	20	0	5	21
	SEMESTERII				
17217SEC21	Cell&MolecularBiology	5	0	0	4
17217SEC22	Biophysics&Bioinformatics	5	0	0	4
17217SEC23	IndustrialBiotechnology	4	0	0	4
[illegible]	Molecular Biology & Biochemistry Lab	0	0	5	3
17217DSC25	Disciplinespecificelective	5	0	0	4
[illegible]	Research Methodology	1	0	0	1
[illegible]	Participation in Scaffold Research	0	0	0	2
	Total	25	0	5	25
	SEMESTERIII				
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]			
17217SEC34L	DNA Technology &AnimalBiotechnology-Lab	4	0	5	6
17217DSC35_	Disciplinespecificelective	5	0	0	4
172_0EC	GeneralElective	4	0	0	2
17217SRC37	Participationinscaffold Research (Design/SocietalProject)	*	*	*	3

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	Total	28	0	5	24
	SEMESTERIV				
17217PRW44	ProjectWork	0	0	30	20
	Total	0	0	30	20
	TotalCreditsfortheProgramme				90

DisciplinespecificElectives

Semester	DisciplinespecificElectiveCourses-I
I	a) 17217DSC15A-Immunology b) 17217DSC15B-Biosafetyandbiodiversity
	DisciplinespecificElectiveCourses-II
II	a) 17217DSC25A-Endocrinology b) 17217DSC25B-BioethicsandIPR
	DisciplinespecificElectiveCourses-III
III	a) 17217DSC35A-Nanobiotechnology b) 17217 DSC35B-Environmentalbiotechnology

GeneralElectives

Semester	GeneralElectiveCourses
III	a) 17211GEC-Writingforthemedia b) 17213GEC-ApplicableMathematicsTechniques c) 17215GEC-Bio-medicalInstrumentation d) 17214GEC-GreenChemistry e) 17220GEC-InternetandWebDesign f) 17261GEC-InsuranceServices g) 17280GEC-CounsellingPsychology

Credit Distribution:

S.No	Sem	AEC	SEC	DSC	GEC	Research	Total
1.	I	-	16	4	-	1	22
2.	II	-	16	4	-	5	25
3.	III	-	16	4	2	2	24
4.	IV	-	-	-	-	20	20
Total		0	48	12	2	28	90

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DEPARTMENT OF BIOTECHNOLOGY

DIPLOMA COURSE SYLLABUS

ACADEMIC YEAR 2018-2019

FERMENTATION TECHNOLOGY

Subject code: 18517FMT

Course outcome

Students enrolled for the certificate course is Fermentation Technology will follow the opportunities. Students will demonstrate knowledge of scientific principles related to agriculture.

+ Appreciate the importance of embarking on self- employment and has developed the confidence and personal skills for the same

+ Identify business opportunities in chosen sector/sub-sector and plan and market and sell products/services.

UNIT I: Major types of organisms used in fermentation. Microbial growth kinetics, Batch culture, Continuous Culture, Fed – Batch – Types, applications, fermentation kinetics.

UNIT II: Isolation, preservation and improvement of industrially important microorganisms, media for industrial fermentations – media formulation, Development of inoculum for industrial fermentations.

UNIT III: Fermentor design and types-basic functions of a Fermentor for microbial and animal cell culture – alternative vessel design, common measurements and control systems, Sensors – solutions to common problems in fermentation, anaerobic fermentation.

UNIT IV: Control of fermentation – requirements for control, design of a fermentation control systems, sensors and controllers, control of incubation, # aeration and agitation.

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UNIT V: Computers in fermentation, modeling, software sensors, control and supervision of fermentation processes.

Books:

1. Arnold L. Demain & Julian E. Davis. Industrial Microbiology & Biotechnology, ASM Press. (2004).

2. Coulson, J.M. and J.F. Richardson: 6th Edition, Chemical Engineering Elsevier.

References:

1. Emt,el-Mansi & CFA, Bryce Fermentation Microbiology & Biotechnology, Taylor & Francis Ltd. (2004). 2. Stanbury, P.F., A. Whitaker & S.J. Hall, Principles of fermentation technology Oxford Press (1997).

HOD

Head of the Department
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DEPARTMENT OF BIOTECHNOLOGY

CERTIFICATE COURSE SYLLABUS

ACADEMIC YEAR 2018-2019

SHRIMP CULTURE

Subject code: 18S175C

Course Outcomes:

At the end of the course, students will be able to:
1. Define, compechend, scope and significance of aquaculture
2. Acquire knowledge on taxonomy and morphology of fishes
3. Examine the types and practices of Aquaculture
4. Describe the food, feeding, growth, digestion and respiration in fishes
5. Estimate and evaluate the functions of reproduction and endocrine glands

UNIT-I

History, definition, scope and significance of aquaculture, Concept of blue revolution. Aquaculture - Global and indian Scenario. Important site selection for pond, pen and cage culture. Criteria for species selection.

UNIT - II.
General characters and Classification of shrimp. Morphology and taxonomy of major shrimp groups.

UNIT -III.

Inland, brackish water and mariculture. Types of ponds- nursery, rearing and stocking. Cultivable freshwater shrimp- Carps, bio flock farming of finfish and shellfish.

UNIT -IV.
Food, Feeding, Growth, Digestion and Respiration.. Classification based on Food and feeding habits. Digestive system. Types of gills, Structure of gill, mechanism of gill respiration.

UNIT -V.

Reproduction and Endocrine glands. reproduction – ovary and testes. structure, development of primary and secondary sexual. Endocrine organs in shrimp - Pituitary gland, thyroid gland,

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adrenal gland.

Reference

1. Jingaran, V.G.1991. Fish and Fisheries of India. Hindustan Publ.Corporation (India). Book for References:
2. Pillay, T.V.R., 1990. Aquaculture. Principles and practices. Fishing News books Ltd. Mpeda publication. Santhanam, et.al. A Manual of Freshwater Aquaculture. Sustainable Aquaculture- Bardach.
3. Aquaculture- The farming and husbandary of freshwater & Marine organisms-John E.Bardach John H. Ryther, William O. McLarney.

HOD

DEAN

Head of the Department
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CERTIFICATE COURSE SYLLABUS

ACADEMIC YEAR 2018-2019

BIOENTREPRENEURSHIP

Subject code: 18S17BEP

COURSE OUTCOME

1. Demonstrate a fundamental comprehension of business opportunity evaluation, from the perspective of a prospective investor.
2. Identify the most recognized sources of potential funding and financing for business start-ups and/or expansion.
3. Assess their own personal work product(s) - and critique those of their colleagues - with regard to thoroughness, creativity and how those could apply to their own real life, future business ventures.
4. Work out the economics of Mushroom.
5. Effectively manage small business enterprise.

Unit I

Apiculture: Introduction to Beekeeping, Different species of honey bees. Morphology, anatomy, colony organization and life cycle, Beekeeping equipment, Social behaviour, Hive products and economics of Beekeeping.

Unit II

Horticulture : Scope and importance , propagation methods- cutting, layering and grafting techniques, gardening and landscaping, irrigation methods, manures, lawns, indoor plants, bonsai techniques.

Unit III

Sericulture : Introduction- History and present status, silk route, Employment potential in mulberry and non-mulberry sericulture. Types of silkworms, distribution of races – exotic and indigenous races. Sericulture organizations in India. Silk industry- commercial classification of silk and silk thread wastes and their marketing.

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Unit IV

Cultivation of mushroom: Mushroom cultivation strategies -Setting up small scale industry from (SIPOT, SIDCO, DIC,TIDAL Park and TICAL park) - Funding Agencies- (Bank loan & marketing network) .Research opportunities - Special Training for developing small scale industry -Value added products - foreign exchange- IPR- (Patenting and IPR, Trade secrets , Copy rights.

Unit V

Biofertilizer - Anabaena complex – Algal inoculants - methods off production (Trough method , pit met Mass Cultivation of Cyanobacteria (Anabaena, Cylindrospermum)- Mass cultivation

REFERENCE

1. Charantimath, P M Entrepreneurship development and small business management, person Education.

2. Gupta CB, Srinivasan NP, Entrepreneurship Development in India, Text & cases sultan chand & sons, New Delhi.

3. Desai vasant, Fundamentals of Entrepreneurship and small Business management, Himalaya publishig House.

HOD

DEAN

Head of the Department
Department of Biotechnology
School of Arts & Science
Prist Deemed to be University,Thanjavur.

Dean of Arts & Science
PRIST Deemed to be University
Thanjavur - 613 403, Tamilnadu.

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BOARD OF STUDIES (BOS) MEETING CIRCULAR

Date: 23-04-2018

There will be a Department Board of studies Meeting on 30-04-2018 at 10 am in the staffroom. All the staff members are requested to attend the meeting.

Agenda:

Curriculum

Feedback

Academic Calendar

Department Activity

Workload

Time table

Others

Chairman of the Board of Studies

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Attendance of the BOS & Staff members

The following members were present:

S.N.O	NAME		SIGNATURE
1	Dr.K.Shibila	HOD, Department of English , PRIST A&S , Vallam.	
2	Dr. Joesh Durairaj	Member External Prof.& Head , Ghandhigram Rural Institute Deemed to be University Dindugal	
3	Dr. Vinod	Member External Prof.& Head School of English and foreign languages Bharathidasan University, Thiruchirapalli.	
4	Dr. K.Saravanan	DEAN, PRIST Deemed to be University A& S , Vallam.	
5	Dr. R.A. Rajasekaran	Professor - PRIST Deemed to be University A& S , Vallam	
	Dr.Prema		
6	Dr. N. Meenurajathi	Professor - PRIST Deemed to be University A& S , Vallam	
7	Dr.D. Ravikumar	Associate Professor-PRIST Deemed to be University A& S , Vallam	
8	R.Vishalakshi	Assistant Professor Deemed to be University A& S , Vallam	
9	Ilamulakshmi Paladugu	Assistant Professor Deemed to be University A& S , Vallam	
10	R.Akila - Alumni	Teacher in Vidya Vikas Matriculation , Kantharvakottai	
11	V.Esha – III B.A	STUDENT	

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MINUTES OF THE MEETING

The meeting of the board of studies for UG and PG in English was held on 30.04.2018at 10.am in the staff room under the Chairmanship of Dr.Shibila, Head of the Department of English. The Board of studies Chairperson Dr.K.Shibila welcomed the members and briefed about the curriculum. The committee scrutinized the curriculum in detail. The board unanonymously decided not makes any changes in it. We follow the 17th regulation yet no change in it. By developing the skills of students and encouraging & train those in to positive job skill oriented people we introduced some value added courses in the curriculum.

Diploma course on Public Speaking and Journalism

Diploma course on Journalism

Certificate course on Spoken English

Diploma course on Radio Jockey

Diploma course on Presentation Skill

Certificate course on Professional Communication

The committee resolved to recommend some suggestions:

- Spoken English as UG-Certificate course and public speaking as diploma course can be introduced as add-on courses.
- The inter-disciplinary courses can be Journalism, Writing for the Media as open elective
- Self-study topics, term paper and the concept of ability enhancement courses, skill enhancement courses, and discipline specific can be introduced.

The meeting concluded with the vote of thanks from the Chairman of Board of Studies

Chairman of the Board of Studies

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DEPARTMENOFENGLISH
2017- 2018

BAENGLISHLITERATURE-REGULATION2017

COURSESTRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTERI				
17110AEC11/ 17111AEC11/ 17132AEC11/ 17135AEC11	Language-I(Tamil-I/ Advanced English-I/ Hindi-I/ French-I)	4	0	0	2
17111AEC12	English-I	4	0	0	4
17111AEC13	Literaturein1400-1600 Period	4	0	0	4
17111AEC14	Literature in Elizabethan Period	4	0	0	4
17111AEC15	Social History of England-I	5	0	0	4
17111AEC16	History of English Literature-I	5	0	0	4
171SEC01	Skill Based Elective-I	0	0	2	1
17111SEC01L	Communicative English Lab -I	0	0	1	1
171INDCONS	Indian Constitution	1	0	0	1
	Total	27	0	3	23
	SEMESTERII				
17110AEC21/ 17111AEC21/ 17132AEC21/ 17135AEC21	Language-II(Tamil-II/ Advanced English-II/ Hindi-II/ French-II)	4	0	0	2
17111AEC22	English-II	4	0	0	2
17111AEC23	Literature in Jacobean Period	4	0	0	4
17111AEC24	Literature in Restoration Period	4	0	0	4
17111AEC25	Social History of England-II	5	0	0	4
17111AEC26	History of English Literature-II	5	0	0	4
17113RLC27	Research Led Seminar	-	-	-	1
171SEC02	Skill Based Elective-II	0	0	2	1
17111SEC02L	Communicative English Lab -II	0	0	2	1
	Total	26	0	4	23
	SEMESTERIII				
17110AEC31/ 17111AEC31/	Language-III(Tamil-III/ Advanced English-III/	4	0	0	2

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17132AEC31/ 17135AEC31	Hindi-III/ French-III)				
17111AEC32	English-III	4	0	0	2
17111AEC33	Literature in Augustan Period	4	0	0	4
17111AEC34	Literature in Romantic Period	4	0	0	4
17111SEC35	Literary Forms and Prosody	4	0	0	5
17111AEC36	Shakespeare	3	0	0	3
17111RMC37	Research Methodology	3	0	0	3
171SEC03	Skill based Elective-III	0	0	2	1
17111SEC03L	Communicative English Lab-III	0	0	2	1
	Total	26	0	4	25
	SEMESTER IV				
17110AEC41/	Language-IV(Tamil-IV/	4	0	0	2
17111AEC41/	Advanced English-IV/				
17132AEC41/	Hindi-IV/				
17135AEC41	French-IV)				
17111AEC42	English-IV	4	0	0	2
17111SEC43	Language and Linguistics	4	1	0	5
17111AEC44	Literature in Victorian Period	4	0	0	4
17111AEC45	Literary Criticism	5	0	0	5
17111AEC46	Indian and European Classics in Translation	4	0	0	4
171SEC04	Skill based Elective-IV	0	0	2	1
17111SEC04L	Communicative English Lab-IV	0	0	1	1
17IENVISTU	Environmental Studies	1	0	0	1
	Total	26	1	3	25
	SEMESTERV				
17111AEC51	Literature in Modern Period-I	5	0	0	4
17111AEC52	American Literature	5	0	0	5
17111AEC53	Indian Writing in English	5	0	0	5
17111SEC54	Translation	5	1	0	5
17111DSC55	Discipline Specific Elective -I	5	0	0	4
17111BRC56	Participation in Bounded research	-	-	-	2
171SEC05	Skill based Elective-V	0	0	2	1
17111SEC05L	Communicative English Lab-V	0	0	2	1
	Total	25	1	4	27
	SEMESTERVI				
17111AEC61	Literature in Modern Period-II	5	0	0	4
17111SEC62	English Language Teaching	5	1	0	5
17111AEC63	Common wealth Literature	5	0	0	5
17111DSC64	Discipline Specific Elective –II	5	0	0	4
171GEC	General Elective	4	0	0	2
17111PRW66	Project Work	-	-	-	4
171SEC06	Skill based Elective-VI	0	0	2	1
17111SEC06L	Communicative English Lab-VI	0	0	2	1
17111EXACT	Extension Activities	-	-	-	1

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	Total	24	1	4	27
	Total Credits for the Programme				150

Discipline Specific Electives

Semester	Discipline Specific Elective Courses
V	a) 17111DSC55A-SingleAuthorStudy-Tagore b) 17111DSC55B-SingleAuthorStudy-OliverGoldsmith
VI	a) 17111DSC64A-Studyofagenre-Poetry b) 17111DSC64B-Studyofagenre-Novel

Open Electives

Semester	Open Elective Courses
V	a) 17112GEC-DevelopmentofMathematicalSkills b) 17113GEC-Instrumentation c) 17114GEC-FoodandAdulteration d) 17117GEC-MushroomTechnology e) 17120GEC-WebTechnology f) 17122GEC-E-Commerceanditsapplication g) 17161GEC-IndirectTaxes

Skill based Electives

Semester	Skill based Elective Courses
I	a) 17120SEC01AL-PackageLab-I b) 17160SEC01B-Softskill-I
II	a) 17120SEC02AL-PackageLab- II b) 17160SEC02B-Softskill- II
III	a) 17120SEC03AL-PackageLab-III b) 17160SEC03B-Softskill- III
IV	a) 17120SEC04AL-PackageLab-IV b) 17160SEC04B- Softskill- IV
V	a) 17120SEC05AL-PackageLab-V b) 17160SEC03B-Softskill- V
VI	a) 17120SEC06AL-PackageLab-VI b) 17160SEC06B-Softskill-VI

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Thanjavur,Tamilnadu,India.

M.A ENGLISH LITERATURE -SYLLABUS – REGULATION 2017

COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
17211AEC11	History of English Language and Structure	6	0	0	4
17211AEC12	Shakespeare	5	0	0	4
17211AEC13	British Literature	5	0	0	4
17211AEC14	Indian Writing in English	5	0	0	4
17211DSC15_	Discipline Specific Elective – I	5	0	0	4
17211RLC16	Research Led Seminar	-	-	-	1
	Total	26	0	0	21
	SEMESTER II				
17211AEC21	Women's writing in English	5	0	0	4
17211AEC22	Post-Colonial literature	6	0	0	4
17211AEC23	Comparative Literature & World Classics in Translation	6	0	0	4
17211DSC24_	Discipline Specific Elective – II	5	0	0	4
17211RMC25	Research Methodology	3	0	0	3

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17211BRC26	Participation in Bounded Research	-	-	-	2
	Total	**25**	**0**	**0**	**21**
	SEMESTER III				
17211SEC31	Critical Approaches to English Literature	5	0	0	5
17211AEC32	American Literature	5	0	0	5
17211AEC33	Literary Criticism	6	0	0	5
17211DSC34_	Discipline Specific Elective – III	5	0	0	4
172__GEC	General Elective	4	0	0	2
17211SRC36	Participation in Scaffold Research (Societal Project)	-	-	-	2
	Total	**25**	**0**	**0**	**23**
	SEMESTER IV				
17211SEC41	Translation	5	1	0	5
17211SEC42	English Language Teaching	4	1	1	5
17211AEC43	English Literature for Competitive Examination	6	0	0	5
17211DSC44_	Discipline Specific Elective – IV	5	0	0	4
17211PRW45	Project Work	0	0	0	6
	Total	**20**	**2**	**1**	**25**
	Total Credits for the Programme				**90**

Discipline Specific Electives

Semester	Discipline specific Elective Courses

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I	a)17211DSC15A-Romantic Movement b)17211DSC15B- Literary Movement
II	a)17211 DSC24A- Canadian Literature b)17211 DSC24B- Diaspora literature
III	a)17211 DSC34A- African Literature b)17211 DSC34B- Popular Literature
IV	a)17211 DSC44A- Australian Literature b)17211 DSC44B- Indian Fiction in Translation

General Electives

Semester	General Elective Courses
III	a) 17212GEC-Applicable Mathematics Techniques b) 17213GEC-Bio-medical Instrumentation c) 17214GEC-Green Chemistry d) 17215GEC-Bio-analytical Techniques e) 17220GEC-Internet and Web Design f) 17261GEC- Insurance Services g) 17280GEC-Counselling Psychology

Value added Courses

Certificate course on Spoken English
Diploma course on Public Speaking and Journalism

SPOKEN ENGLISH

Objectives: To speak fluently

To gain confidence to communicate
Course Content:

UNIT I: Phonetics

UNIT II: LSRW TRAINING

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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'sspeech, American Taxation- Edmond Burke, The rise and fall of the Roman Empire- Gibbon

DIPLOMA IN JOURNALISM

Objectives: To become a journalist
Course Content:

UNIT I: Journalism, Ethics, Press, News

UNIT II: Quality of reporters, kinds of reporting

UNIT III: Editing, News Editor, Subeditor

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UNIT IV: Features & its role

UNIT V: Language of journalism

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UNIT IV: Features & its role

UNIT V: Language of journalism

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DEPARTMENT OF ENGLISH

M.Phil ENGLISH LITERATURE-2017 REVISED COURSE STRUCTURE

Course Code	Course Title	C	Marks
	Semester I		
173ENC11	Research Methodology and Theory of Literature	5	100
173ENC12	Literary Theory	5	100
173ENC13-	Elective	5	100
	Total	15	300
	Semester II		
173END21	Dissertation	15	100
	Total	15	100
	Total	30	400

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Date: 02.05.2018

DEPARTMENT OF MATHEMATICS

BOARD OF STUDIES MEETING CIRCULAR

There will be board of Studies meeting on 09.05.2018 at 11:00 a.m. All the staff members are requested to attend the meeting.

Agenda

1. Curriculum

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DEPARTMENT OF MATHEMATICS
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Date: 09.05.2018

School of Arts and Science
Department of Mathematics

Minutes of Board of Studies Meeting

The Board of Studies meeting for the department of Mathematics is held on 09.05.2018at 11:00 a.m. in the department of Mathematics, PRIST Deemed to be University, Thanjavur under the chairmanship of Dr.S.Subramanian, Prof & HOD (Chairman , BOS))

The following members were present:

1. Dr.S.Subramanian /Prof & HOD (Chairman , BOS)
2. Dr.K.Saravanan /Dean (EX-Officio,BOS)
3. Dr.S.Udayakumar, Professor of Mathematics, (Member, BOS)
4. Dr.R.Balakumar, Associate Professor of Mathematics, (Member, BOS)
5. Dr.K.Selvaraj, Assistant Professor of Mathematics, (Member, BOS)
6. Dr.R.Abirami, Assistant Professor of Mathematics, (Member, BOS)
7. Dr.S.Ramasubramanian / Prof (External Member, BOS)
8. Dr.B.Chellappa / Prof (External Member, BOS)

The Chairman (BOS) Mathematics welcomed the members and briefed them about the programmes offered by the department and the existing syllabi for the programmes offered and they suggested some modifications from earlier BOS-2017 report. According that, some value added courses, like Statistical methods and Maple in Diploma course and add some certificate courses like Business Mathematics, R-programing Mathematica are newly introduced. Additionally they suggested to introduce some new courses like Research LED Seminar, Research methodology, Sequences and Series, Participation in Bounded Research, Participation

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[redacted] After careful scrutiny of the existing syllabi, the Board has unanimously decided to continue the same existing syllabi for B.Sc., and M.Sc.,programming with effect from 2018-2019. Also the Board has decided to continue the existing syllabi for M.Phil Programme for 2018-2019.

The Board has updated the panel of examiners for B.Sc and M.Sc programmes and has recommended the same to academic council for its approved.

Finally the chairman of the Board of Studies thanked the members of the Board for their valuable suggestions.

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BOS-2018

REVIEW OF CURRICULUM & SYLLABUS in B.Sc.

REGULATION 2017

The following changes have been made in upcoming with respect to existing curriculum.

Inclusion of new Courses

1. Research led seminar
2. Research methodology.
3. Sequence and series
4. Participation in Bounded Research
5. Discrete Mathematics

Change of course content for the following Courses in B.Sc. Mathematics

Course content for the following subjects can be modified / upgraded (Newly Introduced)

1	English – I	IV & V Units Newly introduced
2	Differential Calculus and Vector Differentiation	IV & V Units Newly introduced
3	Trigonometry, Analytical Geometry 3D and Calculus	IV & V Units Newly introduced
4	Programming in C	IV & V Units Newly introduced
5	Indian Constitution	IV & V Units Newly introduced
6	English – II	IV & V Units Newly introduced
7	Differential Equations	IV & V Units Newly introduced
8	Vector Integration and Classical Algebra	IV & V Units Newly introduced
9	Web Programming	IV & V Units Newly introduced
10	English – III	IV & V Units Newly introduced
11	Number Theory	IV & V Units Newly introduced
12	Numerical Analysis	IV & V Units Newly introduced
13	Mathematical Statistics I	IV & V Units Newly introduced
14	Mathematical Statistics II	IV & V Units Newly introduced
15	Research Methodology	IV & V Units Newly introduced
16	English-IV	IV & V Units Newly introduced
17	Sequence and Series	IV & V Units Newly introduced
18	Operations Research	IV & V Units Newly introduced
19	Astronomy	IV & V Units Newly introduced
20	Mathematical Statistics III	IV & V Units Newly introduced
21	Mathematical Statistics	IV & V Units Newly introduced
22	Modern Algebra	IV & V Units Newly introduced
23	Real Analysis	IV & V Units Newly introduced
24	Statics	IV & V Units Newly introduced
25	Programming in C++	IV & V Units Newly introduced
26	Discipline Specific Elective -I	IV & V Units Newly introduced
27	Complex Analysis	IV & V Units Newly introduced
28	Dynamics	IV & V Units Newly introduced
29	Discrete Mathematics	IV & V Units Newly introduced
30	Discipline Specific Elective - II	IV & V Units Newly introduced

Introduction of employability , entrepreneur (Assured Course)

1. Sequence and series
2. Discrete Mathematics

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REVIEW OF CURRICULUM & SYLLABUS in M.Sc Mathematics

The following changes have been made in upcoming with respect to existing curriculum.

Inclusion of new Courses

1. Research led seminar
2. Research methodology.
3. Participation in Scaffold Research

Change of course content for the following Courses in M.Sc Mathematics

Course content for the following subjects can be modified / upgraded (Newly Introduced)

1	Algebra	– IV & V Units Newly introduced
2	Real Analysis	– IV & V Units Newly introduced
3	Ordinary Differential Equations	– IV & V Units Newly introduced
4	Discipline Specific Elective- I	– IV & V Units Newly introduced
5	Complex Analysis	– IV & V Units Newly introduced
6	Measure Theory and Integration	– IV & V Units Newly introduced
7	Mathematical Methods	– IV & V Units Newly introduced
8	Differential Geometry	– IV & V Units Newly introduced
9	Discipline Specific Elective- II	– IV & V Units Newly introduced
10	Topology	– IV & V Units Newly introduced

Introduction of employability , entrepreneur (Assured Course)

1. Number Theory
2. Advance Numerical Analysis

REVIEW OF CURRICULUM & SYLLABUS in M.Phil Mathematics

The following changes have been made in upcoming with respect to existing curriculum.

Change of course content for the following Courses in M.Phil Mathematics

Course content for the following subjects can be modified / upgraded (Newly Introduced)

1	Algebra and Analysis	– IV & V Units Newly introduced
2	Advanced Numerical Analysis	– IV & V Units Newly introduced

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

Annexure I	-	Revised Curriculum structure and Syllabus of UG.(FT/PT)
Annexure II	-	Revised Curriculum structure and Syllabus of PG.(FT/PT)
Annexure III	-	List of Examiners.

Note: Annexure I , II & III are Signed by Chairman of BOS

The Meeting concluded with thanks from Board of Studies Chairman.

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Signature of the Chairman & Members

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Annexure I

PRIST UNIVERSITY

Declared Under Section 3 of UGC Act, 1956

Thanjavur, Tamilnadu, India.

(For the candidates admitted from the academic year 2017onwards)

B.Sc., MATHEMATICS – Regulation 2017

COURSE STRUCTURE

SEMESTER – I					
COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC11/ 17111AEC11/ 17132AEC11/ 17135AEC11	Tamil – I / Advanced English – I / Hindi – I/ French- I	4	0	0	2
17111AEC12	English – I	4	0	0	2
17112AEC13	Differential Calculus and Vector Differentiation	4	1	0	4
17112AEC14	Trigonometry, Analytical Geometry 3D and Calculus	4	0	0	4
17120AEC15	Programming in C	6	0	0	6
17120AEC16L	Programming in C Lab	0	0	3	2
171_ _SEC01_	Skill Based Elective – I	0	0	2	1
17111SEC01L	Communicative English Lab – I	0	0	1	1
171INDCONS	Indian Constitution	1	0	0	1
	Total	23	1	6	23

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SEMESTER – II

COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC21/ 17111AEC21/ 17132AEC21/ 17135AEC21	Tamil – II / Advanced English – II /Hindi – II/ French- II	4	0	0	2
17111AEC22	English – II	4	0	0	2
17112AEC23	Differential Equations	4	1	0	4
17112AEC24	Vector integration and Classical Algebra	4	0	0	4
17120AEC25	Web Programming	6	0	0	6
17120AEC26L	Web Designing Lab	0	0	3	2
17112RLC27	Research LED Seminar	-	-	-	1
171__SEC02_	Skill Based Elective - II	0	0	2	1
17111SEC02L	Communicative English Lab-II	0	0	2	1
	Total	22	1	7	23

SEMESTER – III

COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC31/ 17111AEC31/ 17132AEC31/ 17135AEC31	Tamil –III /Advanced English – III/ Hindi-III/ French- III	4	0	0	2
17111AEC32	English – III	4	0	0	2
17112AEC33	Number Theory	5	0	0	5
17112AEC34	Numerical Analysis	4	0	0	4

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17118AEC35	Mathematical Statistics I	3	0	0	3
17118AEC36	Mathematical Statistics II	3	0	0	3
17112RMC37	Research Methodology	3	0	0	3
171__SEC03_	Skill Based Elective – III	0	0	2	1
17111SEC03L	Communicative English Lab- III	0	0	2	1
	Total	26	0	4	24

SEMESTER – IV					
COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC41/ 17111AEC41/ 17132AEC41/ 17135AEC41	Tamil–IV /Advanced English- IV/ Hindi –IV/ French- IV	4	0	0	2
17111AEC42	English-IV	4	0	0	2
17112AEC43	Sequence and Series	4	0	0	4
17112SEC44	Operations Research	4	0	0	4
17112SEC45	Astronomy	4	0	0	4
17118AEC46	Mathematical Statistics III	3	1	0	3
17118AEC47L	Mathematical Statistics	0	0	2	2
171__SEC04_	Skill based Elective – IV	0	0	2	1
17111SEC04L	Communicative English Lab -IV	0	0	1	1
171ENVTSTU	Environmental Studies	1	0	0	1
	Total	24	1	5	24

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SEMESTER – V

COURSE CODE	COURSE TITLE	L	T	P	C
17112AEC51	Modern Algebra	6	0	0	6
17112AEC52	Real Analysis	6	0	0	5
17112SEC53	Statics	4	1	0	5
17112SEC54	Programming in C++	4	0	0	4
17112DSC55_	Discipline Specific Elective -I	5	0	0	4
17112BRC56	Participation in Bounded Research	-	-	-	2
171__SEC05_	Skill Based Elective –V	0	0	2	1
17111SEC05L	Communicative English Lab – V	0	0	2	1
	Total	25	1	4	28

SEMESTER – VI

COURSE CODE	COURSE TITLE	L	T	P	C
17112AEC61	Complex Analysis	5	0	0	5
17112SEC62	Dynamics	4	0	0	4
17112AEC63	Discrete Mathematics	4	0	0	4
17120SEC64L	Programming in C++ Lab	0	0	3	2
17112DSC65_	Discipline Specific Elective - II	5	0	0	4
171__GEC_	General Elective	4	0	0	2
17112PRWP67	Project Work	-	-	-	4
171__SEC06_	Skill Based Elective –VI	0	0	2	1
17111SEC06L	Communicative English Lab-VI	0	0	2	1
17112EXACT_	Extension activities	-	-	-	1
	Total	**22**	**0**	**7**	**28**
Total Credits of the Programme					**150**

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materials.

6. Materials for construction of green houses - Wood, galvanized iron, glass, polyethylene film, poly vinyl chloride film, Tefzel T2 film, fiberglass reinforced plastic rigid panel and acrylic and polycarbonate rigid panel.

7. Design criteria and constructional details of greenhouses - Construction of pipe framed greenhouses, material requirement, preparation of materials and procedure of erection.

8. Greenhouse heating and distribution systems - Greenhouse utilization - Off-season drying of agricultural produce - Economic analysis of greenhouse production - Capital requirement, economics of production and conditions influencing returns.

9. Irrigation system used in greenhouses - Rules of watering, hand watering, perimeter watering, overhead sprinklers, boom watering and drip irrigation.

10. Important engineering properties such as physical, thermal and aero-dynamic properties of cereals, pulses and oil-seeds.

11. Designing post harvest equipment based on physical and thermal properties.

12. Winnowing - Manual and power operated winnowers, care and maintenance - Groundnut decorticators - Hand and power operated decorticators, principle of working, care and maintenance.

13. Moisture measurement - Equilibrium moisture content (EMC) – importance - Drying theory - Drying and dehydration.

14. Commercial grain dryers - Deep bed, flat bed, tray, fluidised bed, recirculated and solar dryers.

15. Material handling equipment - Bucket elevator and screw conveyer and their selection.

16. Primary processing of cereals, pulses and oilseeds - Cleaning, grading and packaging.

Practical

1. Study of different types of green houses based on shape, etc.
2. Computing the rate of air exchange in an active summer and winter cooling systems.
3. Feasibility study on drying of agricultural products inside a greenhouse and its calculation.
4. Visit to post harvest technology units and laboratories.
5. Determination of moisture content of various grains by oven drying and infrared methods.
6. Determination of size, space, porosity, bulk density, etc., of grains.
7. Determination of aerodynamic properties of grains.
8. Cleaning and grading of grains, pulses and oilseeds.
9. Drying and dehydration of vegetables (cauliflower).
10. Visit to rice mill.
11. Study of LSU dryer.
12. Study of Bucket elevator and screw conveyor.
13. Visit to dhal mill
14. Visit to oil seed processing plant.
15. Visit to cold storage
16. Practical final examination

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VALUE ADDED COURSE SYLLABUS

Certificate course on 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

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.

Certificate course on Agri Tourism

Unit I: Agritourism - as part of rural development and tourism. Definition and forms. Strengths and weaknesses.

Unit II: Business projects - their content and development. Economic and environmental aspects of agritourism.

Unit III: Characteristics of quality and their grant.

Unit IV: Field exercises in agro-tourism farms and facilities.

Unit V: Excursion on the international exhibition focusing on tourism, rural tourism and agritourism.

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Certificate course on Herbal science

Unit-I :History, scope, opportunities, constraints in the cultivation of herbal science in India

Unit-II :Importance, origin, distribution, area, climate and soil requirements, propagation and nursery techniques of herbal plants.

Unit-III: plant protection, harvesting processing of herbal plants

Unit-IV: chemical composition of medicinal and aromatic plants and economic use of drugs and essential oils

Unit-V: storage techniques of essential oil and marketing aspect of herbal plants

Certificate course on fruit culture and its propagation

Unit - 1 Introduction, life cycles in plants, cellular basis for propagation, sexual propagation, apomixis, polyembryony, chimeras. Principles factors influencing seed germination of horticultural crops, dormancy, hormonal regulation of germination and seedling growth.

Unit 2 - Seed quality, treatment, packing, storage, certification, testing. Asexual propagation rooting of soft and hard wood cutting under mist by growth regulators. Rooting of cuttings in hotbeds. Physiological, Anatomical and biochemical aspects of root induction in cuttings. Layering-principle and methods.

Unit 3 Budding and grafting - selection of elite mother plants, methods. Establishment of bud wood bank, stock, selon and inter stock, relationship Incompatibility. Rejuvenation through top working-Progeny orchard and scion bank.

Unit 4 Micro-propagation principles and concepts, commercial exploitation in horticultural crops. Techniques in vitro clonal propagation, direct organogenesis, embryogenesis, micrografting, meristem culture. Hardening, packing and transport of micro- propagules

Unit 5 -Health and safely, Understanding about basic safety checks, operation of all machinery and vehicles and hazards; render appropriate emergency procedures, Fruit Culture and it's propagation

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Certificate course on Integrated farming system

Unit I: Introduction (Definition of Integrated Farming System and an Overview of Integrated Farming Systems) -Systems Concept/Theory (Components, interactions, structures, hierarchies)

Unit II: Mixed Farming Systems (Definition, advantages and disadvantages and technology used) - Integration of forage crops in the crop-animal integration system.

Unit III: Three-stratum system- Animal grazing systems in coconut/oil palm plantations.

Unit IV: Integrated farming systems: Agroforestry (Alley cropping, silvopasture, riparian forest buffer, windbreak, forest farming)

Unit V: Sustainable farming - Organic Farming - Techno-ecological Farming Model

Certificate course on Green house technology

Unit-1 Green House General, Introduction to Green House, scope and importance; Types of Green houses, Potential crop for green house

Unit 2-Green House: design and layout - Land survey and levelling, Assessment of structural strength, foundation specifications

Unit 3-Installation of green house - Erection of Greenhouse Structures; Covering with nets and shades (Types of glazing material and its characteristics); Checking of gutters

Unit 4-Maintenance of green house - Maintenance of erected structures; Maintenance of operational elements of the greenhouse for periodic checking, tightening, greasing etc.

Unit 5-Health and safety, Understanding about basic safety checks, operation of all machinery and vehicles and hazards; render appropriate emergency procedures

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SCHOOL OF COMMERCE AND BUSINESS MANAGEMENT

DEPARTMENT OF COMMERCE

Minutes Of Board Of Studies Meeting

The board of studies meeting for the department of commerce is held on 09.05.2018 at 11.am ,in, PRIST Deemed to be University ,Thanjavur under the chairmanship{ (Dr.S.Rajendran / prof & HOD Chairman,BOS)}

The Following Members Were Present:

Dr. Dr.S.Rajendran (Chairperson/HoD / BOS Member)
Dr.R.Prakash Babu (External Expert- Industry/BOS Member)
M.Kumaravelu (External Expert-Academic/ BOS Member)
Dr.R.Selvaraj (Professor/ BOS Member/BOS Member)
Dr.S.Ramesh (Professor/ BOS Member/ BOS Member)
Dr.G.Karthiga (Associate Professor / BOS Member)
Dr.V.Sridevi (Associate Professor/ BOS Member)
Dr.R.Rajavanbhiti (Assistant Professor/ BOS Member)
Dr.D.Sitambarasan (Assistant Professor/ BOS Member)
Dr.T.Jayachitalan (Special Invitee-Dean/ BOS Member)
Deepak (Special Invitee-Alumnus/Alumni Pg-M. Com)
E.Geetha (Special Invitee -Current student Ug-B.COM CA)

HOD,
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THE CHAIRMAN (Bos) Welcomed All The Members And Presented The Feedbacks About Existing Curriculum Received From Various Stock Holders And Also From The Department Academic Advisory Committee.

The Members Of The Board Have Unanimously Discussed And Carefully Received The Existing Syllabus For B.COM, B.COM CA, M.COM, And M.Phil. Programme For 2018-2019.

The Board Has Updated The Panel Of Examiners For B.Com, B.Com Ca And M.Com,M.Phil. Programmes And Has Recommended The Same To Academic Council For Its Approval.

The Following Value Added New Diploma & Certificate Course (2018-2019)

S.NO	COURSE TITLE	COURSE CODE
1	Diploma In Computer Application	18002CCAP
2	Certificate Course In Business Accounting And Taxation	18002IACT
3	E-Commerce	18002IECC

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List of Chairman And Members Signature:

Dr. Dr.S.Rajendran (Chairperson/HoD / BOS Member)

Dr R.Prakash Babu (External Expert- Industry/BOS Member)

M.Kumaravelu (External Expert-Academic/ BOS Member)

Dr.R.Selvaraj (Professor/ BOS Member/BOS Member)

Dr.S.Kanaraju (Professor/ BOS Member/ BOS Member)

Dr.G.Karthiga (Associate Professor / BOS Member)

Dr.V.Sridevi (Associate Professor/ BOS Member)

Dr.R.Rajavardhini (Assistant Professor/ BOS Member)

Dr.D.Silambarasan (Assistant Professor/ BOS Member)

Dr. [illegible] (Special Invitee-Dean/ BOS Member)

Deepak (Special Invitee-Alumnus/Alumnus Pg-M. Com)

E.Geetha (Special Invitee -Current student Ug-B.COM CA)

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The Following Value Added Diploma And Certificate Courses-(2018-2019)
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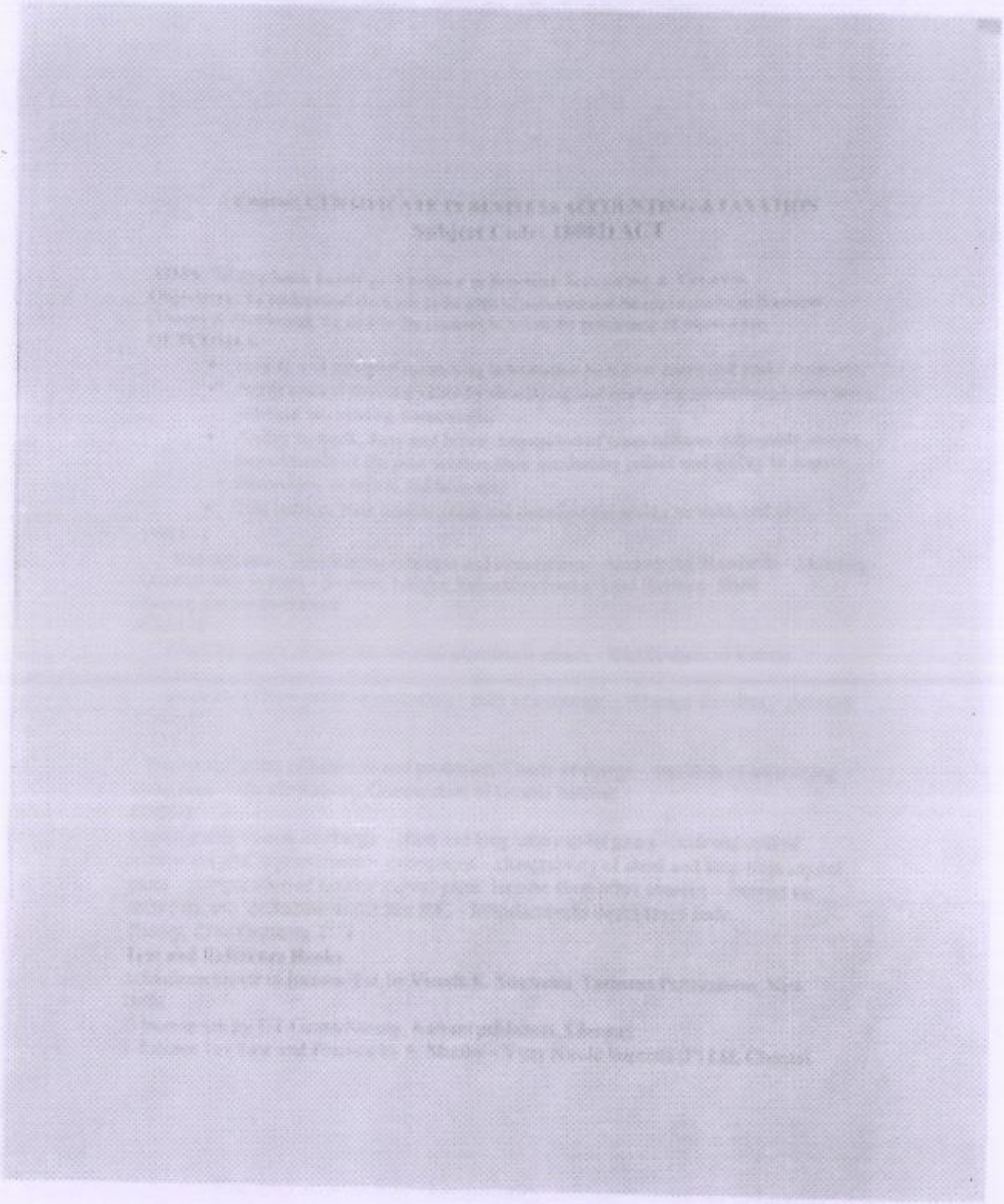

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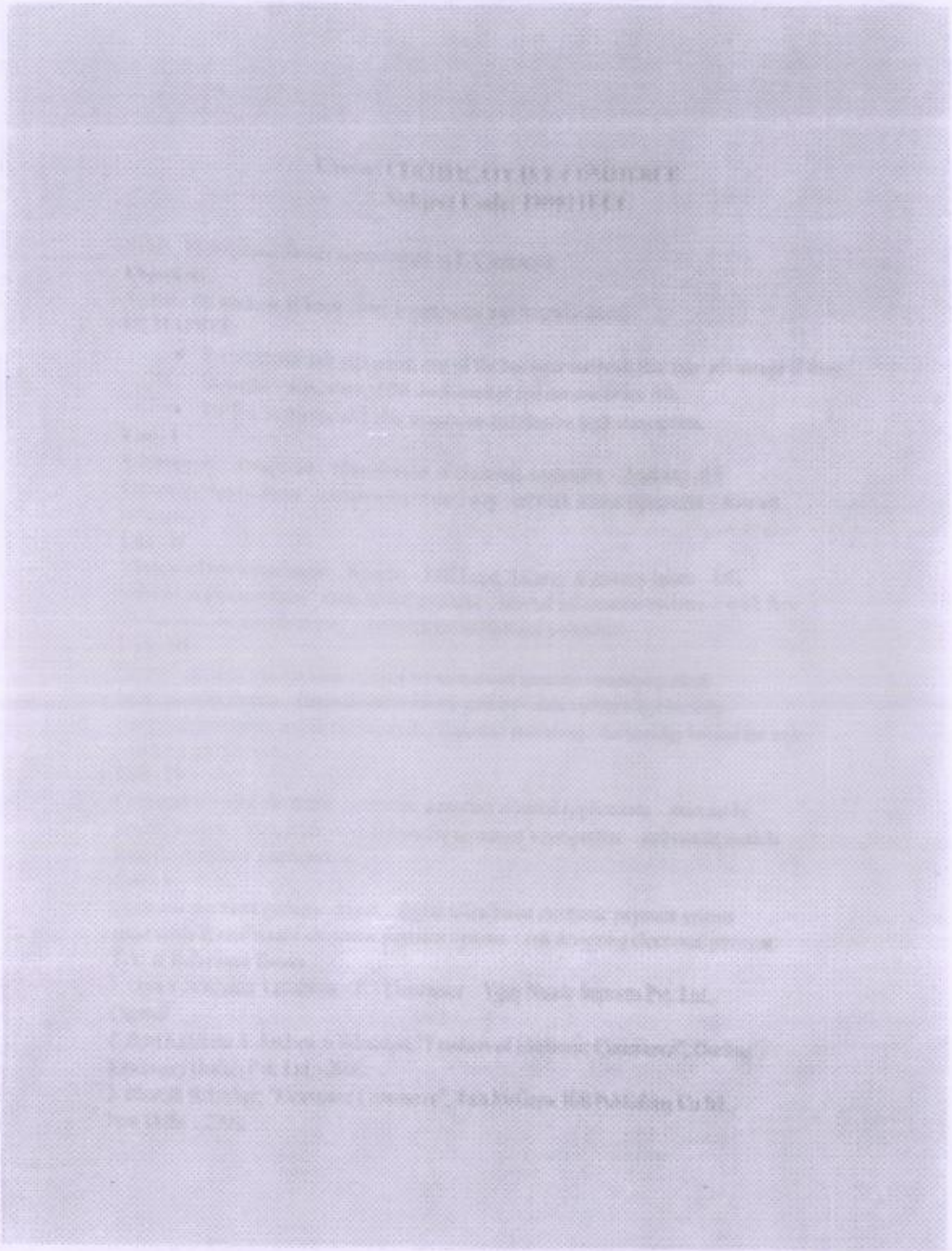

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SCHOOL OF COMMERCE AND BUSINESS MANAGEMENT
DEPARTMENT OF MANAGEMENT

Minutes of Board of Studies Meeting

The BOS meeting for the School of Business held on 13th April 2018 at 10.30 am in West Campus, PRIST University, under the chairmanship (Dr. K. G. Selvan/ Prof & HOD (Chairman, BOS)).

The following member were present

Dr K G Selvan (Chairperson/HoD)
Prof. V. C. Malaramanan (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)
R. Ramya (Alumini)
S. Mohamed Javid (Current student)

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 (BBA, MBA and M. Phil) in detail and made the necessary changes in upcoming (BBA, MBA, and M. Phil) as mentioned

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1. Research Methodology

Addition of Skill Based Course

Nil

Introduction of employability, entrepreneur (Assured Course)

1. Skill Development

Introduction of new additional Elective Courses

Nil.

Curriculum of newly introduced programme

Nil

The Meeting concluded with thanks from Board of Studies Chairman

Signature of the Chairman & Members

R. Tamil

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The Board of Studies Discussion on Introduced Value Added Certificate Course (2018-2019)

S.NO	COURSE TITLE	COURSE CODE
1	Human Resource Management	1860HRM
2	Supply Chain Management	1860SCM
3	Diploma in Personal Finance	18002MPF
4	Certificate course in Entrepreneurship & Innovation	18002CEIC
5	Certificate course in Business Data Analytics	18002CBDA

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2018 – 2019

VALUE ADDED DIPLOMA AND CERTIFICATE COURSE SYLLABUS

HUMAN RESOURCE MANAGEMENT

HUMAN RESOURCE MANAGEMENT

UNIT – I: HR Roles and Functions Human Resource Management - Introduction and Importance - Evolution - Difference between Personnel Management and HRM – HR functions - Structure of HR Department – Role, Duties and responsibilities of HR manager- HRD System – HR Strategies and organisational Strategies.

UNIT - II: Human Resources planning and recruitment Objectives-Importance-HRP - Process- Manpower Estimation-Job analysis-Job Description-Job Specification - Recruitment-Sources of Recruitment-Selection Process-Placement and Induction-Retention of Employees- merit rating – promotion – transfers– job enlargement – job enrichment – job rotation.

UNIT – III: Training and Development and performance appraisal Training and Development - Training Process and Methodology - Need and objectives - Training procedure - Methods of Training - Evaluation of Training programmes Performance Management System – Definition, Concepts and Ethics-Different methods of Performance Appraisal- Rating Errors-Competency management – Career Planning.

UNIT – IV: Compensation Management Concepts and Components- Compensation Plan – Reward – Motivation - Job evaluation - Fringe benefits and services - Employee Welfare – retirement /Separation - Kinds of Retirement - Resignation, Discharge, Dismissal, Suspension, Retirement, Layoff, Voluntary Retirement / Separation Schemes, Golden handshake

UNIT – VI: Industrial Relations Factors influencing industrial relations - State interventions and Legal Framework - Role of Trade unions - Collective Bargaining - Workers' participation in management- time management – Corporate Social Responsibility.

TEXT REFERENCES

7. Dessler & Robbins, Personnel / Human Resource Management, 3rd ed., John Wiley & Sons (Pvt.) Ltd.
   Anne-wil Harzing & Joris Van Ruysseveldt(eds.), International Human Resource Management – Sage Publications, New Delhi.
8. Biswajeet Pattanayak, Human Resource Management, PHI, New Delhi
9. Luis R. Gomez, Mejia, Balkin and Cardy, Managing Human Resources PHI, New Delhi.
10. Rudrabasavaraj, Dynamics of Personnel Admn. Himalaya Publishing House, Mumbai
11. Personnel Management – C.B Mamoria
12. Human Resources Management – Ashwathappa

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CERTIFICATE COURSE

SUPPLY CHAIN MANAGEMENT

UNIT I

The concept of Supply Chain Management - The Supply Chain Revolution - Extended organization - Integrative Management – Responsiveness – Financial Sophistication – Globalization - Digital Business Transformation.

UNIT II

Building Blocks of a Supply Chain Network – Performance Measures – Decisions in the Supply Chain World – Models for Supply Chain Decision-making – Economic Order Quantity Model – Reorder Point Model.

UNIT III

Supply Chain Process - Supply Chain Planning – Supply Chain Facilities Layout – Capacity Planning – Inventory Optimization – Dynamic Routing and Scheduling.

UNIT IV

E-procurement – E-Logistics – Internet Auctions – E-Markets - E commerce advantages and disadvantages for SCM – EDI – Exchanges, hubs and marketplaces – ERP.

UNIT V

Evolution of world class supply chains - Global Supply Chain Integration- Supply Chain Security-International Sourcing.

SUGGESTED READINGS:

1. Supply Chain Logistics Management - Bowersox, Closs & Cooper – McGraw-Hill, 2nd Indian ed.
2. World Class Supply Management - Burt, Dobbler, Starling, TMGH, 7th ed.

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DISCIPLINE SPECIFIC ELECTIVE COURSES

Semester	Elective No.	Course Code	Course Title
V	I	17112DSC55A 17112DSC55B	a) Fuzzy Analysis b) Formal Languages And Automata Theory
VI	II	17112DSC65A 17112DSC65B	a) Graph Theory b) Mathematical Modelling

GENERAL ELECTIVE COURSE

Semester	Course Title
VI	a.17111GEC- Journalism b.17113GEC- Instrumentation c.17114GEC- Food and Adulteration d.17117GEC- Mushroom Technology e.17120GEC- Web Technology f.17122GEC- E-Commerce and its applications g.17161GEC- Indirect Taxes

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SKILL BASED ELECTIVE COURSES

SEMESTER	SKILL BASED ELECTIVE NO.	COURSE CODE	COURSE TITLE
I	I	17120SEC01AL 17160 SEC01B	a) Package Lab I b) Soft Skill I
II	II	17120SEC02AL 17160 SEC02B	a) Package Lab II b) Soft Skill II
III	III	17120SEC03AL 17160 SEC03B	a) Package Lab III b) Soft Skill III
IV	IV	17120SEC04AL 17160 SEC04B	a) Package Lab IV b) Soft Skill IV
V	V	17120SEC05AL 17160 SEC05B	a) Package Lab V b) Soft Skill V
VI	VI	17120SEC06AL 17160 SEC06B	a) Package Lab VI b) Soft Skill VI

Credit Distribution

Sem	AEC	SEC	DSC	GEC	Research	Others	Ext Act	Total
I	20	2	-	-	-	1	-	23
II	20	2	-	-	1	-	-	23
III	19	2	-	-	3	-	-	24
IV	14	9	-	-	-	1	-	24
V	11	11	4	-	2	-	-	28
VI	8	9	4	2	4	-	1	28
TOTAL	92	35	8	2	10	2	1	150

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COURSE STRUCTURE

SEMESTER – I					
COURSE CODE	COURSE TITLE	L	T	P	C
17212AEC11	Algebra	6	0	0	4
17212AEC12	Real Analysis	7	0	0	4
17212AEC13	Ordinary Differential Equations	6	0	0	4
17220SEC14	C++ Programming	6	0	0	4
17212DSC15_	Discipline Specific Elective- I	5	0	0	4
17212RLC16	Research Led Seminar	-	-	-	1
Total		30	0	0	21

SEMESTER – II					
COURSE CODE	COURSE TITLE	L	T	P	C
17212AEC21	Complex Analysis	5	1	0	3
17212AEC22	Measure Theory and Integration	5	0	0	3
17212SEC23	Mathematical Methods	6	0	0	3
17212AEC24	Differential Geometry	5	0	0	3
17212DSC25_	Discipline Specific Elective- II	5	0	0	4
17212RMC26	Research Methodology	3	0	0	3
17212BRC27	Participation in Bounded Research	-	-	-	2
Total		29	1	0	21

SEMESTER – III					
COURSE CODE	COURSE TITLE	L	T	P	C
17212AEC31	Topology	6	0	0	5
17212SEC32	Stochastic Process	6	1	0	5
17212AEC33	Advanced Numerical Analysis	6	1	0	5
17212DSC34_	Discipline Specific Elective -III	5	0	0	4
172__GEC35_	General Elective	4	0	0	2
17212SRC36	Societal Project (Scaffold Research)	-	-	-	2
Total		27	2	0	23

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SEMESTER – IV					
COURSE CODE	COURSE TITLE	L	T	P	C
17212AEC41	Functional Analysis	5	1	0	5
17212SEC42	Visual Programming	6	1	0	5
17212AEC43	Number Theory	6	0	0	5
17212DSC44_	Discipline Specific Elective – IV	5	0	0	4
17212PRW45	Project Work	-	-	-	6
Total		22	2	-	25

DISCIPLINE SPECIFIC ELECTIVE COURSES

Semester	Elective No.	Course Code	Course Title
I	I	17212DSC15A (OR) 17212DSC15B	a) Classical Dynamics (OR) b) Fluid Dynamics
II	II	17212DSC25A (OR) 17212DSC25B	a) Mathematical Probability (OR) b) Mathematical Modelling
III	III	17212DSC34A (OR) 17212DSC34B	a) Cryptography (OR) b) Algebraic Coding Theory
IV	IV	17212DSC44A (OR) 17212DSC44B	a) Combinatorial Mathematics (OR) b) Design And Analysis of Algorithm

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GENERAL ELECTIVES COURSE

Semester	GENERAL ELECTIVE COURSES
III	a. 17211GEC - Writing For The Media b. 17213GEC – Bio medical instrumentation c. 17214GEC –Green Chemistry d. 17215 GEC – Bio analytical Techniques e. 17220GEC - Internet and Web Design f. 17261GEC - Insurance Services g. 17280GEC - Counselling and Psychology

Credit Distribution

Sem	AEC	SEC	DSC	GEC	Research	Total
I	12	4	4	-	1	21
II	9	3	4	-	5	21
III	10	5	4	2	2	23
IV	10	5	4	-	6	25
Total	41	17	16	2	14	90

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COURSE STRUCTURE

DEPARTMENT OF MATHEMATICS

M.Phil

SYLLABUS

(REGULATION 2017)

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DEPARTMENT OF MATHEMATICS

COURSE STRUCTURE

SEMESTER - I					
COURSE CODE	COURSE TITLE	L	T	P	C
173___11 (Common Paper)	Research Methodology	2	2	0	2
173MAC12	Algebra and Analysis	2	2	0	2
173MAC13	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					
173MAC31	Project Work				02

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Annexure III

LIST OF MEMBERS
2018-2019

1. Dr.S.Subramanian /Prof & HOD (Chairman , BOS)
2. Dr.K.Sarvanan /Dean (EX-Office,BOS)
3. Dr.S.Udayakumar, Professor of Mathematics, (Member, BOS)
4. Dr.R.Balakumar, Associate Professor of Mathematics, (Member, BOS)
5. Dr.K.Selvaraj, Assistant Professor of Mathematics, (Member, BOS)
6. Dr.R.Abirami, Assistant Professor of Mathematics, (Member, BOS)
7. Dr.S.Ramasubramanian / Prof (External Member, BOS)
8. Dr.B.Chellappa / Prof (External Member, BOS)

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Regulation 2017
VALUE ADDED COURSE

DIPLOMA

Duration: 90 Hours

Course Code	Course Title	L	T	P	C
17VADMAP	MAPLE	4	0	0	2

Objectives	Learn the applications of mathematics in real life problems. Understand the suitable methods to adopt the problem using several mathematical concepts.

Unit	Contents
I	Simple Programs using Mathematical constant, Programs using complex functions.
II	Numerical solutions of nonlinear equations and systems, Solving system of linear equations using Jacobi method
III	Program using Trigonometric and Hyperbolic Expressions , Finding Eigen values and Eigen vectors
IV	Plotting Points in the Plane and Space , Analyse data using Central Tendency and Measures of dispersion and distributions
V	Find the Laplace integral transforms for different functions. , Obtain the solution of the initial value problem

Text Book: Maple and Mathematica, A Problem Solving Approach for Mathematics Second Edition, Dr. Inna Shingareva & Dr. Carlos Lizárraga-Celaya, Springer Wien New York

Outcomes: To learn a new programming language, beginner in the field of data science.
To kindle the problem solving ability of the students in mathematics.

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VALUE ADDED COURSE

CERTIFICATE

Course Code	Course Title	L	T	P	C
17VACRP	R Programming	4	0	0	2

Duration: 90 Hours

Objectives:

Learn the applications of mathematics in real life problems. Understand the suitable methods to adopt the problem using several mathematical concepts.

Unit I:

Simple Programs using Mathematical constant
Programs using complex function

Unit II

Numerical solutions of nonlinear equations and systems . Solving system of linear equations using Jacobi method

Unit III:

Program using Trigonometric and Hyperbolic Expressions & Finding Eigen values and Eigen vectors

Unit IV:

Plotting Points in the Plane and Space
Analyse data using Central Tendency and Measures of dispersion and distributions

Unit V:

Find the Laplace integral transforms for different functions.
Obtain the solution of the initial value problem Banks for

Reference:

1. Programming with R by S.R. Mani Sekhar, T.V. Suresh Kumar, Madhavi Katta, Sunil Kumar S. Manvi, Cengage Learning India Pvt. Ltd. 2017
2. R for Statistics by Pierre-Andre Cornillon, Arnaud Guyader, Francois Husson, Nicolas Jegou, Julie Josse, Maela Kloareg, Eric Matzner-Lober, Laurent Rouviere, Chapman and Hall, 2012
3. Statistics with R Programming by Dr. Sandip Rakshit, McGraw Hill Education (India) Pvt. Ltd. 2018

Course Outcomes:

1. To learn a new programming language, beginner in the field of data science.
2. To handle the problem solving ability of the students in statistics.

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Regulation 2017
VALUE ADDED COURSE

CERTIFICATE

Course Code	Course Title	L	T	P	C
17VACMA	MATHEMATICA	4	0	0	2

Duration: 45 Hours

Course Objectives:
Learn the applications of mathematics in real life problems. Understand the suitable methods to adapt the problem using several mathematical concepts.

Unit I:

Solving higher degree equations. Solving system of equations by matrix method and find the eigen values and eigen vectors of a matrix of order 4 by 4 or higher order

Unit II:

Solving system of non-linear equations. Finding the differentiation of different functions of second and third derivatives.

Unit III:

Finding the Integration of different functions with limits. Evaluation of double integrals and triple Integrals.

Unit IV:

Solving ordinary differential equations with initial condition. Solving system of ordinary differential equations.

Unit V:

Creating and plotting 2-D and 3-D graphs.Solving Linear programming problems. Self-study portion.

Text Books:
TB-1 : Eugene Don. Mathematica, Schaum's Outline Series, Mc Graw Hill Publisher, New York (2018)
TB-2 : Prapthi Gautam and Swapnil Verma, Practical Mathematica, Ane Books Publisher (2018).

Books for Reference:
1. Ananta Kumar Bora. Mathematica:A Research Book of Mathematics, Scholastic Publishers (2017)

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Duration: 90 Hrs.

COURSE Title of the Course

DIPLOMA STATISTICAL METHOD

UNIT 1:

Bivariate distribution - discrete and continuous, marginal and conditional distribution Statistical independence, Conditional expectations

UNIT 2:

Binomial, Poisson, Negative binomial, geometric distribution — Constants, moment generating function, Cumulant generating function

UNIT 3:

Normal distribution — Normal distribution as a limiting form of binomial distribution Mode of Normal distribution-Median of Normal distribution-MEAN of Normal Distribution-Moments of Normal distribution-Chi — square distribution — Statement of Central limit theorem, Statement of Uniqueness theorem

UNIT 4:

Continuous distribution — rectangular, exponential, beta, gamma distribution

UNIT 5:

Classification — Stationary process—Markov Process — Markov chain Transition Probabilities.

Text Book:

Author Name	Title of the book	Edition/year	Publisher
3. S.C Gupta & V. K.Kapoor	1.Fundamentals of Mathematical Statistics	2002	Sultan Chand
4. Dr.A Singaravelu & Dr.S.Sivasubramanian	2. Probability & queuing theory	2015	Meenakshi Agency Chennai

Unit I : Book-1 Chapter 5 (Section 5.5.1 to 5.5.5)

Unit II:Book-1Chapter8

(Section 8.4.1 to 8.4.3, 8.5.1 ,8.5.2, 8.5.4,8.5.5,8.6.1 to 8.6.2 ,8.7.2 to 8.7.3)

Unit III: Book -1Chapter 9 (Section 9.2.1to 9.2.6)

Unit IV: Book-1 Chapter 9 (Section 9.3, 9.5, 9.7, 9.8)

Unit V : Book-2 Chapter 3.

Reference Book:

Fundamentals of Statistics S.C Gupta

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SYLLABUS FOR BUSINESS MATHEMATICS

UNIT-I : **Introduction :** The Nature and scope of statistics, Definition of statistics, Law of Statistical Regularity : Law of Inertia of Large Numbers. Census and Sampling, Methods of Sampling, Types and Characteristics of Statistical Unit, Methods and instruments of data collection.

UNIT-II : **Classification and Tabulation :** Objects, general rules for the construction of tables.

Measures of Central Tendency : Mean—Simple and Weighted, Mode, Harmonic and Geometric Mean; Positional Averages—Median, Quartile and Percentiles.

UNIT-III : **Measures of Dispersion, Skewness and Kurtosis :** Range, Quartile Deviation, Mean Deviation, Standard Deviation and their coefficients, Measures of Skewness and Kurtosis.

Correlation Analysis : Scatter diagram, Karl Pearson's coefficient of correlation, Spearman's ranking method.

UNIT-IV : **Regression Analysis :** Linear regression, regression lines, regression equations.

Interpolation : Assumptions, Binomial, Newton's advancing differences, Lagranges' methods.

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Core –VII SEQUENCE AND SERIES

Course code	Course Title	L	T	P	C
17112AEC43	Core – VII SEQUENCE AND SERIES	4	0	0	4

UNIT 1:

Sequence, Limits, Convergence-Cauchy's general principle of convergence-Cauchy's first theorem on Limits-Bounded sequences-Monotonic sequence always tends to a limit ,finite or infinite-Limit superior and limit inferior.

UNIT 2:

Infinite series-Definition of convergence, Divergence and Oscillation-Necessary condition for convergence-Convergence of $\Sigma 1/n^p$ and Geometric series. Comparison test,D^1 Alembert's ratio test and Raabe's test –Simple problems.

UNIT 3:

Cauchy's condensation test, Cauchy's root test and their simple problems Alternative series with simple problems.

UNIT 4:

General summation of series including successive difference and recurring series.

UNIT 5:

Inequalities-Geometric and Arithmetic means Weistrass inequalities- Cauchy's inequality.

TEXT BOOK:

Alebra Volume I &II T.K.M.Pillai (Relavant problems only)

Unit I : Chapter 2 (4.7)
Unit II : Chapter 2 (8-14,16,18,19)
Unit III : Chapter 2 (15,17,21-24)
Unit IV : Chapter 5
Unit V : Chapter 4 (second volume)

General Reference

Sequence and series: Arumugam and Isaac

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Core XVI – DISCRETE MATHEMATICS

Course code	Course Title	L	T	P	C
17112AEC61	Core-XVI Discrete Mathematics	4	0	0	4

Objectives:

Discrete Mathematics is a bridge connecting various branches of Computer Science and Mathematics. In Discrete Mathematics, we essentially study various finite (discrete) structures of Mathematics which are essential to develop the various concepts of computer science.

UNIT 1 :

RELATIONS:

Cartesian Product of Two sets – Relations – Representation of Relation-Operations Relations-Equivalence Relation

FUNCTIONS:

Function and Operations- One-to-One , Onto Functions-Special Types of Functions- Invertible Functions- Compositions of Functions

UNIT 2:

LOGIC:

Introduction-TF –Statements-Connectives-Atomic and Compound Statement-Well Formed (Statements) Formulae-Truth Table of a Formula- Tautology-Tautological Implications and Equivalence of Formulae

UNIT 3:

LATTICES AND BOOLEAN ALGEBRA

Lattices – Some Properties of Lattices – New Lattices – Modular and Distributive Lattices- Boolean Algebra

UNIT 4:

RECURRENCE RELATIONS AND GENERATING FUNCTIONS:

Recurrence as Introduction – Polynomials and their Evaluations- Recurrence Relations- Solution of Finite Order Homogeneous (linear) Relations-Solution of Non- homogeneous Relations-Generating Functions-Some Common Recurrence Relations-Primitive Recursive Functions- Recursive and Partial Recursive Functions

UNIT 5:

AUTOMATA, LANUAGES AND COMPUTATIONS:

Introduction-Finite Automata- Definition of Finite Automaton –Representation of Finite Automaton-Acceptability of a string by a Finite Automaton-Languages accepted by a Finite Automaton-Non-deterministic Finite Automata- Acceptability of a String by Non-Deterministic Finite Automata –Equivalence of DA and NFA

Text Books: Dr.M.K. Venkatarauman and N. Sridharan,N.Chandrasekharan

For UNIT 1 - Chapter 2: Section 2.1 to 2.21& Chapter 3 Section 3.1 to 3.13

For UNIT 2 - Chapter 9: Section 9.1 to 9.30

For UNIT 3 - Chapter 10: Section 10.1 to 10.34

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For UNIT 4 - Chapter 5: Section 5.1 to 5.33
For UNIT 5 - Chapter 12: Section 12.1 to 12.18

Learning outcomes

Students who successfully complete the course will demonstrate the following outcomes by tests, homework, and written reports:

1. A knowledge of Relations and functions
2. A knowledge of logical reasoning is used in mathematics to prove theorems, in computer science to verify the correctness of programs and to prove theorems in physical science to draw the conclusions.
3. An ability to find the solutions of Recurrence relations.
4. A knowledge of to study on ordering relations.

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF BIOCHEMISTRY

MINUTES OF THE BOARD OF STUDIES MEETING - 2018-2019

The meeting of the Board of studies for UG and PG in Biochemistry was held on 30-04-2018 at 10 am in the staff room under the chairmanship of Dr. Bakrudeen Ali Ahmed, Head of the Department.

The Chairman of the Board of Studies for UG and PG in Biochemistry welcomed the Members. Members analyzed the feedbacks from the stakeholders and the follow up actions taken. The committee scrutinized the curriculum in detail. The board unanimously decided not to make any changes in it. New value-added course Organic Farming to be introduced.

The board prepared the list of examiners and submitted the above for the approval of the academic council. Discussed about newly introduced courses for subsequent years also.

The Chairman of the Board of Studies proposed vote of thanks.

Head of the Department
Department of Biochemistry
School of Arts & Science
PRIST Deemed to be University
Thanjavur-613 403

REGISTRAR
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THANJAVUR - 613 403, Tamil Nadu

COURSE STRUCTURE
B. Sc., Biochemistry Regulation - 2017
2018-2019

Course Code	Course Title	L	T	P	C
	SEMESTER I				
17110AEC11/ 17111AEC11/ 17132AEC11/ 17135AEC11	Language-I (Tamil-I/ Advanced English-I/ Hindi-I/ French-I	4	0	0	2
17111AEC12	English-I	4	0	0	2
17115AEC13	Biomolecules	6	1	0	5
17115AEC14L	Biomolecules Lab - I	0	0	3	3
17114AEC15	Inorganic, Organic and Physical Chemistry - I	5	0	0	5
17114AEC16L	Volumetric Analysis Lab	0	0	3	3
171__SEC01_	Skill Based Elective-I	0	0	2	1
17111SEC01L	Communicative English Lab - I	0	0	1	1
171INDCONS	Indian Constitution	1	0	0	1
	Total	**20**	**1**	**9**	**23**
	SEMESTER II				
17110AEC21/ 17111AEC21/ 17132AEC21/ 17135AEC21	Language-II (Tamil-II/ Advanced English-II / Hindi-II/ French-II)	4	0	0	2
17111AEC22	English-II	4	0	0	2
17115AEC23	Analytical Techniques	6	1	0	6
17115AEC24L	Biomolecules Lab-II	0	0	3	2
17114AEC25	Inorganic, Organic and Physical Chemistry - II	5	0	0	5
17114AEC26L	Organic Analysis Lab	0	0	3	3
17115RLC27	Research LED Seminar	-	-	-	1
171__SEC02_	Skill Based Elective -II	0	0	2	1
17111SEC02L	Communicative English Lab-II	0	0	2	1
	Total	**19**	**1**	**10**	**23**
	SEMESTER III				
17110AEC31/ 17111AEC31/ 17132AEC31/ 17135AEC31	Language-III (Tamil-III/ Advanced English-III / Hindi-III/ French-III)	4	0	0	2
17111AEC32	English-III	4	0	0	2
17115AEC33	Cell Biology and Genetics	5	0	0	5
17115AEC34L	Biochemical Techniques Lab-I	0	0	3	3

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[illegible]	Programming in C	4	0	0	4
[illegible]	Programming in C Lab	0	0	3	3
[illegible]	Research Methodology	3	0	0	3
[illegible]	Skill based Elective- III	0	0	2	1
[illegible]	Communicative English Lab-III	0	0	2	1
	Total	20	0	10	24
	SEMESTER IV				
[illegible]	Language-IV (Tamil-IV/ Advanced English-IV/ Hindi-IV/ French-IV)	4	0	0	2
[illegible]	English-IV	4	0	0	2
[illegible]	Human Physiology	6	0	0	6
[illegible]	Biochemical Techniques Lab-II	0	0	3	3
[illegible]	Fundamentals of Computing	4	0	0	4
[illegible]	Web Design Lab	0	0	3	3
[illegible]	Skill based Elective- IV	0	0	2	1
[illegible]	Communicative English Lab-IV	0	0	1	1
[illegible]	Environmental Studies	1	0	0	1
	Total	21	0	9	23
	SEMESTER V				
[illegible]	Enzymes	5	0	0	5
[illegible]	Metabolism	5	0	0	5
[illegible]	Immunology	4	1	0	5
[illegible]	Food Analysis Lab	0	0	3	3
[illegible]	Enzyme Analysis Lab	0	0	3	3
[illegible]	Discipline Specific Elective-I	3	0	0	4
[illegible]	Participation in Intended research	-	-	-	2
[illegible]	Skill based Elective- V	0	0	2	1
[illegible]	Communicative English Lab-V	0	0	2	1
	Total	19	1	10	27
	SEMESTER VI				
[illegible]	Clinical Biochemistry	4	0	0	5
[illegible]	Molecular Biology	4	0	0	4
[illegible]	Blood Analysis Lab	3	0	0	3
[illegible]	Urine Analysis Lab	0	0	3	3
[illegible]	Discipline Specific Elective -II	4	0	0	4
[illegible]	General Elective	4	0	0	2

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17113PRW67	Project	-	-	-	4
171--SEC06--	Skill based Elective – VI	0	0	2	1
17111SEC06L	Communicative English lab – VI	0	0	2	1
17113EXACT-	Extension Activities	-	-	-	1
	Total	**21**	**0**	**7**	**28**
	Total Credits for the Programme				**150**

Discipline Specific Electives

Semester	Discipline Specific Elective Courses-I
V	a) 17115DSC56A - Pharmaceutical chemistry b) 17115DSC56B - Enzyme technology
	Discipline Specific Elective Courses-I
VI	a) 17115DSC65A - Biochemistry of plants and microbes b) 17115DSC65B - Immunotechnology

General Electives

Semester	General Elective Courses
V	a) 17111GEC-Journalism b) 17112GEC-Development of Mathematical Skills c) 17113GEC-Instrumentation d) 17114GEC-Food and Adulteration e) 17120GEC-Web Technology f) 17122GEC-E-Commerce and its application g) 17161GEC-Indirect Taxes

Skill based Electives

Semester	Skill based Elective Courses
I	a) 17120SEC01AL-Package Lab – I b) 17160SEC01B-Soft skill – I
II	a) 17120SEC02AL-Package Lab – II b) 17160SEC02B-Soft skill – II
III	a) 17120SEC03AL-Package Lab –III b) 17160SEC03B-Soft skill – III
IV	a) 17120SEC04AL-Package Lab –IV b) 17160SEC04B- Soft skill – IV
V	a) 17120SEC05AL-Package Lab –V b) 17160SEC05B-Soft skill - V
VI	a) 17120SEC06AL-Package Lab – VI b) 17160SEC06B-Soft skill – VI

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Credit Distribution

Sem	AEC	SEC	DSC	GEC	Research	Others	Ext Act	Total
I	20	2	-	-	-	1	-	23
II	20	3	-	-	1	-	-	23
III	19	2	-	-	3	-	-	24
IV	22	2	-	-	-	1	-	25
V	19	2	4	-	2	-	-	27
VI	12	5	4	2	4	-	1	28
Total	112	15	8	2	10	2	1	150

COURSE STRUCTURE

M. Sc BIOCHEMISTRY -SYLLABUS – REGULATION 2017
2018-19

Course Code	Course Title	L	T	P	C
	SEMESTER I				
17215SEC11	Biomolecules	5	0	0	4
17215SEC12	Biochemical and Instrumental analysis	5	0	0	4
17215SEC13	Enzymology	5	0	0	4
17215SEC14L	Biochemical Techniques Lab - I	0	0	5	4
17215DSC15_	Discipline specific elective	5	0	0	4
17215RES16	Research Led Seminar	0	0	0	1
	Total	20	0	5	21
	SEMESTER II				
17215SEC21	Cellular Biochemistry	5	0	0	4
17215SEC22	Metabolism and Regulation	5	0	0	4
17215SEC23	Bioinformatics	5	0	0	4
17215SEC24L	Enzymology Lab- II	0	0	5	4
17215DSC25_	Discipline Specific Elective	4	0	0	4
17215RMC26	Research Methodology	3	0	0	3
17215BRC27	Participation in Bounded Research	-	-	-	2
	Total	22	0	5	25
	SEMESTER III				
17215SEC31	Molecular Biology	5	0	0	4
17215SEC32	Clinical Biochemistry	5	0	0	4
17215SEC33L	Clinical Biochemistry Lab	4	0	5	4
17215DSC34_	Discipline Specific Elective	5	0	0	4
172_GEC-	General Elective	4	0	0	2

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17215SRC36	Participation in Scaffold Research (Design Societal Project)	-	-	-	2
	Total	23	0	5	19
	SEMESTER IV				
17215PRW41	Project Work	0	0	30	20
	Total	0	0	30	20

Discipline specific Electives

Semester	Discipline specific Elective Courses-I
I	a)17215DSC13A - Biostatistics b) 17213DSC13B - Immunology
	Discipline specific Elective Courses-II
II	a)17215DSC23A- Endocrinology b)17215 DSC23B - Clinical nutrition and dietetics
	Discipline specific Elective Courses-III
III	a)17215DSC34A - Genetics and Genetic Engineering b)17215DSC34B- Pharmaceutical Biotechnology

General Electives

Semester	General Elective Courses
III	a) 17211GEC - Writing for the media b) 17212GEC - Applicable Mathematics Techniques c) 17213GEC - Bio-medical Instrumentation d) 17214GEC - Green Chemistry e) 17215GEC - Bio-analytical Techniques f) 17220GEC - Internet and Web Design g) 17261GEC - Insurance Services h) 17280GEC - Counselling Psychology

Credit Distribution:

Sem	AEC	SEC	DSC	GEC	Research	Total
I	-	16	4	-	1	21
II	-	16	4	-	5	25
III	-	12	4	2	2	20
IV	-	-	-	-	20	20
Total	0	44	12	2	28	86

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VALUE ADDED COURSES

REGULATION - 2017

DIPLOMA COURSE SYLLABUS

ORGANIC FARMING

Aim:

To acquaint students with philosophy, objectives and principles of organic agriculture.

Course objectives:

- 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.

Head of the Department
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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.

Unit: IV-Organic 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.P.Palaniappan 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

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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	2018-19
Date and Time	14.05.2018 & 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 14.05.2018. 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 08.05.2017 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 decided that content of core courses was retained without any modification. But in the cases of elective courses, new elective course, Digital Photography was introduced in the semester-V instead of Energy Physics (17113DSC55A). BOS members also suggested to include some new value added courses.
Resolution: The board members recommended the above mentioned suggestions in UG curriculum.

Agendum 3: Discussion about the revision of core and elective courses of PG curriculum
Discussion : The members discussed elaborately about the existing curriculum of PG courses. It was planned that content of core courses was retained without any modification. Nevertheless, 3 new elective courses were introduced in the semesters (I, III and IV). BOS members also recommended to include some new value added courses. New elective course, Digital Communication was included instead of Instrumentation (17213DSC15A) in the semester – I. New elective course, Analysis of Crystal Structures was included instead of Photonics Devices and Applications (17213DSC34B) in the semester – III. New elective course, Advanced Spectroscopy was included instead of Non-linear Dynamics (17213DSC43B) in the semester – IV.
Resolution: The board members approved the above suggestions in PG curriculum

Agendum 4: Organizing industrial visit for students

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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.

Signature
(Dr. M. Sivamarthoni)

Date: 14.05.2018

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

Dates: 14.05.2018

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	WgCdr M. Jeyakumar, M.A., PGDPRM, MBA, CEO, nRoot Consultancy	nRoot Consultancy, RS No.139/B1, nRootHead quarters, MappillaiNayakkampatti, 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. K. Saravanan, M.Sc., M. Phil, Ph.D., 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. L. Chinnappa, M.Sc., M. Phil, Ph.D., PGDCA., Professor	Physics	

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4	Dr. S. Subashchandrabose, M.Sc., M.Phil., Ph.D., Professor	Physics	
5	Dr. Sutapa Ghosh M.Sc., Ph.D., Associate Professor	Physics	
6	Dr. V. Vidhya M.Sc., M.Phil., Ph.D., Assistant Professor	Physics	
7	Mr. K. Swaminathan, M.Sc., M.Phil., Assistant Professor	Physics	

Date: 14.05.2018

Signature
(Dr. M. Sivanandham)

BOS Chairman/HOD Seal

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List of new elective courses

1. Digital Photography
2. Digital Communication
3. Analysis of Crystal Structures
4. Advanced Spectroscopy

List of new value-added courses

1. Diploma course on Science of growing single crystals
2. Certificate course on Physics for Everyday Life
3. Certificate course on Photovoltaics for Energy Conversion
4. Certificate course on Astrophysics
5. Certificate course on programming with python
6. Certificate course on Communication Physics
7. Certificate course on plasma physics

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B.Sc., PHYSICS

COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
17110AEC11 17111AEC11 17132AEC11 17135AEC11	Tamil-I Advanced English-I Hindi-I French-I	4	0	0	2
17111AEC12	English-I	4	0	0	2
17113AEC13	Properties of Matter	6	1	0	6
17113AEC14L	Properties of Matter Lab	0	0	3	2
17112AEC15A	Calculus and Fourier series	4	0	0	4
17112AEC16A	Algebra and Trigonometry	4	0	0	4
17160SEC01B	Skill Based Elective-I	0	0	2	1
17111SEC01L	Communicative English Lab-I	0	0	1	1
17INDCONS	Indian Constitution	1	0	0	1
	Total	23	1	6	23
	SEMESTER II				
17110AEC21 17111AEC21 17132AEC21 17135AEC21	Tamil-II Advanced English-II Hindi-II French-II	4	0	0	2
17111AEC22	English-II	4	0	0	2
17113AEC23	Mechanics And special theory of Relativity	6	1	0	6
17113AEC24L	Mechanics Lab	0	0	3	2
17112AEC25A	ODE,PDE and Laplace Transform	4	0	0	4
17112AEC26A	3D Vector calculus	4	0	0	4
17111RLC27	Research Led Seminar	-	-	-	1
17160SEC02B	Skill Based Elective -II	0	0	2	1
17111SEC02L	Communicative English Lab-II	0	0	2	1
	Total	22	1	7	23
	SEMESTER III				
17110AEC31 17111AEC31 17132AEC31 17135AEC31	Tamil-III Advanced English-III Hindi-III French-III	4	0	0	2
17111AEC32	English-III	4	0	0	2
17113AEC33	Heat and Thermodynamics	5	0	0	5
17113AEC34L	Heat and optics lab	0	0	3	2

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17114AEC35	Inorganic,Organic and Physical Chemistry-I	4	0	0	4
17114AEC36L	Volumetric Analysis lab- I	0	0	3	2
17113RMC37	Research Methodology	3	0	0	3
171_SEC03__	Skill based Elective- III	0	0	2	1
17111SEC03L	Communicative English Lab-III	0	0	2	1
	Total	20	0	10	23
	SEMESTER IV				
17110AEC41 17111AEC41 17132AEC41 17135AEC41	Tamil-IV Advanced English-IV Hindi-IV French-IV	4	0	0	2
17111AEC42	English-IV				
17113AEC43	Optics	4	0	0	2
17113AEC44L	Basic Electronics Lab	6	1	0	6
17114AEC45	Inorganic,Organic and Physical Chemistry-II	0	0	3	3
17114AEC46L	Volumetric Analysis Lab -II	5	0	0	5
171_SEC04__	Skill based Elective- IV	0	0	3	2
17111SEC04L	Communicative English Lab-IV	0	0	2	1
17ENVTSTU	Environmental Studies	0	0	1	1
	Total	1	0	0	1
	SEMESTER V	20	1	9	23
17113AEC51	Electricity and Magnetism				
17113AEC52	Atomic Physics	6	0	0	6
17113AEC53	Basic Electronics	5	1	0	6
17113AEC54L	Digital Electronics Lab	5	0	0	5
17113DSC55	Discipline Specific Elective - I	0	0	3	2
17113BRCS6	Participation in Bounded research	5	0	0	4
171135EC05__	Skill based Elective- V	-	-	-	2
17111SEC05L	Communicative English Lab-V	0	0	2	1
	Total	0	0	2	1
	SEMESTER VI	22	1	7	28
17113AEC61	Digital Electronics & Microprocessor				
17113AEC62	Wave Mechanics and Nuclear Physics	6	1	0	6
17113AEC63L	Advanced Digital Electronics Lab	6	1	0	6
17113DSC64	Discipline Specific Elective –II	0	0	3	3
171_GEC65__	General Elective	5	0	0	4
17113PRW66	Project Work	4	0	0	2
171_SEC06__	Skill based Elective- VI	-	-	-	6
17111SEC06L	Communicative English Lab-VI	0	0	2	1
17113EXACT	Extension Activities	0	0	2	1
	Total	-	-	-	1
	Total Credits for the Programme	21	2	7	30
					150

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Discipline Specific Electives

Semester	Discipline Specific Elective Courses -I
V	a) 17113DSC55A- Digital Photography b) 17113DSC55B- Laser Physics

Semester	Discipline Specific Elective Courses - II
VI	a) 17113DSC64A-Material Physics b) 17113DSC64B- Communication Physics

General Electives

Semester	General Elective Courses
V	a) 17111GEC-Journalism b) 17112GEC-Development of Mathematical Skills c) 17114GEC-Food and Adulteration d) 17117GEC-Mushroom Technology e) 17120GEC-Web Technology f) 17122GEC-E-Commerce and its Application g) 17161GEC-Indirect Taxes

Skill based Electives

Semester	Skill based Elective Courses
I	a) 17120SEC01AL-Package Lab – I b) 17160SEC01B-Soft skill – I
II	a) 17120SEC02AL-Package Lab - II b) 17160SEC02B-Soft skill – II
III	a) 17120SEC03AL-Package Lab –III b) 17160SEC03B-Soft skill – III
IV	a) 17120SEC04AL-Package Lab –IV b) 17160SEC04B- Soft skill – IV
V	a) 17120SEC05AL-Package Lab –V b) 17160SEC05B-Soft skill - V
VI	a) 17120SEC06AL-Package Lab –VI b) 17160SEC06B-Soft skill – VI

Credit Distribution

Sem	AEC	SEC	DSC	GEC	Research	Others	Total
I	20	2	-	-	-	1	23
II	20	2	-	-	1	-	23
III	18	2	-	-	3	-	23
IV	20	2	-	-	-	1	23
V	20	2	4	-	2	-	28
VI	15	2	4	2	6	1	30
Total	113	12	8	2	12	3	150

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DIGITAL PHOTOGRAPHY	
Learning Objective: To understand the principles of photography and image formation and the science and arts behind it. To understand the essential components of conventional and digital cameras and also the different image processing techniques.	
UNITS	**COURSE DETAILS**
UNIT-I	**PHOTOGRAPHY AND BASIC PRINCIPLE OF IMAGE FORMATION:** principle –chemical route and digital route –light, wavelengths, colours – shadows – light intensity and distance – making light form images –pin-hole images – practical limitations to pin-hole images – lens instead of pin-hole – focal length and image size – imaging of closer subjects.
UNIT-II	**LENSES – CONTROLLING THE IMAGES:** photographic lens – focal length and angle of view *(problems)* – focusing movement – aperture and f-numbers *(problems)* – depth of field– depth of focus – image stabilization – lenses for digital cameras – lens and camera care
UNIT-III	**CAMERA USING FILMS AND ITS TYPES:** camera and its essential components– shutter – aperture – light measurement – film housing – camera types: view camera– view finder camera – Reflex camera– single lens reflex (SLR) camera
UNIT-IV	**DIGITAL CAMERAS PRINCIPLE AND TYPES:** principle of digital image capturing –comparison of digital and analog picture information – megapixel – grain, noise and pixel density – optical and digital zooming – image stabilizer – bit depth – white balance – colour modes – file formats (TIFF, RAW & JPEG) – storage cards and types – digital viewers: camera phones – compact camera – hybrid camera – digital SLR.
UNIT-V	**THE DIGITAL IMAGE – POSTPRODUCTION:** hardware: computer and its peripherals – software: saving digital file – basic editing: navigating the image – undo/redo/history – crop – rotate – brightness &contrast – colour balance – hue/saturation – dodge/burn – cloning &retouching – removing an element in an image – advanced editing: histogram/levels – curves – selection tools: magic wand – printing digital images: inkjet printer – laser printer – dye sub printer – lambda/light jet printers.
TEXT BOOKS	1. Michel J.Langford , Anna Fox & Richard Sawdon Smith, Basic photography, 9th Edition, , 2010-NL, Focal press, London 2. Henry Carroll, Read this if you want to take great photographs of people, Laurence King Publishing
REFERENCE BOOKS	1. Mark Galer, Digital Photography in Available Light essential skills, 2006, Focal press, London 2. Paul Harcourt Davies, The Photographer's practical handbook, 2005, UK PRESS

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M.Sc., PHYSICS

COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER I				
17213SEC11	Advanced Mathematical Physics	6	2	0	5
17213SEC12	Classical and Statistical Mechanics	6	1	0	5
17213SEC13	Electronics and Communication	6	1	0	4
17213SEC14L	Spectroscopy and General Electronics Lab	0	0	4	3
17213DSC15_	Discipline Specific Elective – I	5	0	0	4
17213RLC16	Research Led seminar	-	-	-	1
	Total	23	4	8	22
	SEMESTER II				
17213SEC21	Microprocessor and Microcontroller	6	0	0	5
17213SEC22	Quantum Mechanics	6	0	0	5
17213SEC23	Condensed Matter Physics	6	0	0	5
17213SEC24L	Advanced General Experiments Lab	0	0	4	3
17213DSC25_	Discipline Specific Elective – II	5	0	0	4
17213RMC26	Research Methodology	3	0	0	3
17213BRC27	Participation in Bounded Research	-	-	-	2
	Total	26	0	4	27
	SEMESTER III				
17213SEC31	Electro Magnetic Theory	6	0	0	5
17213SEC32	Nuclear and Particle Physics	6	0	0	5
17213SEC33L	Advanced Electronics Lab	0	0	4	3
17213DSC34_	Discipline Specific Elective – III	5	0	0	4
172__GEC35_	General Elective	4	0	0	2
17213SRC36	Participation in Scaffold Research (Societal Project)	-	-	-	2
	Total	21	0	4	21
	SEMESTER IV				
17213SEC41	Programming in C++	6	0	0	5
17213SEC42L	Microprocessor and Computer Laboratory	0	0	8	8
17213DSC43_	Discipline Specific Elective – IV	5	0	0	4
17213PRW44	Project Work	0	0	0	6
	Total	11	0	8	20
	Total Credits for the Programme				90

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Discipline specific Electives

Semester	Discipline specific Elective Courses- I
I	a)17213DSC15A- Digital Communication b)17213DSC15B- Crystal Growth Processes

Semester	Discipline specific Elective Courses -II
II	a)17213DSC25A- Atomic and Molecular Physics b)17213DSC25B- Radiation Physics

Semester	Discipline specific Elective Courses -III
III	a)17213DSC34A- Non-Conventional Energy Physics b)17213DSC34B-Analysis of Crystal Structures

Semester	Discipline specific Elective Courses -IV
IV	a)17213 DSC43A- Nano Science and Technology b)17213 DSC43B- Advanced Spectroscopy

General Electives

Semester	General Elective Courses
III	a) 17211GEC-Writing for the Media b) 17212GEC-Applicable Mathematics Techniques c) 17214GEC - Green Chemistry d) 17215GEC-Bio-analytical Techniques e) 17220GEC -Internet and Web Design f) 17261GEC- Insurance Services g) 17280GEC-Counselling Psychology

Credit Distribution:

S.No	SEM	AEC	SEC	DSC	GEC	Research	Total
1.	I	14	3	4	-	1	22
2.	II	15	3	4	-	5	27
3.	III	10	3	4	2	2	21
4.	IV	5	5	4	-	6	20
Total		44	14	16	2	14	90

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Subject Code	Subject Name
17213DSC15A	DIGITAL COMMUNICATION

Pre-Requisites
Exposure to Fourier transform, pulse modulation, multiplexing, noises in communication signals
Learning Objectives
➢ To understand the use of Fourier, transform in analyzing the signals ➢ To learn about the quanta of transmission of information ➢ To make students familiar with different types of pulse modulation ➢ To have an in depth knowledge about the various methods of error controlling codes ➢ To acquire knowledge about spread spectrum techniques in getting secured communication

UNITS	Course Details
UNIT I: SIGNAL ANALYSIS	Fourier transforms of gate functions, delta functions at the origin – Fourier transform of delta function and periodic delta function – Properties of Fourier transform – Frequency shifting –Time shifting – Convolution –Graphical representation – Convolution theorem – Time Convolution theorem – Frequency Convolution theorem –Sampling theorem.
UNIT II: INFORMATION THEORY	Communication system – Measurement of information – Coding – Bandot Code CCITT Code –Hartley Law – Noise in an information Carrying Channel - Effects of noise- Capacity of noise in a channel – Shannon Hartley theorem –Redundancy.
UNIT III: PULSE MODULATION	Pulse amplitude modulation - natural sampling – instantaneous sampling - Transmission of PAM Signals -Pulse width modulation – Time division multiplexing – Band width requirements for PAM Signals. Pulse Code Modulation –Principles of PCM –Quantizing noise – Generation and demodulation of PCM -Effects of noise –Companding – Advantages and application
UNIT IV: ERROR CONTROL	Introduction to Linear Block Codes, Hamming Codes, BCH Coding, RS Coding, Convolutional Coding, Coding Gain Viterbi Coding

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CODING	
UNIT V: SPREAD SPECTRUM SYSTEMS	Pseudo Noise sequences, generation and Correlation properties, direct sequence spread spectrum systems, frequency HOP Systems, processing gain, anti-jam and multipath performance
UNIT VI: PROFESSIONAL COMPONENTS	Expert Lectures, Online Seminars - Webinars on Industrial Interactions/Visits, Competitive Examinations, Employable and Communication Skill Enhancement, Social Accountability and Patriotism

TEXT BOOKS	1. B.P. Lathi, *Comounication system*, Wiley Eastern. 2. George Kennedy, *Electronic Communication Systems*, 3rd Edition, Mc Graw Hill. 3. Simon Haykin, *Communication System*, 3rd Edition, John Wiley & Sons. 4. George Kennedy and Davis, 1988, *Electronic Communication System*, Tata McGraw Hill 4th Edition. 5. Taub and Schilling, 1991, *"Principles of Communication System"*, Second edition Tata McGraw Hill.
REFERENCE BOOKS	1. John Proakis, 1995, *Digital Communication*, 3rd Edition, McGraw Hill, Malaysia. 2. M. K. Simon, 1999, *Digital Communication Techniques, Signal Design and Detection*, Prentice Hall of India. 3. Dennis Roddy and Coolen, 1995, *Electronics communications*, Prentice Hall of India IV Edition. 4. Wave Tomasi, 1998, *"Advanced Electronics communication System"* 4th Edition Prentice Hall, Inc. 5. M.Kulkarni, 1988, *"Microwave and Radar Engineering"*, Umesh Publications.
WEB SOURCES	1. http://nptel.iitm.ac.in/ 2. http://web.ewu.edu/ 3. http://www.ece.umd.edu/class/enee630.F2012.html 4. http://www.ehcourses.com/Advanced%20Topics%20in%20Wireless%20Networks 5. http://nptel.iitm.ac.in/courses/117101051.html

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Subject Code	Subject Name
17213DSC348	ANALYSIS OF CRYSTAL STRUCTURES

Pre-Requisites
Fundamentals of crystal structures, symmetry and X-Ray Diffraction techniques
Learning Objectives
➢ To teach the concept of crystal structures and symmetry, and diffraction theory ➢ To provide students with a background to X-ray generation, scattering theory and experimental diffraction from single crystals ➢ To provide instruction on the methods and basis for determining low-molecular weight crystal structures using X-ray Crystallography ➢ To give the students a background to the instrumentation used for powder diffraction and structure refinement using Rietveld method ➢ To teach the different levels of structure exhibited by proteins and nucleic acids and methods used in protein crystallography.

UNITS	Course details
UNIT I: CRYSTAL LATTICE	Unit cell and Bravais lattices - crystal planes and directions - basic symmetry elements operations - translational symmetries - point groups - space groups - equivalent positions - Bragg's law - reciprocal lattice concept -Laue conditions - Ewald and limiting spheres - diffraction symmetry - Laue groups.
UNIT II: DIFFRACTION	X-ray generation, properties - sealed tube, rotating anode, synchrotron radiation - absorption - filters and monochromators Atomic scattering factor - Fourier transformation and structure factor - anomalous dispersion - Laue, rotation/oscillation, moving film methods- interpretation of diffraction patterns - cell parameter determination - systematic absences - space group determination.
UNIT III: STRUCTURE ANALYSIS	Single crystal diffractometers - geometries - scan modes - scintillation and area detectors -intensity data collection - data reduction - factors affecting X-ray intensities - temperature and scale factor - electron density - phase problem - normalized structure factor - direct method fundamentals and procedures - Patterson function and heavy atom method - structure refinement

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	- least squares method - Fourier and difference Fourier synthesis - R factor - structure interpretation - geometric calculations - conformational studies - computer program packages.

UNIT IV: POWDER METHODS	Fundamentals of powder diffraction - Debye Scherrer method - diffractometer geometries - use of monochromators and Soller slits - sample preparation and data collection - identification of unknowns - powder diffraction files (ICDD) - Rietveld refinement fundamentals - profile analysis - peak shapes - whole pattern fitting - structure refinement procedures – auto-indexing – structure determination from powder data - new developments. Energy dispersive X-ray analysis – texture studies - crystallite size determination - residual stress analysis - high and low temperature and high pressure crystallography (basics only).
UNIT V: PROTEIN CRYSTALLOGRAPHY	Globular and fibrous proteins, nucleic acids - primary, secondary, tertiary and quaternary structures - helical and sheet structures - Ramachandran map and its significance – crystallization methods for proteins - factors affecting protein crystallization - heavy atom derivatives – methods used to solve protein structures - anomalous dispersion methods.
UNIT VI: PROFESSIONAL COMPONENTS	Expert Lectures, Online Seminars - Webinars on industrial interactions/Visits, Competitive Examinations, Employable and Communication Skill Enhancement, Social Accountability and Patriotism.
TEXT BOOKS	1. Azaroff, L.V., "Elements of X-Ray Crystallography", Techbooks, New York, 1992. 2. Blundell, T.L. and Johnson, L., "Protein Crystallography", Academic Press, New York, 1986. 3. Cullity, B.D. and Stock,S.R. "Elements of X-ray Diffraction", Pearson, 2014. 4. H.L. Bhat, Introduction to Crystal Growth Principles and Practice CRC Press, Taylor & Francis Group, Boca Raton, Florida, 2015. 5. B.R. Pamplin, Crystal Growth, Pergamon Press, Oxford, 1975.
REFERENCE BOOKS	1. Glusker, J.P. and Trueblood, K.N. Crystal Structure Analysis: A Primer", Oxford University, Press, New York, 1994. 2. Ladd, M.F.C. and Palmer, R.A., "Structure Determination by X-ray Crystallography", Plenum Press, New York, 3rd Edition, 1993. 3. Stout, G.H. and Jensen, L."X-ray Structure Determination, A Practical Guide", Macmillan, New York, 1989.

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	4. Woolfson, M.M. "An Introduction to X-ray Crystallography" Cambridge University Press, New York, 1997. 5. Sam Zhang, Lin Li, Ashok Kumar, Materials Characterization Techniques, CRC Press, Taylor & Francis Group, Boca Raton, Florida, 2009
WEB SOURCES	1. https://archive.nptel.ac.in/courses/112/106/112106227/ 2. https://archive.nptel.ac.in/courses/104/108/104108098/ 3. https://www.digimat.in/nptel/courses/video/102107086/L11.html 4. https://onlinecourses.nptel.ac.in/noc19_cy35/preview https://onlinecourses.nptel.ac.in/noc19_cy35/preview 5. https://nptel.ac.in/courses/104/104/104104011/

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Subject Code	Subject Name
17213BSC43B	ADVANCED SPECTROSCOPY

Pre-Requisites
Basic knowledge of group theory, abstract thinking ability, lasers, chemical bonds and molecular structures
Learning Objectives
➢ Helps students understand and appreciate spectroscopy as a sufficiently broad field in which many sub disciplines exist. ➢ Make them appreciate each of these specific techniques with numerous implementations. ➢ To realize the progress in this field that is rapid, resulting in improved instrument capabilities and an ever-widening range of applications. ➢ To apply group theory in spectroscopy to shed light on molecular symmetry and determine important physical parameters.

UNITS	Course Details
UNIT I: MOLECULAR SPECTROSCOPY AND GROUP THEORY	Group axioms –subgroup, simple group, Abelian group, cyclic group, order of a group, class- Lagrange's theorem statement and proof - Symmetry operations and symmetry elements - Application: construction of group multiplication table (not character table) for groups of order 2, 3, cyclic group of order 4, noncyclic group of order 4 – reducible and irreducible representations- Unitary representation – Schur's lemmas – Great orthogonality theorem – point group -Simple applications : Symmetry operations of water and ammonia- Construction of character table for C_{2v} (water) and C_{3v} (ammonia) molecules
UNIT II: LASER SPECTROSCOPY	Lasers as Spectroscopy Light sources – Special Characteristics of Laser emission- ultra short pulses- laser cooling -Single and multi-mode lasers- Laser tenability- Fluorescence spectroscopy with lasers- Laser Raman Spectroscopy – Non-linear Spectroscopy – Applications of Laser Spectroscopy in medical fields, materials science research
UNIT III: MOSSBAUER SPECTROSCOPY	Basic idea of Mossbauer spectroscopy - Principle- Mossbauer effect- Recoilless emission and absorption- Chemical shift -Effect of electric and

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	magnetic fields – hyperfine interactions- instrumentation-Applications: understanding molecular and electronic structures
UNIT IV: XRAY PHOTOELECTRON SPECTROSCOPY	Principle – XPS spectra and its interpretation- ECSA-EDAX- other forms of XPS – chemical shift - Applications : - stoichiometric analysis- electronic structure- XPES techniques used in astronomy, glass industries, paints and in biological research

UNIT V: MOLECULAR MODELLING	Determination of force constants- force field from spectroscopic data- normal coordinate analysis of a simple molecule (H_2O) – analyzing thermodynamic functions, partition functions, enthalpy, specific heat and related parameters from spectroscopic data- molecular modelling using data from various spectroscopic studies
UNIT VI: PROFESSIONAL COMPONENTS	Expert Lectures, Online Seminars - Webinars on Industrial Interactions/Visits, Competitive Examinations, Employable and Communication Skill Enhancement, Social Accountability and Patriotism
TEXT BOOKS	1. William Kemp, 2019, Organic Spectroscopy (2nd Edition) MacMillan, Indian Edition. 2. C N Banwell and McCash, 1994, Fundamentals of Molecular Spectroscopy, 4th Edition, Tata McGraw-Hill, New Delhi. 3. D.N. Satyanarayana, 2001, *Vibrational Spectroscopy and Applications*, New Age International Publication. 4. B.K. Sharma , 2015, *Spectroscopy*, Goel Publishing House Meerut. 5. J M Hollas, 2002, Basic Atomic and Molecular Spectroscopy, Royal Society of Chemistry, RSC, Cambridge.
REFERENCE BOOKS	1. Demtroder, W, Laser Spectroscopy: Basic concepts and Instrumentation, Springerlink. 2. B. P. Straughan and S. Walker, 1976, Spectroscopy Vol.1., Chapman and Hall, New York. 3. J.I. McHale, 2008, Molecular Spectroscopy, Pearson Education India, New Delhi. 4. David. L. Andrews, **Introduction to Laser Spectroscopy**, Springer, 2020 5. Kalsi P.S, 2016, Spectroscopy of Organic Compounds (7th Edition) New Age International Publishers.
WEB SOURCES	1. Fundamentals of Spectroscopy - Course (nptel.ac.in) 2. http://mpbou.edu.in/slm/msccheJ04.pdf 3. https://onlinecourses.nptel.ac.in/noc20_cy08/preview

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	4. https://www.coursera.org/lecture/spectroscopy/nmr-spectroscopy-introduction-XCWRu 5. https://serc.carleton.edu/research_education/geochemsheets/techniques/mossbauer.html

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Department of Physics

Subject Code	Subject Name
18513AP	Certificate course on astrophysics

Total : 45 hours

Syllabus

Learning Objective:

This course intends to introduce principles of astrophysics describing the science of formation and evolution of stars and interpretation of various heavenly phenomena and provides an understanding of the physical nature of celestial bodies along with the instrumentation and techniques used in astronomical research

UNITS	COURSE DETAILS
UNIT-I	TELESCOPES: Optical telescopes – magnifying power, brightness, resolving power and f/a ratio – types of reflecting and refracting telescopes – detectors and image processing – radio telescopes – Hubble space telescope.
UNIT-II	SOLAR SYSTEM: Bode's law of planetary distances – meteors, meteorites, comets, asteroids – Kuiper belt – Oort cloud – detection of gravitational waves – recent advances in astrophysics.
UNIT-III	ECLIPSES: types of eclipses – solar eclipse – total and partial solar eclipse – lunar eclipse – total and partial lunar eclipse – transits. THE SUN: physical and orbital data – solar atmosphere – photosphere – chromosphere – solar corona – prominences – sunspots – 11 year solar cycle – solar flares.
UNIT-IV	STELLAR EVOLUTION: H-R diagram – birth and death of low mass, intermediate mass and massive stars – Chandrasekar limit – white dwarfs – neutron stars – pulsars – black holes – supernovae. GALAXIES: classification of galaxies – galaxy clusters –interactions of galaxies, dark matter and super clusters – evolving universe.
UNIT-V	ACTIVITIES IN ASTROPHYSICS: (i) Basic construction of telescope (ii) Develop models to demonstrate eclipses/planetary motion (iii) Night sky observation (iv) Conduct case study pertaining to any topic in this paper (v) Visit to any one of the National Observatories Any three activities to be done compulsorily.

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TEXT BOOKS	1. Baidyanath Basu, (2001), An introduction to Astrophysics, Second printing, Prentice – Hall of India (P) Ltd, New Delhi 2. K.S.Krishnaswamy, (2002), Astrophysics – a modern perspective, New Age International (P) Ltd, New Delhi 3. Shylaja, B.S. and Madhusudan, H.R.,(1999), Eclipse: A Celestial Shadow Play, Orient BlackSwan,

Course Outcomes

1. Basic information about the formation of stars, their magnitudes and luminosity
2. Study of distances of stars, stellar mass and temperature
3. Knowledge of astronomical instrument, telescopes, its mountings and image defects

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Department of Physics

Subject Code	Subject Name
18513DC	Certificate course on installation and maintenance of digital circuits

Total : 45 hours

Syllabus

Course Objectives:

The main objectives of this course are to:

1. To make student to understand the importance of digital electronic circuits
2. To bring exposure to various tools and equipment used for installation of digital electronic circuits.
3. To get hands-on training on the installation and maintenance of digital electronic circuits.
4. To bring knowledge on the possibility of Employability and Entrepreneurship avenues in the area of digital electronic circuits.

Unit 1

Digital System and Binary Numbers: Number System and its arithmetic, Signed binary numbers, Binary codes, Cyclic codes, Hamming Code, the map method up to five variable, Don't care conditions, POS simplification, NAND and NOR implementation, Quine McClusky method (Tabular method).

Unit 2

Combinational Logic: Combinational Circuits: Analysis Procedure, Design procedure, Binary adder-subtractor, Decimal adder, Binary multiplier, Magnitude comparator, Multiplexers, Demultiplexers, Decoders, Encoders.

Unit 3

Sequential Logic and Its Applications: Storage elements: latches & flip flops, Characteristic Equations of Flip Flops, Flip Flop Conversion, Shift Registers, Ripple Counters, Synchronous Counters, Other Counters: Johnson & Ring Counter.

Unit 4

Synchronous & Asynchronous Sequential Circuits: Analysis of clocked sequential circuits with state machine designing, State reduction and assignments, Design procedure. Analysis procedure of Asynchronous sequential circuits, circuit with latches, Design procedure, Reduction of state and flow table, Race-free state assignment, Hazards.

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Unit 5

Memory & Programmable Logic Devices: Digital Logic Families: DTL, DCTL, TTL, ECL & CMOS etc., Fan Out, Fan in, Noise Margin, RAM, ROM, PLA, PAL; Circuits of Logic Families, Interfacing of Digital Logic Families, Circuit Implementation using ROM, PLA and PAL; CPLD and FPGA.

Course Outcomes

At the end of the course, trainees/students will be able to:

1 Apply concepts of Digital Binary System and implementation of Gates.

2 Analyze and design of Combinational logic circuits.

3 Analyze and design of Sequential logic circuits with their applications

4 Implement the Design procedure of Synchronous & Asynchronous Sequential Circuits

5 Apply the concept of Digital Logic Families with circuit implementation

References

1. M. Morris Mano and M. D. Ciletti, "Digital Design", Pearson Education.
2. David J. Comer, "Digital Logic & State Machine Design", Oxford University Press.
3. RP Jain, "Modern Digital Electronics", Tata McGraw Hill Publication.

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Department of Physics

Subject Code	Subject Name
18513MC	Certificate course on microcontroller

Total : 45 hours

Syllabus

Course Objectives:

The main objectives of this course are to:

1. To make student to know the significance of microcontroller
2. To convey details about several tools about microcontroller
3. To acquire hands-on training on the maintenance of microcontroller
4. To transfer knowledge on the possibility of Employability and Entrepreneurship avenues in the field of microcontroller

Unit 1

Block diagram of microcontroller : CPU, input device, output device, memory and buses, common features of Microcontrollers : On-chip Oscillator, program and data memory, I/O Ports, Watchdog-timer reset, SFRs, Timers, Counters, Interrupts, ADC, PWM, microprocessor and microcontroller, Hierarchy of microcontrollers, architectures of microcontroller Harvard , Von Neumann RISC and CISC, Applications: House hold , Communication, Office equipment and industrial automation

Unit 2

Blocks of Microcontroller 8051: ALU, PC, DPTR, PSW, Internal RAM, Internal ROM, Latch, SFRs, General purpose registers, Timer/Counter, Interrupt, Ports, Functions of each pin of 8051 Clock circuit, reset Circuit , phase and state in machine cycle of 8051, Memory organization of 8051: Program and Data memory Map, External Memory Addressing and Decoding Logic of 8051, Stack, Stack Pointer and Stack operation, Timers/Counters logic diagram and its operation in various modes, I/O Ports structure: Port 0, Port 1, Port2, Port 3., Serial Communication in various modes, Interrupt structure, vector address, priority and operation

Unit 3

Addressing Modes : Immediate, Register, Direct, Indirect, Indexed, Relative and bit addressing, Instruction set :Data Transfer, Arithmetic, Logical, Branching, and Machine Control, Looping , Counting, sorting and Indexing, Data manipulation, Masking , Stack operation, Conditional programming, Configuration and programming of Timer/Counter using SFRs: TMOD, TCON,

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THx, TLx., Configuration and programming of interrupts using SFRs: IE,IP,Configuration and programming of I/O Port : P0,P1,P2,P3

Unit 4

Switch: Pushbutton, DIP, Thumbwheel, Tilt, Relay,LED,7 segment LED, LCD, ADC0804,Temperature sensor LM35, DAC0808, ADC0804, Damper Control, Hoper Control, DC Motor, Stepper motor, Serial communication using MAX 232,Hyperterminal

Unit 5

Application of microcontroller in various field - Using LM35, ADCC0804, Microcontroller, 7 segment LED - Using Analog Multiplexer 8051,ADC0804,Microcontroller, 7 segment LED,MAX232 - Using GSM Modem, Microcontroller, Relay, Switches - Using Photo interrupter, Microcontroller, 7 Segment LED - Using Pushbutton switches, Microcontroller, Relay, NVRAM.

Course Outcomes

i. At the end of the course, trainees/students will be able to:
   1 Identify features of various microcontroller
ii. Select appropriate microcontroller for different application
iii. Interface microcontroller with hardware for given application
iv. Write and execute assembly language programs(software) for given application
v. Develop small microcontroller based applications.

References

1. Microcontrollers : Principles And Applications Pal Ajit EEE, PHI ,New Delhi,(Latest edition)
2. The 8051 Microcontrollers, Architecture, Programming and Applications Rao Dr. K Uma Pearson Education India, New Delhi,(Latest edition)
3.The 8051 microcontroller and embedded systems Mazidi Ali, Muhammad Mazidi Gillispie Janice PHI, New Delhi,(Latest edition)
4. The 8051 Microcontroller: Architecture, Programming, and Applications Kenneth Ayala J. Thomson Delmar learning,(latest Edition)
5. The 8051 Microcontroller, Mackenzie Pearson Education India, New Delhi,(Latest edition)
6.Programming and customizing the 8051 microcontroller Predko Michael McGraw-Hill, International edition

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Department of Physics

Subject Code	Subject Name
18513PWP	Certificate course on programming with python

Total : 45 hours

Syllabus

Learning Objectives:

1. Learn the syntax and semantics of Python Programming Language.
2. Write Python functions to facilitate code reuse and manipulate strings.
3. Illustrate the process of structuring the data using lists, tuples and dictionaries.
4. Demonstrate the use of built-in functions to navigate the file system.
5. Appraise the need for working on web scraping.

CONTENTS
Unit 1
Introduction, Python Basics: Entering Expressions into the Interactive Shell, The Integer, Floating-Point, and String Data Types, Strog Concatenation and Replication, Storing Values in Variables, Your First Program, Dissecting Your Program. **Flow control:** Boolean Values, Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators, Elements of Flow Control, Program Execution, Flow Control Statements, Importing Modules, Ending a Program Early with sys.exit().
Unit 2
Functions: def Statements with Parameters, Return Values and return Statements, The None Value, Keyword Arguments and print(), Local and Global Scope, The global Statement, Exception Handling.

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Lists: The List Data Type, Working with Lists, Augmented Assignment Operators, Methods.
Unit 3
Dictionaries and Structuring Data: The Dictionary Data Type, Pretty Printing, Using Data Structures to Model Real-World Things. **Manipulating Strings** - Working with Strings, Useful String Methods.
Unit 4
Pattern Matching with Regular Expressions: Finding Patterns of Text without Regular Expressions, Finding Patterns of Text with Regular Expressions, More Pattern Matching with Regular Expressions, Greedy and Nongreedy Matching, The findall() Method, Character Classes, Making Your Own Character Classes, The Caret and Dollar Sign Characters, The Wildcard Character, Review of Regex Symbols, Case-Insensitive Matching, Substituting Strings with the sub() Method, Managing Complex Regexes, Combining re.IGNORECASE, re.DOTALL, and re.VERBOSE. **Reading and Writing Files:** Files and File Paths, The os.path Module, The File Reading/Writing Process, Saving Variables with the shelve Module, Saving Variables with the pprint.pformat() Function. **Organizing Files:** The shutil Module, Walking a Directory Tree, Compressing Files with the zipfile Module.
Unit 5
Web Scraping: Project: MAPIT.PY with the webbrowser Module, Downloading Files from the Web with the requests Module, Saving Downloaded Files to the Hard Drive, HTML. **Working with Excel Spreadsheets:** Excel Documents, Installing the openpyxl Module, Reading Excel Documents, Project: Reading Data from a Spreadsheet, Writing Excel Documents, Project: Updating a Spreadsheet, Setting the Font Style of Cells, Font Objects, Formulas, Adjusting Rows and Columns, Charts.

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Text Books:

1. Al Sweigart, "Automate the Boring Stuff with Python", William Pollock, 2015, ISBN: 978-1593275990.

Reference Books:

1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition,Green Tea Press, 2015, ISBN: 978-93520134755.
2. Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wileyindia Pvt-Ltd. ISBN-13: 978-8126556014.
3. Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Educationindia, 2015. ISBN-13: 978-9332555365.
4. Roberto Tamassia, Michael H Goldwasser, Michael T Goodrich, "Data Structures and Algorithms in Python", 1st Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126562176.
5. ReemaThareja, "Python Programming using problem solving approach", Oxford University press. 2017. ISBN-13: 978-0199480173
6. Charles R. Severance, "Python for Everybody: Exploring Data Using Python 3",1st Edition, Shroff Publishers, 2017. ISBN: 978-9352136278.

Course Outcomes: Upon successful completion of this course, student will be able to

1. Demonstrate the concepts of control structures in Python.
2. Implement Python programs using functions and strings.
3. Implement methods to create and manipulate lists, tuples and dictionaries.
4. Apply the concepts of file handling and regExusing packages.
5. Illustrate the working of scraping websites with CSV.

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Department of Physics

Subject Code	Subject Name
18513SGSC	Diploma course on Science of growing single crystals

Total : 90 hours

Syllabus

Learning Objective:

1. To provide information on the important aspects of nucleation mechanisms involved in the growth of crystals and to evaluate the existing theories of crystal growth.
2. To introduce the development and experimental aspects of crystal growth.
3. To train the students in specific areas of growing techniques in making bulk single crystals related to Lasers, Electronics and Photovoltaic activities.

UNIT I NUCLEATION

Supersaturation and supercooling – nucleation concept – Kinds of nucleation - Homogeneous nucleation - Equilibrium stability and metastable state -Classical theory of nucleation - Gibbs-Thomson equation. Kinetic theory of nucleation - Statistical theory of nucleation - Free energy of formation of nucleus considering translation, vibration and rotation energies. Homogeneous nucleation of Binary system - Induction period. Heterogeneous nucleation - Free energy of formation of a critical heterogeneous - cap shaped -disc shaped nucleus - Heterogeneous nucleation of Binary vapour – Secondarynucleation.

UNIT II THEORIES OF CRYSTAL GROWTH

Theories of crystal growth - Surface energy theory - Diffusion theory - Adsorption layer theory - Volmer theory -Bravais theory - Kossel theory - Stranski's treatment -Two dimensional nucleation theories of Crystal growth - Crystal growth by mass transfer processes -Bulk diffusion model - Surface diffusion growth theories - Mobility of absorbed molecules on a crystal surface - Physical modeling of BCF theory -BCF differential surface diffusion equation – single straight step - Multiple straight parallel steps - Growth rate of an F-face - Giant dislocation steps –Description, Derivation, and interpretation of Temkin's model of crystal growth - PCB theory of crystal growth - Computer simulation technique.

UNIT III MELT GROWTH

Growth of crystal from melt - Bridgman method - Kyropolous method - Czochralski method- Verneuil method - Zone melting method - LEC growth of III - V materials - Growth of oxide materials. Growth of crystal from flux - Slow cooling method - Temperature difference method - High pressure method - Solvent evaporation method - Top seeded solution growth -Growth of superconducting single crystal.

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UNIT IV VAPOUR GROWTH AND EPITAXY

Growth of crystals from vapour phase - Physical vapour deposition - Chemical vapour transport - Open and closed system - Thermodynamics of chemical vapour deposition process - Physical, thermo-chemical factors affecting growth process. Epitaxy:Liquid Phase Epitaxy (LPE) - Vapour Phase Epitaxy (VPE)- Metalorganic Vapour Phase Epitaxy - (MOVPE)-Molecular Beam Epitaxy (MBE) - Atomic Layer Epitaxy (ALE) - Electroepitaxy - Chemical Beam Epitaxy (CBE).

UNIT V SOLUTION GROWTH

Growth of crystals from solutions - solvents and solutions - solubility - preparation of a solution - saturation and supersaturation - Measurement of supersaturation - Expression for supersaturation - Low temperature solution growth - Slow cooling method - Mason-jar method - Evaporation method -Temperature gradient method - Electrocrystallization. Crystal growth in gels - Experimental methods -Chemical reaction method - Reduction method - Complex decomposition method - Solubility reductionmethod - Growth of biologically important crystals - Crystal growth by hydrothermal method.

Course Outcome

- Knowledge on fundamentals, theories and experimental aspects of crystal growth and epitaxy.

REFERENCES

1. J.C. Brice, Crystal growth processes, John Wiley and sons, New York, 1986.
2. A. Laudise, The Growth of single crystals, Prentice Hall, 1970.
3. B.Pamplin, Crystal Growth, Volume 16, Pergamon Press 1975.
4. F.F. Abraham, Homogeneous nucleation theory, Advances in Theoretical Chemistry, AcademicPress, New York, 1974.
5. K.F. Strickland, Kinetics and Mechanism of Crystallization, Academic Press, New York, 1968.
6. AM Alper, Phase Diagrams: Materials Science and Technology, Vol. I-VI, academic Press, NewYork, 1970.

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Department of Physics

Subject Code	Subject Name
18513PP	Certificate course on plasma physics

Total : 45 hours

Syllabus

Pre-Requisites
Fundamentals of Electricity and Magnetism, Electromagnetic theory, Maxwell's equation, Basic knowledge of electrical and electronics instrumentation.

Learning Objectives
➢ To explore the plasma universe by means of in-situ and ground-based observations. ➢ To understand the model plasma phenomena in the universe. ➢ To explore the physical processes which occur in the space environment.

UNITS	Course Details
UNIT I: FUNDAMENTAL CONCEPTS OF PLASMA	Kinetic pressure in a partially ionized - mean free path and collision cross section - Mobility of charged particles - Effect of magnetic field on the motility of ions and electrons-Thermal conductivity- Effect of magnetic field- Quasi- neutrality of plasma Debye shielding distance - Optical properties of plasma.
UNIT II: MOTION OF CHARGED PARTICLES IN ELECTRIC AND MAGNETIC FIELD	Particle description of plasma- Motion of charged particle in electrostatic field- Motion of charged particle in uniform magnetic field - Motion of charged particle in electric and magnetic fields- Motion of charged particle inhomogeneous magnetic field - Motion of charged particle in magnetic mirror confinement - motion of an electron in a time varying electric field- Magneto- hydrodynamics - Magneto-hydrodynamic equations – Condition for magneto hydrodynamic behaviour.
UNIT III: PLASMA OSCILLATIONS AND WAVES	Introduction, theory of simple oscillations - electron oscillation in a plasma – Derivations of plasma oscillations by using Maxwell's equation - Ion oscillation and waves in a magnetic field - thermal effects on plasma oscillations - Landau damping - Hydro magnetic waves - Oscillations in an electron beam.
UNIT IV: PLASMA DIAGNOSTICS TECHNIQUES	Single probe method - Double probe method - Use of probe technique for measurement of plasma parameters in magnetic field - microwave method - spectroscopic method - - laser as a tool for plasma diagnostics- X-ray diagnostics of plasma - acoustic method - conclusion.
UNIT V:	Magneto hydrodynamic Generator - Basic theory - Principle of Working.

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APPLICATIONS OF PLASMA PHYSICS	Fuel in MHD Generator - Generation of Microwaves Utilizing High Density Plasma - Plasma Diode.
UNIT VI: PROFESSIONAL COMPONENTS	Expert Lectures, Online Seminars - Webinars on Industrial Interactions/Visits, Competitive Examinations, Employable and Communication Skill Enhancement, Social Accountability and Patriotism

TEXT BOOKS	1. Plasma Physics- Plasma State of Matter - S. N. Sen, Pragati Prakashan, Meerut. 2. Introduction to Plasma Physics-M. Uman 3. Krall, N. A., and A. W. Trivelpiece. Principles of Plasma Physics. Berkeley, CA: San Francisco Press, 1986. ISBN: 9780911302585.Tanenbaum, B. S. Plasma Physics. New York, NY: McGraw-Hill, 1967. ISBN: 9780070628120. 4. Goldston, R. J., and P. H. Rutherford. Introduction to Plasma Physics. Philadelphia, PA: IOP Publishing, 1995. ISBN: 9780750301831. 5. Hutchinson, I. H. Principles of Plasma Diagnostics. Cambridge, UK: Cambridge University Press, 2005. ISBN: 9780521675741.
REFERENCE BOOKS	1. Chen, F. F. Introduction to Plasma Physics. 2nd ed. New York, NY: Springer, 1984. ISBN: 9780306413322. 2. Introduction to Plasma Theory-D.R. Nicholson 3. Shohet, J. L. The Plasma State. San Diego, CA: Academic Press Inc., 1971. ISBN: 9780126405507. 4. Haseltine, R. D., and F. L. Waelbroeck. The Framework of Plasma Physics. Boulder, CO: Westview Press, 2004. ISBN: 9780813342139. 5. Huddlestone, R. H., and S. L. Leonard. Plasma Diagnostic Techniques. San Diego, CA: Academic Press, 1965
WEB SOURCES	1. https://fusedweb.llnl.gov/Glossary/glossary.html 2. http://farside.ph.utexas.edu/teaching/plasma/lectures1/index.html 3. http://www.plasmas.org/ 4. http://www.plyo.org/Education/whplasma.html 5. http://www.plasmas.org/resources.htm

COURSE OUTCOMES:

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

1. Understand the collision, cross section of charged particles and to able to correlate the magnetic effect of ion and electrons in plasma state.

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2. Understand the plasma and learn the magneto-hydrodynamics concepts applied to plasma.
3. Explore the oscillations and waves of charged particles and thereby apply the Maxwell's equation to quantitative analysis of plasma.
4. Analyze the different principle and techniques to diagnostics of plasma.
5. Learn the possible applications of plasma by incorporating various electrical and electronic instruments.

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Department of Physics

Subject Code	Subject Name
18S13TF	Certificate course on Thin film techniques

Total : 45 hours

Syllabus

Course Objectives:

The main objectives of this course are to:

1. To make the students understand the technique to prepare a nano thin films and device.
2. To bring exposure to various tools and equipment used for thin films characterizations

Unit 1- Introduction

Basic of Thin films and Nanostructures, Role of thin films in devices

Unit 2- FABRICATION OF THIN FILMS

Sol-gel synthesis, Spin coating, Chemical vapor deposition, Physical vapor deposition, Sputtering deposition, ion implantation, Cathodic arc deposition, Pulsed laser deposition, Molecular beam epitaxy

Unit 3- CHARACTERIZATION OF THIN FILMS

x-ray diffraction, UV-vis spectroscopy, squid, four probe resistivity, atomic probe microscopy, profilometer

Unit 4- PROPERTIES OF THIN FILMS

Structural, electrical, magnetic, optical, thermal, etc.

Unit 5- APPLICATION OF THIN FILMS

Application of thin films in different areas such as electronics, medical, defense, sports, automobiles, etc.

Course Outcomes

After learning the course the students should be able to:

1.To notify the learner about the various techniques of nano-thin films.

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2. To know about the growth of nanostructured thin films.

3. To have knowledge about synthesis of nanostructured thin films

References

1. G. Cao, "Nanostructures & Nanomaterials: Synthesis, Properties & Applications" Imperial College Press, 2004.
2. W.T.S. Huck, "Nanoscale Assembly: Chemical Techniques (Nanostructure Science and Technology)".
3. Thin Film Phenomena by K. L. Chopra, McGraw Hill 1969.

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SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATION

BOARD OF STUDIES MEMBERS OF B.Ed. & M.Ed. 2018-2019

CIRCULAR

By direction Board of Studies meeting for the department of Education will be held on 10.05.2018 at 2.00 p.m. in Education Dean Cabin, PRIST DEEMED TO BE University, Thanjavur. The following committee members are requested to attend the meeting.

AGENDA

- Discussion of Curriculum & Syllabus in B.Ed. (Education) Full Time programme – Regulation 2015
- Discussion of Curriculum & Syllabus in M.Ed. (Education) Full Time programme – Regulation 2015

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.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)
Mr.T.Selvaraj, Asst. Prof. / PRIST DEEMED TO BE University (Member, BOS)
Mrs.R.Vaishnavi, 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 10th May, 2018 at 2.00 p.m. in Education Dean Cabin, PRIST DEEMED TO BE University.

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 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.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)
Mr.T.Selvaraj, Asst. Prof. / PRIST DEEMED TO BE University (Member, BOS)
Mrs.R.Vaishnavi, 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 ProfEducation 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 2018-2019.

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.
The Meeting concluded with thanks from Chairperson/ Board of Studies.

List of value added course: Approaches in value education, Academic writing, Origami and learning mathematics, Child psychology, Leadership development

Signature of the Chairman & Members

1. Ve. B. Jasmine Shanthi
2. Beaula Grace. A
3. P. Srinivasan
4.
5.
6. D. Murugan
7.
8.
9.
10.
11. R. Jayashree
12. T. Sebastin
13.

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PRIST DEEMED TO BE UNIVERSITY
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COURSE CODE: 18130VAC1- APPROACHES IN VALUE EDUCATION

Objectives:

- Helping students develop their personalities so they can shape their future and deal with challenges with ease.
- It shapes children to effectively carry out their social, moral, and democratic responsibilities while becoming sensitive to changing circumstances.
- To teach and inculcate the importance of value based living.
- To give students a deeper understanding about the purpose of life.
- To teach and inculcate the essential qualities to become a good leader.

UNIT – I : PHILOSOPHY OF LIFE

Human Life on Earth- Purpose of Life- Meaning and Philosophy of Life-The Law of Nature - Glorifying All form of Life in this Universe – Protecting Nature /Universe

UNIT- II: INDIVIDUAL QUALITIES

Basic Culture Thought Analysis Regulating desire Guarding against anger To get rid of Anxiety , The Rewards of Blessing, Benevolence of Friendship , Love and Charity, Self – tranquility/Peace.

UNIT- III : SOCIAL VALUES (INDIVIDUAL AND SOCIAL WELFARE)

Family, Peace in Family, Society, The Law of Life, Brotherhood, The Pride of Womanhood, Five responsibilities/duties of Man : - a) to himself, b) to his family, c) to his environment, d) to his society, e) to the Universe in his lives. Thriftness /Economics , Health , Education , Governance, People's responsibility/ duties of the community, World peace.

UNIT -IV: MIND CULTURE

Mind Culture, Life and Mind - Bio - magnetism, Universal Magnetism (God – Realization and Self Realization) - Genetic Centre – Thought Action – Short term Memory – Expansiveness – Thought – Waves, Channelizing the Mind, Stages - Meditation, Spiritual Value Tending, Personal Health- Structure of the body, the three forces of the body, life body relation, natural causes and unnatural causes for diseases, Methods in Curing diseases.

UNIT- V: - APPROACHES

Direct Approach- Integrated Approach- Holistic Approach

Outcomes:

To make it a whole school approach.
To teach values during planned value education classes.
To integrate teaching of value with other subjects.

REFERENCE:

1. Value Education for Health, Happiness and Harmony, The World Community ServiceCentre Vethathiri Publications Rs 35/- (for All Units).
2. Philosophy of Universal Magnetism (Bio - magnetism, Universal Magnetism) The WorldCommunity Service Centre Vethathiri Publications (for Unit IV)
3. Thirukkural with English Translation of Rev. Dr. G.U. Pope, Uma Publication, 156, SerfojiNagar, Medical College Road,Thanjavur 613 004 (for All Units)

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COURSE CODE:18130VAC2 - ACADEMIC WRITING

Objective:

- Questioning and substantiating in the relevance of statements;
- Applying analogous cases to qualify and refine value positions;
- Pointing out logical and empirical inconsistencies in arguments;
- Weighing counter arguments; and seeking and testing evidence

UNIT – I Inculcation-Modeling-Positive and negative reinforcement-Manipulating alternatives-Games and simulations-Role playing- To instill or internalize certain values in students-To change the values of students so they more nearly reflect certain desired values

UNIT – II Moral Development- Moral dilemma episodes with small-group discussion-Relatively structured and argumentative without necessarily coming to a "right" - To help students develop more complex moral reasoning patterns based on a higher set of values-To urge students to discuss the reasons for their value choices and positions, not merely to share with others, but to foster change in the stages of reasoning of students

UNIT – III Analysis- Structured rational discussion that demands application of reasons as well as evidence-Testing principles-Analyzing analogous cases-Research and debate- students use logical thinking and scientific investigation to decide value issues and questions - students use rational, analytical processes in interrelating and conceptualizing their values

UNIT – IV Values Clarification- Role-playing games-Simulations-Contrived or real value-laden situations-In-depth self-analysis exercises-Sensitivity activities Out-of-class activities-Small group discussions

UNIT – V Action Learning- Methods listed for analysis and values clarification-
Projects within school and community practice-Skill practice in group
organizing and interpersonal relations- These purposes listed for analysis and values clarification
To provide students with opportunities for personal and social action based on their values-To
encourage students to view themselves as personal-social interactive beings, not fully
autonomous, but members of a community or social system.

Out comes:

- Identify and clarify the value question;
- Assemble purported facts;
- Assess the truth of purported facts;
- Clarify the relevance of facts;
- Arrive at a tentative value decision; and
- Test the value principle implied in the decision.

References

- Adler, A. (1924). The practice and theory of individual psychology. New York: Harcourt Brace Jovanovich.
- Allport, G. (1955). Becoming: Basic considerations for a psychology of personality. New Haven, CT: Yale University Press.
- Asch, S. (1952). Social psychology. Englewood Cliffs, NJ: Prentice-Hall.
- Association for Supervision and Curriculum Development. (1996). Schools as partners in character development (Press release). Arlington, VA: Author. Retrieved December 1997, from http://www.ascd.org/today/position/part.html.
- Bennet, W. (Ed.). (1993). *The book of virtues: A treasury of great moral stories*. New York: Simon & Schuster.

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COURSE CODE:18130VAC3 - ORIGAMI AND LEARNING MATHEMATICS

Objectives:

- Discover origami and its roots in india and else where
- Understand that origami can be a source practical Mathematics

UNIT – I : Introduction-Mathematics teaching- Origami activity- Mathematics teaching with origami-Preservice mathematics teacher-Use of Origami-Opinions about origami

UNIT – II : Method-Research Design, Study Group-Data Collection Tool-Development of Spiral Cube and Square Prism Activity-Data Collection and Analysis-Validity and Reliability

UNIT – III : Findings- Introduction to Spiral Cube and Square Prism and the Making Stages- Clarity and Applicability of the Activity Instructions-Association of the Activity with Attainments-Grade Levels and Mathematical -Second Grade Attainments-Third Grade Attainments-Fourth Grade Attainments-Fifth Grade Attainments-Sixth Grade Attainments

UNIT –IV: Opinions on the Advantages and Disadvantages of the Activity- Advantages and disadvantages of spiral cube and square prism activity- Opinions on Contributions of the Activity to the Preservice Teachers- Contributions of spiral cube and square prism activity to the preservice teachers-

UNIT – V: Discussion and Conclusion-persevere- the justification- mathematics curriculum-geometric shape- contributions of the activity- environment and ensuring hand-eye coordination.

OUTCOMES

- Now, what origami is and fold some simple models.
- Apply some mathematical concepts and problem solving to origami.

References:

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Boz, B. (2015). A journey from two-dimensional papers to three-dimensional origamic cube. Journal of Inquiry Based Activities, 5(1), 20-33. Bozkurt, A., & Polat, M. (2011). Teachers' views on the effect of modeling with counters on learning integers. Gaziantep University Journal ofSocial Sciences, 10(2), 787 -801.

Bozkurt, A., & Altalin, S. (2010). The importance of material development and use in mathematics education and the role of the teacher.

Dumlupınar University Journal of Social Sciences, 27, 47-56.

Celik, L. (2014). Instructional technologies and material design (8th ed.). Ankara: Pegem Academy.

Cepni, S. (2012). Introduction to research and project studies (6th ed.). Trabzon: Celepler Printing.

Cipoletti, B., & Wilson, N. (2004). Turning origami in to the language of mathematics. Mathematics Teaching in the Middle School, 10(1), 26- 31.

Clements, D. H., & McMillen, S. (1996). Rethinking concrete manipulatives. Teaching Children Mathematics, 2(85), 270-279.

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VALUE ADDED COURSE
COURSE CODE 18130VAC4 - CHILD PSYCHOLOGY

Objective:

- Understand the overall span of childhood development along with theories and different perspectives.
- Knowledge about biological basis, developmental disorders and will have idea about treatment.

UNIT - I: Introduction to Child Psychology- The field of child psychology: Definition, nature and history- Theories of child development- Cognitive theories- Behavioral and social cognitive theories- Ecological model- Bronfenbrenner, Durganand Sinha's ecological model in Indian context- Research methods and designs for studying development- Longitudinal research-Cross sectional-Sequential-Correlational-Careers in child psychology

UNIT –II: Periods of Development-Genetic foundations-Genes and chromosomes Heredity and environment-Genetic counseling-Genetic disorders-Conception From fetus to neonate Birth-Types of child birth- Natural, prepared, home deliveries and medications-Stages of child birth Birth complications

UNIT – III: Motor and sensory development- Motor-Development-Reflexes and development of motor skills-Principles of development and growth-Cephalocaudal-Proximodistal Gross-motor development-Fine motor development-Sensory development-Comparison of motor development during infancy and childhood

UNIT – IV: Cognitive development and development of language-Cognitive development in infancy-Piaget's approach-Memory-Stages of memory, strategies of storing information-Information processing approach – Language development-Components of language development-Roots of language-Pre-linguistic development- receptivity to language-Phonological development, semantic development, pragmatic development and bilingualism

OUTCOMES:

- Understand the discipline of child psychology as an area of study
- Understand how theories try to explain children's development
- Discuss important questions that are central to child psychology
- Understand how child psychologists work in different applied settings.

Reference Books:

Laura E. Berk- Child Development- 7th Edition, Easter economy edition, PHI publication
John. W. Santrock Child Development - 13th edition, Tata McGraw hill edition
Carson, Butcher and Mineka. Abnormal Psychology- 11th edition, Pearson education
Feldman

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PRIST DEEMED TO BE UNIVERSITY
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COURSE CODE: 18130VAC5 - LEADERSHIP DEVELOPMENT

Course Objective:

- The course focuses on developing and understanding leadership roles and styles and examine the leader's role as it leads to development of self and organization.

Unit-I: Introduction to Leadership

Traits, styles, skills, behaviors, vision, inspiration and momentum of leadership-International frame work for analyzing leadership-Personality Types and Leadership-Five factor model of personality

Unit II: Leadership Theories

Great Man Theory-Trait theory- Behavioral Theories: Michigan studies, Ohio State University studies, Leadership Grid, Role theory- Contingency Theories: Casual model of Leadership, Normative Decision model, Hersey Blanchard situational model, Vroom & Jago's model, House's Path Goal theory- Contemporary leadership styles

Unit - III: Leadership Development, Succession & Followership

Characteristics, types and evaluation of Leadership Development-Leadership Succession-Choosing a successor, Emotional aspects of leadership succession, developing pool of successors, Followership- Essential qualities of effective followers, Collaboration between leaders and followers.

Unit IV: Leadership and Corporate Culture

Levels of Leadership- Leadership Traits of Highly productive Organizations- Leadership strategies for Productivity improvement- Corporate culture- Purpose- Foundations of a Productivity focused culture- Managerial culture, Leader's action that fosters teamwork- Leadership Commitment.

Unit V: Women in Leadership

Meaning- Definition- Women's unique leadership traits-Women & Leadership-Barriers for Women in Leadership positions- Women in Leadership: Global scenario vs Indian scenario-Current issues in leadership

Course Outcome: On successful completion of this course, the students will be able

- To understand and gain Conceptual knowledge of Leadership.
- To demonstrateanunderstanding of the current leadership theoriesand how they apply to the modern organizations.
- ToAnalyzetheimpactofeffectiveleadershipperspectivesonorganisationalperformance
- To Reengineer the mindset of students which will help them to become effective leaders

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MINUTES OF BOARD OF STUDIES MEETING OF COMPUTER SCIENCE

The Minutes of the Board of Studies meeting in Computer Science was held on 10-04-18 by 10.30 a.m. at Department of computer science, PRIST University, Thanjavur under the chairmanship of Dr.K.Saravanan, Head of the Department of Computer Science.

The following Members were present for the meeting:

Dr.L.Chinnappa	Dean of Arts and Science	Internal Member
Dr.K.Saravanan	Professor and Head	Chairman
Dr.R.Maruthi	Professor	Internal Member
Dr.AV.Seethalakshmi	Professor	Internal Member
G Preethi	Associate Professor	Internal Member
Dr.K.Raja	Associate Professor	Internal Member
P.Karthik	Assistant Professor	Internal Member
G.Gayathri	Assistant Professor	Internal Member
Dr.N.E.Gopalan	Professor, NIT Trichy	Subject Expert, External Member
S.StephenRaj	Director, Ads-E-Park, Chennai	Industry Expert, External Member
S.Kabilan	B.Sc(CS)	Alumni
S.Chandravarun	B.C.A	Student

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The Chairman of Board of Studies in Computer Science Welcomed the members and briefed them about the programmes offered by the department and the existing Syllabi for the programmes offered.

After carefull scrutiny of the existing syllabus, the Board has unanimously decided to continue the existing Syllabi for B.Sc., (CS),BCA and MCA programmes with effect from 2018-2019.

Also the Board has decided to continue the existing syllabi for M.Phil. Programme for 2018-2019.

The New Value added Diploma and Certificate Courses were introduced in the Academic Year 2018-2019.

Name of the course/programme	Course/programme Code	Year of offering
Diploma in Adobe Page maker	18CCAPM01	2018
Diploma in Corel Draw	18CCCD02	2018
Certificate in Ms-Access	18CCMA03	2018
Certificate in Ms-Power point	18CCMP04	2018
Certificate in Designing Photoshop	18CCAP05	2018
Certificate in Macromedia Flash	18CCMF06	2018
Diploma in Graphics Programming	18CCGW07	2018
Certificate in Computer Application	18CCCS02	2018
Certificate in Machine Learning	18CCML01	2018
Certificate in DB Administration	18CCDBA03	2018

The Meeting concluded with thanks from Board of Studies Chairman.

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VALUE ADDED COURSE SYLLABUS

Course: Diploma in Adobe Page maker
Subject Code: 18CCAPM01
Aim:
PageMaker was originally designed to facilitate pasting parts of a publication together after they were individually created with other software.
Objectives:
To provide a conceptual understanding of the basics of Adobe PageMaker and in-depth coverage of drawing and editing tools.
Modules:
Introduction to Publishing

- Overview of traditional publishing
- Overview of desktop publishing
- Overview of PageMaker
- Starting PageMaker

Introduction to PageMaker

- Reviewing a completed publication
- Starting a new publication, including:
- Page setup
- Target printer
- Saving a publication
- Using the story editor to create and place text
- Text appearance changes
- Working with text blocks
- Enhancing the publication
- Printing a Publication

Placing and Manipulating Text

- Assembling one-page publications by importing
- Assembling multiple-page publications by importing and placing text from the word processor
- Text flow options
- manual
- automatic
- semi-automatic
- Placing text in columns

Importing and Manipulating Graphics

- Importing graphics
- Placing graphics within a document
- Working with graphics on the pasteboard
- Cropping a graphic

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- Resizing a graphic

Integrating Text and Graphics

- Additional story editor features
- Find/change
- Spellcheck
- Combining graphics with text
- Text wrap options and standoff
- Customizing the graphics boundary
- Using a PageMaker template to create a new publication which follows a standard layout
- Introduction to master pages to create standard layout elements
- Headers / Footers
- Page Numbers, etc.,
- Introduction to Styles

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Course: Diploma in Coral Draw
Subject Code: 18CCCD02
Aim:
To learn various technologies like formatting, editing, imprinting images, blending and pleating of images to Import or export, printing, creating special effects etc., are used in order to make the conclusion realistic.
Objectives:
The aim of learning Corel Draw training that of forming object is based design such as Logos, company identities, brochures and catalogues with fine skills and depth of creativity.

Module 1: Getting Started with Corel Draw

- Introduction to CorelDraw
- Features of CorelDraw
- Corel Draw Interface
- Tool Box
- Moving from Adobe Illustrator to Corel Draw
- Common Tasks

Module 2: Drawing and Coloring

- Introduction
- Selecting Objects
- Creating Basic Shapes
- Reshaping Objects
- Organizing Objects
- Applying color fills and Outlines

Module 3: Mastering with Text

- Introduction
- Text Tool
- Artistic and paragraph text
- Formatting Text
- Embedding Objects into text
- Linking Text to Objects

Module 4: Applying Effects

- Introduction
- Power of Blends
- Distortion
- Contour Effects
- Envelopes
- Lens effects
- Transparency
- Creating Depth Effects
- Power Clips

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Module 5: Working with Bitmap Commands

- Introduction
- Working with Bitmaps
- Editing Bitmaps
- Applying effects on Bitmaps
- Printing.

Deployment:

- Deploying using Github
- Angular2 Hosting Options
- Hosting Angular App on Cloud server Heroku

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Course: Certificate in Ms-Access
Subject Code: 18CCMA03
Aim:
To learn the essential features of access to create and alter simple relational databases.
Objectives:
Access can work directly with data from other sources, including many popular PC database programs, with many SQL databases on the desktop, on servers, on minicomputers, or on mainframes, and with data stored on Internet or Intranet web servers.

Module 1: Create

- Create a Database with a simple Table called "Employees"
- Apply queries for the table
- Sort by their date of joining.

Module 2: Retrieve

- Select records that matches specific condition using Queries.
- Create Relationships among the different tables.
- Create Queries using Built-in functions.

Module 3: Update & Delete

- Develop Forms to enter data into the Student Marks Database.
- Develop Forms for Employee Database as well as Electricity Bill Database.
- Develop Reports and execute it.

Module 4: Working with Forms

- Introduction to Forms and Their Uses
- Creating and Modifying Forms
- Adding Controls (Text Boxes, Combo Boxes, etc.)
- Using Form Wizards
- Form Layouts and Design Techniques

Module 5: Advanced Query Techniques

- Creating Parameter Queries
- Using Aggregate Functions (SUM, AVG, COUNT)
- Working with Subqueries
- Using Form Wizards
- Creating Crosstab Queries

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Course: Certificate in Ms-Power point
Subject Code: 18CCMP04

AIM:

This PowerPoint training course will take you from the basics through to sophisticated techniques to help you create polished slides that will be sure to impress for your next project or presentation.

OBJECTIVES:

Goals purpose and characteristics Goals are general statements of the program's purposes, focus on what the program hopes to accomplish in the future. What they students should be able to do when they leave the program. Serve as one basis for developing more precise and observable objectives.

MODULES:

1. Create a slide show presentation for a Seminar (Choose your own topics)
    a. Enter the Text in the Outline View
    b. Create Non-Bulleted and Bulleted Text
2. Create a slide show presentation for a Science Exhibition
    a. Create Non-Bulleted and Bulleted text
    b. Apply appropriate Text Attributes
3. Create slide show presentation for an Invitation
    a. Insert an Object form a Bitmap File
    b. Apply appropriate Text Attributes
    c. Rotate the Object to 45 degree
    d. Apply Shadow to the Object
4. Create a slide show presentation to display percentage of marks in each semester for all Students
    a. Use Bar chart (x-axis: semester; y-axis: % of marks)
    b. Use different Presentation Template and different Transition Effect for each slide
    c. Use different Text Attributes in each slide
5. Create a slide show presentation for a Shop Advertisement to be open shortly.
6. Create a slide show presentation to display Percentage of Sales in each quarter for the any Vendor using bar chart (x-axis: Quarter; y-axis: % of sales)
7. Create a slide show presentation for Tourists Places
8. Create a slide for Calendar using appropriate Text attributes and insert an object from a Bitmap file.

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Course: Certificate in Designing Photoshop
Subject Code: 18CCAP05

AIM

Adobe Photoshop is used to edit and improve the quality of images, not only images we can create animated gifs, wap and web apps etc.,

OBJECTIVES

Photoshop is a powerful raster based graphics program produced by the Adobe Corporation.
It has long been Adobe's flagship product, and is widely used for a variety of project and purposes worldwide.
The program has a huge number of filters, functions and other tools that help the graphics artist complete his task.
In addition, there is a huge support base for Photoshop, with countless online sites devoted to the program, filled with tips and tutorials.
There are also books, online a college courses and the documentation at Adobe itself.
The graphics uses for Photoshop are almost unlimited.

MODULES

1. Design a Visiting card with Background Image.
2. Design an Identity card with Photo.
3. Design a Letter pad with LOGO.
4. Create an Advertisement in a Newspaper for a shop.
5. Design a Calendar with Pictures.
6. Design a Magazine using different type of Tools.
7. Create a Photoshop image using Lasso Tool.
8. Design a CD Cover.

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Course: Certificate in Macromedia Flash
Subject Code: 18CCMF06

AIM

Macromedia Flash is use to develop a rich content, user interfaces and web applications. While Adobe Flash Player is a multiple-platform client.

OBJECTIVES

Cross browser compatibility

Image replacement for special fonts

Better expression through animation

Interactivity

MODULES

1. Drawing and Painting original art by using simple objects in flash.
2. Develop a Flash Document by applying different type of Styles in Text with Animations.
3. Create a frame-by-frame animation technique.
4. Develop a program for animation with motion Tweening.
5. Develop a program for animation with Shape Tweening.
6. Develop a program for adding sound to your movies.
7. Create a Simple Banner.
8. Create a Simple Animation by using Movie Clip and Graphic Symbols.

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Course: Diploma in Graphics Programming
Subject Code: 18CCGW07

MODULE 1:

- Computer Studies
- Typographic Design
- Generic Skills
- Graphics Principle and Method of Design Introduction to Multimedia Basic Information
- Colour Theory for Computer Sound Principles
- Visual Communication
- Digital Publishing

MODULE 2:

- Principles of Management
- Drawing as Basis for 2D and 3D Animation
- Design: Character Background & Concept
- Introduction to Computer Animation
- Modelling Using CAD
- Web Design
- Digital Portfolio Development & Presentation Multimedia Authoring

MODULE 3:

- Flash & Scripting for the Web
- Web Campaign Implementation
- Animation the Production Process
- Sound Recording
- Breakdown: Voice

MODULE 4:

- Music & Effects Film
- Composing/Shooting on Film
- Project-I + Case Study I
- Industrial Training

MODULE 5:

- Live Project
- Team Management
- Language Career planning and guidance

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Course: Certificate in Computer Application
Subject Code: 18CCCS02

MODULE 1:

Introduction to Computers
Basic Concepts: Definition, components, and types of computers.
Computer Hardware: CPU, memory, storage devices, and peripherals.
Computer Software: Operating systems, application software, and utility programs.

MODULE 2:
Operating Systems
Windows Operating System: Basic navigation, file management, and system settings.
Introduction to Other Operating Systems: Overview of Linux, macOS.

MODULE 3:
Word Processing
Microsoft Word: Document creation, formatting, styles, templates.
Advanced Features: Tables, graphics, mail merge, and referencing.

MODULE 4:
Spreadsheet Applications
Microsoft Excel: Basic functions and formulas, cell formatting, data entry.
Advanced Features: Charts, pivot tables, data analysis tools, and macros.

MODULE 5:
Presentation Software
Microsoft PowerPoint: Creating and formatting slides, adding multimedia, animations, and transitions.
Design Principles: Effective presentation design and delivery techniques.

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Course: Certificate in machine learning
Subject Code: 18CCML01

MODULE -1

- Probability Theory, Linear Algebra, Convex Optimization - (Recap).
- Introduction: Statistical Decision Theory - Regression, Classification, Bias Variance.
- Linear Regression, Multivariate Regression, Subset Selection, Shrinkage Methods, Principal Component Regression, Partial Least squares.
- Linear Classification, Logistic Regression, Linear Discriminant Analysis.
- Perceptron, Support Vector Machines

MODULE -2

Neural Networks - Introduction, Early Models, Perceptron Learning, Backpropagation, Initialization, Training & Validation, Parameter Estimation - MLE, MAP, Bayesian Estimation.

MODULE -3

Decision Trees, Regression Trees, Stopping Criterion & Pruning loss functions, Categorical Attributes, Multiway Splits, Missing Values, Decision Trees - Instability Evaluation Measures.

MODULE -4

Bootstrapping & Cross Validation, Class Evaluation Measures, ROC curve, MDL, Ensemble Methods - Bagging, Committee Machines and Stacking, Boosting, Gradient Boosting, Random Forests, Multi-class Classification, Naive Bayes, Bayesian
Networks-Undirected Graphical Models, HMM, Variable Elimination, Belief Propagation-Partitional Clustering, Hierarchical Clustering, Birch Algorithm, CURE Algorithm, Density based Clustering- Gaussian Mixture Models, Expectation Maximization

MODULE -5

Learning Theory, Introduction to Reinforcement Learning, Optional videos (RL framework, TD learning, Solution Methods, Applications).

Books and references:

The Elements of Statistical Learning, by Trevor Hastie, Robert Tibshirani, Jerome H. Friedman (freely available online)
Pattern Recognition and Machine Learning, by Christopher Bishop (optional)

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Course: Certificate in DB Administration
Subject Code: 18CCDBA03

UNIT – I

Database concepts: A relational Approach – Database Management Systems (DBMS) – Relational Database Model – Integrity rules – Theoretical Relational Languages - Database Design: Data Modeling and Normalization.

UNIT – II

Oracle 8: An overview - Personal Databases – Client / Server Databases - Table Creation & Modification: Data types – Constraints – Creating an Oracle Table - Working with tables: Data Management and retrieval.

UNIT – III

Multiple Tables: Join – Set Operators - Sub-Query - Advanced Features: Objects, Transactions and Control – Views – Sequences – Synonyms – Index – Controlling Access – Object privileges.

UNIT – IV

PL/SQL: Programming Language Basic – History of PL/SQL – Fundamentals of PL/SQL – Data types – Variable declaration - SQL and Control structures in PL/SQL.

UNIT – V

Cursors and Exceptions – Procedures, Functions and Packages.Reference

Book:

1. Nilesh Shah, "Database Systems Using Oracle", Prentice Hall Pvt Ltd, New Delhi
2. Abraham Silberschatz Henry F.Korth S.Sudarshan, "Database System Concepts", Tata McGraw Hill Publishing Company Limited, Noida, U

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Dr.R.Maruthi	
Dr.AV.Seethalakshmi	
G Preethi	
P.Karthik	
G.Gayathri	
Dr.K.Raja	
Dr.N.Gopalan	
Dr.G.Gopinath	

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Department of Chemistry

Board of Studies-Minutes for the Academic Year 2018-2019

Minutes of the Board of Studies (BoS) meeting held on 16-04-2018 at 9.30 am in PRIST University, Vallam, Thanjavur.

Chairperson of the BoS, Department of Chemistry welcomed the members. He then discussed the changes needed in the syllabus of B.Sc. (Chemistry) and Ancillary Chemistry to BSc (Bio-chemistry) to the Academic and Industrial Experts, and to the committee members as well. The committee carefully scrutinized the syllabus and gave meaningful suggestions to modify. Accordingly, the committee submitted the above for the approval of the academic council.

The meeting concluded with vote of thanks.

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Dean of Arts & Science
PRIST Deemed to be University
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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF CHEMISTRY

Circular

12-04-2018

The Board of Studies meeting will be on 16-04-2018 at 2.30 pm in the department. Staff members are requested to attend the meetingAgenda of the meeting:

Curriculum

Feedback

Academic Calendar

Department Activities

Head of the Department
Department of Chemistry
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Dean of Arts & Science
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DEPARTMENT OF CHEMISTRY

MINUTES OF THE DEPARTMENT ACADEMIC COMMITTEE MEETING

Minutes of the Board of Studies (BoS) meeting held on 16-04-2018 at 10.30 am in PRIST, Vallam, Thanjavur.

Chairperson of the BoS, Department of Chemistry welcomed the members

NAME & DESIGNATION

Dr.Kabilan Professor /Acadamic Expert

Dr.P.Balamurugan Professor /Acadamic Expert

Dr. P. Parthiban Professor

Dr. M. Jerome Rozario Professor

Dr. D. Senthilnathan Associate Professor

Dr. J.S. Nirmalram Associate Professor

Dr. R Manikandan Assistant Professor

Dr. D. Chinnaraja Assistant Professor

Dr. M. Surendra Varma Assistant Professor

Dr. A. Jenif D'souza Assistant Professor

Dr. N.V.Prabhu Assistant Professor

Dr. J. Thalasidhasan Assistant Professor

Dr. C.R. Shanthi Assistant Professor

Dr. J.Silabarasan Assistant Professor

Dr.P.Rajamohan Assistant Professor

Head of the Department
Department of Chemistry
PRIST Deemed to be University
Vallam, Thanjavur - 613403

Dean of Arts & Science
PRIST Deemed to be University
Thanjavur - 613 403, Tamilnadu

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Board of Studies-Minutes for the Academic Year 2018-2019

LIST OF MEMBERS 2018-2019

S.No	Name Of The Members	Designation	SIGNATURE
1	Dr.Kabilan	Professor /Acadamic Expert	
2	Dr.P.Balamurugan	Industrial Expert	
3	Dr. P. Parthiban	Professor	
4	Dr. M. Jerome Rozario	Professor	
5	Dr. D. Senthilnathan	Associate Professor	
6	Dr. J.S. Nirmalram	Associate Professor	
7	Dr. R Manikandan	Assistant Professor	
8	Dr. D. Chinnaraja	Assistant Professor	
9	Dr. M. Surendra Varma	Assistant Professor	
10	Dr. A. Jenif D'souza	Assistant Professor	
11	Dr. N.V.Prabhu	Assistant Professor	
12	Dr. J. Thulasidhasan	Assistant Professor	
13	Dr. C.R. Shanthi	Assistant Professor	
14	Dr.J.Silaiarasan	Assistant Professor	
15	Dr.P.Rajamohan	Assistant Professor	

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DEPARTMENT OF CHEMISTRY

MEETING OF BOARD OF STUDIES IN DEPARTMENT OF CHEMISTRY (16.04.2018)

MINUTES OF THE MEETING

Prof. Dr. P. Balamurugan (Industrial Expert)
AGM-Quality Control,
Alembic Pharma,
Gujarath.

The Board after a detail and thorough examination has suggested the following recommendation to the academic council for approval.

1. Change of syllabus recommended for

BSc-General Chemistry I

MSc-Inorganic Chemistry - II,

The members of BOS has suggested to change the course structure by introducing new theory courses and Practical Courses in the curriculum.

2.Introduction of programe Exit Examination

3. Recommendation for Panel of Examiners

The BOS carefully scrutinized the Panel of Examiners and approved the same.

The Minutes of BOS meeting were reviewed and approved.

4. To introduce experintental learning

5.To considered Environmental studies and Indian Constitution as non-credit courses.

6.CIA components- Weekly Test I-20% Weekly Test II-20% + Pre Semester-20%- MCQ-20 marks + Assignment/Activity-20 marks-100.

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DEPARTMENT OF CHEMISTRY

MEETING OF BOARD OF STUDIES IN DEPARTMENT OF CHEMISTRY (16.04.2018)

MINUTES OF THE MEETING

The Meeting of Board of Studies in the department of Chemistry was held on 16.04.2018 at 10.30 am in the seminar hall at PRIST University Vallam Campus under the Chairmanship of Prof.Dr.M.Jerome Rozario.

The following members were present:

Dr.Kabilan Professor /Acadamic Expert

Dr.P.Balamurugan Professor /Acadamic Expert

Dr. P. Parthiban Professor

Dr. M. Jerome Rozario Professor

Dr. D. Senthilnathan Associate Professor

Dr. J.S. Nirmalram Associate Professor

Dr. R Manikandan Assistant Professor

Dr. D. Chinnaraja Assistant Professor

Dr. M. Surendra Varma Assistant Professor

Dr. A. Jenif D'souza Assistant Professor

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SCHOOL OF ARTS AND SCIENCE DEPARTMENT OF CHEMISTRY

We have collected the feedback on curriculum from all the stakeholders for the academic year 2017-2018. We has been analysis the feedback and find the issues and proposal from students, Alumni, Academic Peer Employer Parents.

- As per analysis of student's feedback, students feel that there is need to add latest knowledge in the syllabus.
- Former students feel that there is refurbishing of evaluation pattern for communication skills oriented and a soft skill oriented course was suggested.
- Proprietors suggested that there is necessity to include the new curriculum aspect syllabus
- Speculative peer has been suggested to familiarize the research oriented course in the curriculum
- Parents feel to revise the employability courses on curriculum.

B.SC CHEMISTRY

New courses:

- Pharmaceutical chemistry new Course updated during V Semester
- Agricultural Chemistry new course updated during V Semester.
- Polymer Chemistry new course updated during V Semester
- Analytical Chemistry new course introduce during VI Semester.
- Free Elective-Computational Chemistry new course introduce during VI Semester.

Syllabus Revised:

Language-I course have been changed all the five units in the new syllabus for "Tamil-I" during semester-I, II, III, IV

Electives;

Head of the Department
Department of Chemistry
PRIST Deemed to be University
Vallam, Thanjavur - 613403

Dean
School of Arts & Science
Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
Deemed to be University
Vallam, Thanjavur - 613 403.

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Research courses:

- Research Led Seminar new Course introduced during II Semester.
- Research Methodology new Course introduced during III Semester
- Participation in Bounded Research new Course introduced during V Semester

M.Sc., Chemistry:

New Courses:

Environmental Chemistry I Semester.

Research Courses:

- Research Led Seminar new Course introduced during I Semester.
- Research Methodology new Course introduced during II Semester.

Take action for their feedback on curriculum

Resolved to take note of the abstract of stake holders feedback on curriculum collected during the year 2017-2018 and further resolved to change the Syllabus content for B.Sc., Chemistry Bachelor of science M.Sc. Chemistry Master of science, M.Phil in Chemistry, Master of Philosophy with effect from 2018-19 by taking into consideration the participants feedback on curriculum

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Dr. S. KABILAN, M.Sc., Ph.D.
Professor of Organic Chemistry
Department of Chemistry
Annamalai University
Annamalainagar – 608 002
Tamilnadu, India
E-mail:prskabilan@rediffmail.com
kabilan@sify mail.com
Tel: +91-94439-24629

To

The Registrar,

PRIST University

Thanjavur

Sub: Acceptance Letter-Reg.

Ref: Ref: PU/RO/AC/BOS/SAS-CHE/01

Sir,

It is my pleasure to accept the appointment as member in Board of Studies in the department of Chemistry.

I shall take part in the Board of Studies meeting scheduled by the Chemistry department.

Thanking you,

Yours Truly,

Head of the Department
Department of Chemistry
PRIST Deemed to be University
Vallam, Thanjavur-613 403

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Dean of Arts & Science
PRIST Deemed to be University
Thanjavur - 613 403, Tamilnadu

From:

P. Balamurugan,

Cipla Ltd, Bangalore

To

The Registrar,

PRIST University, Thanjavur.

Sub: Letter of Acceptance – BoS Member – reg.,

Dear Sir,

I acknowledge the receipt of your letter dated 5.6.2015 for appointing me to act as an industrial Expert member in the board of studies of Chemistry Department.

With Sincere Thanks,

(P. Balamurugan)

Head of the Department
Department of Chemistry
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Vallam, Thanjavur-613403

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF CHEMISTRY

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- Proprietors suggested that there is necessity to include the new curriculam aspect syllabus.
- Speculative peer has been suggested to familiarize the research oriented course in the curriculum.
- Parents feel to revise the employability courses on curriculum.

B.Sc CHEMISTRY

New courses:

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- Agricultural Chemistry new course updated during V Semester.
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Syllabus Revised:

- Language-I course have been changed all the five units in the new syllabus for "Tamil-I".during semester-I,II,III,IV.

Electives:

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Dean of Arts & Sci. (I/c)
PRIST Deemed to be University
Thanjavur-613 403, Tamil Nadu

Research courses:

- Research Led Seminar new Course introduced during II Semester.
- Research Methodology new Course introduced during III Semester.
- Participation in Bounded Research new Course introduced during V Semester.

M.Sc., Chemistry:

New Courses:

- Environmental Chemistry I Semester.

Research Courses:

- Research Led Seminar new Course introduced during I Semester.
- Research Methodology new Course introduced during II Semester.

Take action for their feedback on curriculum

Resolved to take note of the abstract of stake holders feedback on curriculum collected during the year 2016-2017 and further resolved to change the Syllabus content for B.Sc., Chemistry ,Bachelor of science,M.Sc.,Chemistry ,Master of science, M.Phil.,in Chemistry, Master of Philosophy with effect from 2018-19 by taking into consideration the participants feedback on curriculum.

Head of the Department
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M.Sc.-CHEMISTRY

(For the candidates admitted from the academic year 2017-18 onwards)

COURSE STRUCTURE

Course Code	Course Title	L	T	P	C
	SEMESTER - I				
17214SEC11	Organic Chemistry-I	5	1	-	5
17214SEC12	Inorganic Chemistry-I	5	-	-	4
17214SEC13	Physical Chemistry-I	5	-	-	4
17214SEC14L	Core Practical-I: Organic Chemistry Lab-I	-	-	5	3
17214SEC15L	Core Practical-II: Inorganic Chemistry Lab-I	-	-	5	3
17214DSC16	Discipline Specific Elective-I 1. Environmental Chemistry (17214DSC16A) 2. Food Chemistry (17214DSC16B)	5	5	-	4
17214CRS	Research Lod Seminar	-	-	-	1
	Total	**20**	**1**	**10**	**24**
	SEMESTER - II				
17214SEC21	Organic Chemistry-II	5	-	-	4
17214SEC22	Inorganic Chemistry-II	5	1	-	5
17214SEC23	Physical Chemistry-II	5	-	-	4
17214SEC24L	Core Practical-III: Organic Chemistry Lab-II	-	-	5	3
17214SEC25L	Core Practical-IV: Inorganic Chemistry Lab-II	-	-	5	3
17214DSC26	Discipline Specific Elective-II 1. Industrial Chemistry (17214DSC26A) 2. Polymer Chemistry (17214DSC26B)	5	-	-	4
172MPCRDR7	Research Methodology	4	-	-	3
17214BRC28	Participation in Bounded Research	-	-	-	2
	Total	**24**	**1**	**10**	**28**

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SEMESTER - III					
17214SEC31	Organic Chemistry-III	5	-	-	4
17214SEC32	Inorganic Chemistry-III	5	-	-	4
17214SEC33	Physical Chemistry-III	5	1	-	5
17214SEC34L	Core Practical-V: Physical Chemistry Lab-I	-	-	5	3
17214SEC35L	Core Practical-VI: Physical Chemistry Lab-II	-	-	5	3
172--GEC36	General Elective Writing for the Media (17211GEC35A) Applicable Math'l Techniques (17212GEC35B) Internet and Web Design (17222GEC35C) Insurance Services (17261GEC35D) Counselling Psychology (17280GEC35E)	4	-	-	3
1714SRC3	Participation in Scaffold Research	-	-	-	2
	Total	**19**	**1**	**12**	**24**
SEMESTER-IV					
17214DSC41	Discipline Specific Elective-III 1. Medicinal Chemistry (17214DSC41A) 2. Nanochemistry (17214DSC41B)	5	-	-	4
152MPA02	Project	-		20	10
	Total	**5**	**-**	**20**	**14**
	Total Credits of this Program				**90**

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Thanjavur,

Tamilnadu, India.

B.Sc. - CHEMISTRY

Research Integrated Curriculum

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PRIST UNIVERSITY

Under Section 3 of UGC Act, 1956

B.Sc. - CHEMISTRY
Research Integrated Curriculum
(For the candidates admitted from the academic year 2018-19 onwards)

COURSE STRUCTURE **SEMESTER – I**

COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC11/ 17131AEC11/ 17111AEC11	Tamil – I / Hindi – I / Advanced English – I	4	0	0	2
17111AEC12	English – I	4	0	0	2
17114AEC13	Core – I: General Chemistry - I	6	1	0	6
17114AEC14L	Core Practical – I: Volumetric Analysis	0	0	3	2
17112AEC15A	Ancillary – I: Mathematics - I	4	0	0	4
17112AEC16A	Ancillary –I: Mathematics - II	4	0	0	4
171__SEC01__	Skill Based Elective – I	0	0	2	1
17111SEC01L	Communicative English Lab – I	0	0	1	1
171INDCONS	Indian Constitution	1	0	0	1
	Total	23	1	6	23

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SEMESTER – II

COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC21/ 17131AEC21/ 17111AEC21	Tamil – II/ Hindi – II/ Advanced English – II	4	0	0	2
17111AEC22	English – II	4	0	0	2
17114AEC23	Core – II: General Chemistry - II	6	1	0	6
17114AEC24L	Core Practical – II: Organic Analysis	0	0	3	2
17112AEC25B	Ancillary – I: Mathematics - III	4	0	0	4
17112AEC26B	Ancillary – I: Mathematics - IV	4	0	0	3
17114RLS27	Research Led Seminar	0	0	0	1
171__20SEC02__	Skill Based Elective - II	0	0	2	1
17111SEC02L	Communicative English Lab-II	0	0	2	1
	Total	22	1	7	23

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SEMESTER – III

COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC31/ 17111AEC31/ 17131AEC31	Tamil –III / Hindi –III / Advanced English – III	4	0	0	2
17111AEC32	English – III	4	0	0	2
17114AEC33	Core – III: General Chemistry - III	5	0	0	5
17114AEC34L	Core Practical – III: Physical Chemistry	0	0	3	3
17113AEC35	Ancillary-II: Physics - I	4	0	0	4
17113AEC36L	Ancillary-II: Physics Practical	0	0	3	3
171PHSRM37	Research Methodology	3	0	0	3
171__SEC03__	Skill Based Elective - III	0	0	2	1
17111SEC03L	Communicative English Lab - III	0	0	2	1
	Total	**20**	**0**	**10**	**24**

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SEMESTER – IV

COURSE CODE	COURSE TITLE	L	T	P	C
17110AEC41/ 17131AEC41/ 17111AEC41	Tamil–IV / Hindi –IV / Advanced English- IV	4	0	0	2
17111AEC42	English-IV	4	0	0	2
17114AEC43	Core – IV: General Chemistry - IV	6	0	0	6
17114AEC44L	Core Practical – IV: Physical Chemistry	0	0	3	3
17113AEC45	Ancillary-II: Physics - II	6	0	0	6
17113AEC46L	Ancillary-II: Physics Practical - II	0	0	3	3
171__SEC04__	Skill Based Elective – IV	0	0	2	1
17111SEC04L	Communicative English Lab -IV	0	0	1	1
171ENVTSTU	Environmental Studies	1	0	0	1
	Total	21	0	9	25

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SEMESTER – V

COURSE CODE	COURSE TITLE	L	T	P	C
17114AEC51	Core – V : Inorganic Chemistry - I	5	0	0	4
17114AEC52	Core – VI : Organic Chemistry - I	5	0	0	4
17114SEC53	Core –VII : Physical Chemistry - I	4	1	0	4
17114AEC54L	Core Practical – V: Inorganic Qualitative Analysis	0	0	3	3
17114AEC55L	Core Practical – VI: Gravimetric Analysis	0	0	3	3
17112DSC56_	Discipline Specific Elective -I	5	0	0	4
17114BRC57	Participation in Bounded Research	0	0	0	2
171__SEC05__	Skill Based Elective – V	0	0	2	1
17111SEC05L	Communicative English Lab – V	0	0	2	1
	Total	19	1	10	26

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SEMESTER – VI

COURSE CODE	COURSE TITLE	L	T	P	C
17114AEC61	Core –VIII : Inorganic Chemistry - II	5	0	0	5
17114AEC62	Core –IX : Organic Chemistry - II	5	0	0	5
17114SEC63	Core –X : Physical chemistry - II	5	0	0	5
17112DSC64_	Discipline Specific Elective - II	4	0	0	4
171__GEC65_	General Elective	4	0	0	2
17114PRW66	Project Work	0	0	0	5
171__SEC06_	Skill Based Elective - VI	0	0	2	4
17111SEC06L	Communicative English Lab-VI	0	0	2	1
17114EXACT	Extension Activities	0	0	0	1
	Total	23	0	7	29
Total Credits of the Program					150

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DISCIPLINE SPECIFIC ELECTIVE COURSES

Semester	Elective No.	Course Code	Course Title
V	I	17112DSC56A (OR) 17112DSC56B	a) Pharmaceutical Chemistry (OR) b) Agricultural Chemistry
VI	II	17112DSC66A (OR) 17112DSC66B	a) Polymer Chemistry (OR) b) Analytical Chemistry

GENERAL ELECTIVE COURSE

Semester	Elective No.	Course Code	Course Title
VI	A	17111GEC65A	Journalism
	B	17112GEC65B	Development of Mathematical Skills
	C	17120GEC65C	Web Technology
	D	17122GEC65D	E-Commerce and its applications
	E	17161GEC65E	Indirect Tax

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SKILL ENHANCED COURSES

Semester	Skill Based Elective	Course Code	Course Title
I	I	17120SEC01AL (OR) 171__SEC01B	a) Package Lab - I (OR) b) Soft Skill - I
II	II	17120SEC02AL (OR) 171__SEC02B	a) Package Lab - II (OR) b) Soft Skill II
III	III	17120SEC03AL (OR) 171__SEC03B	a) Package Lab - III (OR) b) Soft Skill - III
IV	IV	17120SEC04AL (OR) 171__SEC04B	a) Package Lab - IV (OR) b) Soft Skill - IV
V	V	17120SEC05AL (OR) 171__SEC05B	a) Package Lab - V (OR) b) Soft Skill - V
VI	VI	17120SEC06AL (OR) 171__SEC06B	a) Package Lab - VI (OR) b) Soft Skill - VI

EXTENSION ACTIVITIES

a. Participation in Seminars

b. Service to Society

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COURSE CODE	COURSE TITLE	L	T	P	C
17114DSC36A	Discipline Specific Elective: I Pharmaceutical Chemistry	5	0	0	4

Aim:

- To develop pharmaceutical knowledge to the learners.

Objectives:

- Imparting basic knowledge about the drugs.
- Developing knowledge about pharmacy.

Learning Outcomes:

- Students who graduate with a major in Pharmaceutical Chemistry will be able to:
- Understand the principles of Pharmaceutical Chemistry.

To know the knowledge about antiseptic and anaesthetics.

To have employability.

UNIT I

ALKALOIDS –

General methods of extraction from a plant source, colour reaction and detection — morphine and quinine with special refrence to structure relationship (SAR) and uses. Chemistry of sulphonamides — sulphapyridine phthalyl sulphathiazole — sulpha furazole and protosil —preparation and uses —- vitamins —- classification of vitamins — vitamin A,B 1 and B2, ascorbic acid — their synthesis, estimation and uses.

UNIT II

ENZYMES —

Characteristics —- classification — composition and biological functions — composition of blood and blood plasma — analysis of serum proteins — functions of plasma proteins — osmotic regulation — functions of hemoglobin, transport of oxygen and maintenance of pH of blood — analysis of hemoglobin in blood — Rh factor — blood pressure — normal, high and low and to control — diagnostic test for sugar, salt and cholesterol in serum —medically important compounds of Al, P, As and Fe — their preparation and applications.

UNIT III

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SYNTHESIS OF HETEROCYCLICS –

Drugs derived from — pyridine derivatives — triphenyl amine and mepyramine — quinoline derivatives — chloroquine and primaquine — pyrimidines — urides and barbiturates. Antibiotics — pharmacological action — structural elucidation — synthesis and rises of chloramphenicol and penidillin.

UNIT IV

ORGANIC DIAGNOSTIC AGENTS —

X-ray contrast media (radiopaques) sodium diatrizolate,— evan's blue — indigocarmine — methylene blue — histamine — pentagastrin — xylose and sodium benzoate — clinical estimation of proteins, glucose, urea, blood, cholesterol and hemoglobin — analgesic — classification — narcotic analgesics — morphine and derivatives — totally synthetic analgesic — pethidine and methadones — antipyretic analgesics — salicylic acid derivatives, indolyl derivatives and p-aminophenol derivatives —synthetic — action and uses.

UNIT V

ANAESTHETICS—

Preparation and uses of general and local gaseous anaesthetics —ether, vinylether, methoxy flourane, halogenated hydrocarbons like choloroform, halothane, tricholoethylene, ethyl chloride, cyclopropane, nitrous oxide. Thiopentane sodium, methohexitone and propanoid- local anahetics- cocaine and its derivatives. Antiseptic and disinfectants- phenols and related compounds, organic mercurials- dyes, cationic surface active agents, chloramine-T, chlorhexidine, diquallinium chloride. Preservatives, antioxidants, coloring, flavoring and sweetening agents, emulsifying agents-and suspending agents- ointment bases- disintegrating agents.

References:

- H.S Hugh and Kapoor K.V. Vallabh Prakashan, Organic Pharmaceutical Chemistry, New Delhi.
- Bently and Drivers, Pharmacentical Chemistry.
- Allion Chidambaram, Pharmaceutical Chemistry.
- Chatwal, Organic Pharmaceutical Chemistry.
- S. Jayshree Ghosh, Pharmaceutical Chemistry, Chand & Co.
- Chatwal, Inorganic Pharmaceutical Chemistry.

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COURSE CODE	COURSE TITLE	L	T	P	C
17114DSC56B	Discipline Specific Elective: 1 Agricultural Chemistry	5	0	0	4

Aim:

- To develop agricultural knowledge to the learners.
- Objectives:
- Imparting basic knowledge about the soil nature.
- Developing knowledge about fertilizers and pesticides.

Learning Outcomes:

- Students who graduate with a major in Agricultural Chemistry will be able to:
- Understand the principles of Agricultural Chemistry.

To know the knowledge about nutrients and its importance.

To have employability.

UNIT-I

DEFINITION OF SOIL -SOIL composition Soil Physical properties-soil separates and particle size distribution-soil texture and structure —Bulk density, particle density, pore space, soil air, soil temperature, soil water , soil consistence-significance of physical properties to plant growth.Soil chemical properties — soil colloids —Inorganic colloids —- clay minerals —- amorphous — Ion exchange reactions —-organic colloids —- soil organic matter-Decomposition-Humus formation —-significance on soil fertility, soil reaction —-Biological properties of soil —-nutrient availability.

UNIT-II

FERTILIZER — definition-fertilizer recommendation based on soil testing-Nitrogenous fertilizers — Effect of Nitrogen on plant growth and development .Phosphate fertilizers — Effect of phosphorous on plant growth and development.-super phosphate & Bone meal .Potassium fertilizers — function of Potassium on plant growth. Secondary and micronutrient fertilizers — complex and mixed fertilizer- sources. Manufacture, properties and reactions in soils. Biofertilizersnitrogen fixing biofertilizer- rhizobium, azospirillum- Phosphate Mobilizing.

UNIT-III

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ORGANIC MANURES —Agricultural, industrial and urban Wastes — prepartion of enriched farm yard manures — Zinc enriched organics. Green manures-green leaf manure-bulky organic and concentrated organic manures -compost — enriched farm yard manures, oil cakes, bone meal, fish meal, guano poultry manures-Fertilizer use efficiency —integrated nutrient management. Preparation of slow release fertilizer-compatability of fertilizers —fertilizers Blending- preparation of different fertilizer mixtures — fertilizer prescription for different soils and crops.

UNIT - IV

PEST MANAGEMENT AND CONTROL .PESTICIDES — formulations — emulsifiable concentrate, water miscible liquids, wettable powders, dusts, granules , classification of pesticides — mode of action — characteristics — uses — fate of pesticides in soil and plants — impact of pesticides on environment — safety measures in the analysis of pesticides.

Insecticides — plant products — Nicotine, pyrethrum, rotenone, petroleum oils. In organic pesticides — Arsenical fluorides, borates. Organic pesticides — organo chlorine compounds — D.D.T , B.H.C, methoxychlor, chloredane, endousulfon.

UNIT - V

FUNGICIDES-inorgnic-sulphur compounds-copper compounds- Mercuic compounds-organic- dithio carbamates – dithane M.boredeaux mixture Herbicidies: Inorganic herbidea- Arsenical compounds Boron compound- cyanamide- cyanides and thiocyanates, chlorates and sulphamates. Organic herbicides & Nitro – compounds- chlorinated compound – aren herbicides. Alachlor

REFERENCES:

1.N.C Brady , the Nature and properties of soils Eurasia publishinghouse (P) Ltd 9th Ed.1784

2. Biswas,T.D.and Mukebetjee S.K.1787 Text book of soil science.

3.A.L.Dajk(1770) A Text book of soil science-Asia publishing house,Madras.

4.Donahue,R.L.Miller,R.W.and shuckluna,J.C.1787,soils-An Introduction to soils and plant Growth —Prentice Hall of India (p) Ltd. NewDelhi.

5. Colling,G.H.1755,Commercial Fertilizers-McGraw Hill Publishing Co., New York

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COURSE CODE	COURSE TITLE	L	T	P	C
17114DSC66A	Discipline Specific Elective:II Polymer Chemistry	4	0	0	4

COURSE OBJECTIVES:

- To learn the purification techniques of solids and liquids.
- To understand data analysis, various separation techniques.
- To learn gravimetric analysis and various thermo analytical methods.
- To learn visible spectrophotometry and colorimetry.
- To know the various electro analytical techniques.

UNIT – I LABORATORY SAFETY AND PURIFICATION OF CHEMICALS:

1.1 Precautions to avoid poisoning-treatment for specific poisons, threshold vapour concentrations-safe limits-laboratory safety measures.

1.2 Waste disposal-fume disposal-precautions for avoiding accidents.

1.3 Purification of solid organic compounds: recrystallisation, extraction, sublimation.

1.4 Purification of liquids: fractional distillation, steam distillation and azeotropic distillation.

UNIT – II DATA ANALYSIS:

2.1 The Mean-significant numbers, the median-precision, accuracy- confidence limits, standard deviation.

2.2 Errors-method for improving accuracy-rejection of data-presentation of tabulated data-Scatter diagram – method of least squares- S.I. units.

2.3 Separation techniques: Precipitation-solvent extraction-chromatography – types, column chromatography-thin layer chromatography.

2.4 Paper chromatography – paper electrophoresis– ion exchange chromatography –Gas liquid chromatography.

UNIT – III GRAVIMETRIC ANALYSIS AND THERMO ANALYTICAL TECHNIQUES:

3.1 Gravimetric analysis - principles-methods of gravimetric analysis - requirement of gravimetric analysis-precipitation-theories of precipitation.

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3.2 Types of precipitation – co–precipitation, post precipitation - and precipitation from homogeneous solution-digestion, filtration and washing, drying and ignition. Inorganic and organic precipitating agents.

3.3 Thermo analytical techniques – types-TGA principle-Instrumentation - TGA analysis of CaC2O4. H2O. Differential thermal analysis-principle-DTA of CaC2O4.H2O.-factors affecting TGA &DTA.

UNIT – IV VISIBLE SPECTROPHOTOMETRY AND COLORIMETRY:

4.1 Theory of spectrophotometry and colorimetry, Beer-Lambert's law (statement only), Molar absorptivity and absorbance.

4.2 Visual comparators-multiple standard methods, duplication and dilution method, balance method, photoelectric colorimeter, spectrophotometer.

4.3 Criteria for satisfactory colorimetric estimation-advantages of colorimetric estimation, determination of composition of complexes, colorimetric estimation Of iron.

UNIT – V ELECTRO ANALYTICAL METHODS:

5.1 Electro gravimetry – theory - electro gravimetric analysis of Fe and Cu.

5.2 Electrolytic separation of metals: principle – separation of copper and nickel, Electro deposition- principle – overvoltage.

5.3 Coulometry -Principle of coulometric analysis –coulometry at controlled potentialapparatus and technique-separation of nickel and cobalt. Amperometry titrationsprinciple –Instruments –types-applications.

UNIT – VI CURRENT CONTOURS (For Continuous Internal Assessment Only):

General quiz on – inter conversion of the units of energy – joules, calories and ergs. Wave properties–wave length, wave number and frequency. Assignment on –electroplating of nickel on steel surface, gravimetric estimation of lactose in milk, preparing rose oil by solvent extraction. Estimation of iron in ground water by colorimetric method. Preparing chart for handling and storage of glassware and chemicals in laboratory.

REFERENCES:

1. Gopalan R, Subramanian PS and Rengarajan K (1993) ``Elements of analytical chemistry'' second revised edition, Sultan Chand.

2. Gurdeep R Chatwal, Sham K. Anand (2005) ``Instrumental methods of chemical analysis''. Himalaya publishing house.

3. Vogel A.I. Text Book of Quantitative Inorganic analysis," The English Language Book Society, Fourth edition.

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4. Douglas A. Skoog, Donald M. West and F. J. Holler, Fundamentals of Analytical chemistry, 7thedition, Harcourt College Publishers.

5. Mendham J., Denny R. C., Barnes J.D., Thomas M., Vogel's Test book of Quantitative Chemical analysis 6th edition, Pearson education.

6. Sharma, B. K., Instrumental methods of chemical analysis, Goel Publishing House, Meerut (1997).

7. https://www.iitk.ac.in/che/pdf/resources/TGA-DSC-reading-material.pdf

8. https://epgp.inflibnet.ac.in/epgpdata/up

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COURSE CODE	COURSE TITLE	L	T	P	C
19214DSC16A	Discipline Specific Elective:II Environmental Chemistry	5	0	0	4

Aim: To learn the important of Environmental Chemistry. Objective:

- Creating the awareness about environmental problems among people.
- Imparting basic knowledge about the environment and its Ancillary problems.
- Developing an attitude of concern for the environment.
- Motivating public to participate in environment protection and environment improvement.
- Acquiring skills to help the concerned individuals in identifying and solving environmental problems.
- Striving to attain harmony with Nature.

Outcomes:

Students who graduate with a major in environmental science will be able to:

- Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale;
- Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment;
- Demonstrate ecology knowledge of a complex relationship between producers, prey, and the plant community; • Apply the ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues; and
- Understand how politics and management have ecological consequences.

UNIT – I Pollution Environmental pollution - structure of atmosphere - biogeological cycles - oxygen - nitrogen – carbon – phosphorous – sulphur - biodistribution of elements - air pollutions - reactions in atmosphere - primary pollutants - air quality standards - analysis of CO, nitrogen oxides, sulphur oxides, hydrocarbons and particulate matter - particulate pollution - control methods - vechicular pollution - green house effect and global warming - climatic changes – ozone - photochemical smog - acid rain - sampling – monitoring – control.

UNIT – II Water Pollution Hydrosphere: Water pollution - hyrological cycle - chemical composition - sea water composition - water quality criteria for domestic and industrial uses - BIS and WHO standards - ground water pollution - surface water pollution

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- lake and river water - eutrophication - marine pollution - water pollutants - biodgradeability of detergents – pestisides - endosulfan and related case studies.

UNIT – III Water Treatment Principles of water and waste water treatment - aerobic and anaerobic treatment - industrial waste water treatment - heavy metal pollution - hard water - softening - purification of water for drinking purposes - water treatment for industrial use - electrodialysis - reverse osmosis - other purification methods - chemical speciation of elements.

UNIT – IV Water Analysis Color - odor - conductivity - TDS - pH - acidity - alkalinity - chloride - residual chlorine - hardness - trace metal analysis - elemental analysis - ammonia - nitrite - nitrate - fluoride - sulphide - phosphate - phenols - surfactants - BOD - COD - DO - TOC - nondispersive IR spectroscopy - anode stripping - ICP - AES - Chromatography - ion selective electrodes - neutron activation analysis.

UNIT – V Soil Pollution: Soil humus - soil fertility - inorganic and organic components in soil - acid - base and ion exchange reactions in soils - micro and macro nutrients - wastes and pollutants in soil - introduction to geochemistry - solid waste management - treatment and recycling soil analysis - radioactive pollution - disposal of radioactive waste.

REFERENCES: 1. H. Kaur, Environmental Chemistry, 6th Edn. Pragathi Prakashan, Meerut, 2011.

2. K.H.Mancy and W.J.Weber Jr. Wiley, Analysis of Industrial Waste Water, Interescience New York. 1971.

3. L.W. Moore and E. A. Moore, Environmental Chemistry, McGraw Hill Publication, New York, 2002.

4. S. M. Khopkar, Environmental Pollution Analysis, New Age International (P) Ltd, 1993.

5. Colin Baird, Environmental Chemistry, W.H. Freeman

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COURSE CODE	COURSE TITLE	L	T	P	C
19214DSC16b	Discipline Specific Elective:II Supramolecular Chemistry	5	0	0	4

Aim: • To focuses on non-covalent bonding interactions of molecule.

Objective: • To explain the chemical reactions and molecular rearrangements of non-covalent bond molecules.

• To forces include hydrogen bonding ,metal coordination, van der waals forces, pi-pi interactions and electrostatic effects.

Outcome:

• Understand the reactivity of non-covalent bonding molecules.

• Develop the interaction and nature of organic solvents to others.

UNIT- I Definition of supramolecular chemistry: Nature of binding interactions in supramolecular structures: ion-ion, ion-dipole, dipole-dipole, hydrogen bonding, cation-π, anion- π, π- π, and van der Waals interactions.

UNIT -II Synthesis and structure of crown ethers: lariat ethers, podands, cryptands, spherands, calixarenes, cyclodextrins, cyclophanes, cryptophanes, carcerands and hemicarcerands.

UNIT- III Host-Guest interactions: pre-organization and complimentarity, lock and key analogy. Binding of cationic, anionic, ion pair and neutral guest molecules. Crystal engineering: role of H-bonding and other weak interactions.

UNIT- IV Self-assembly molecules: design, synthesis and properties of the molecules, self assembling by H-bonding, metal-ligand interactions and other weak interactions, metallomacrocycles, catenanes, rotaxanes, helicates and knots.

UNIT -V Molecular devices: molecular electronic devices, molecular wires, molecular rectifiers, molecular switches, molecular logic. Relevance of supramolecular chemistry to mimic biological systems: cyclodextrins as enzyme mimics, ion channel mimics, supramolecular catalysis.

REFERENCES:

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DEPARTMENT OF CHEMISTRY

VALUE ADDED COURSE
Academic year: 2018-2019

Certificate Course on Laboratory Safety.

Aim:

To introduce students to Laboratory Safety.

Course Outcomes:

At the end of this unit, you will be able to:

- On completion of the course the students will be able to
- Practice safety rules while performing experiments in the lab.
- Develop good laboratory practices.
- Confidently handle various chemicals used in a general chemistry lab.
- Perform first-aid treatment in case of common injuries/accidents in the lab.
- Apply IT tools to process the raw experimental data and make conclusions.
- Write a project report and also give a presentation on it.

UNIT -1

Safety in laboratory Green Chemistry

Laboratory safety rules General guidelines, general precautions, personal protective equipments apparel in the lab, conduct and hygiene practices in the lab, housekeeping, chemical safety rules, fire and electrical safety rules common

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chemistry laboratory practices safety and hazard symbols how to deal with accidents DON'Ts in the lab

UNIT -2

Material Safety Data Sheet (What is MSDS? MSDS of frequently

used laboratory chemicals

Lab waste management and disposal

Green Chemistry Definition, brief introduction of twelve principles of Green Chemistry with examples (special emphasis on atom economy, reducing toxicity and green solvents) CO 2 an alternative solvent

UNIT -3

Introduction to word processor and structure drawing ChemSketch ChemDraw softwares Incorporating chemical structures, chemical equations, expressions from chemistry (e g Maxwell Boltzmann distribution law, Bragg's law, van der Waals equation, integrated rate expressions, BET isotherm, etc into word processing documents

UNIT -4

Handling numeric data Spreadsheet software (creating a spreadsheet, entering and formatting information, basic functions and formulae, creating charts, tables and graphs Incorporating tables and graphs into word processing documents Simple calculations and plotting graphs using a spreadsheet

UNIT -5

Numeric modelling Numerical curve fitting, linear regression (rate constants from concentration time data, molar extinction coefficients from absorbance data), numerical differentiation (e g handling data from potentiometric and pH metric titrations, p Ka of weak acid), integration (e g entropy/enthalpy change from heat

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capacity data) PowerPoint presentation and general introduction to project report writing

References

1) Otto, Thomas (2021). Safety for Particle Accelerators. Particle Acceleration and Detection. Cham: Springer International Publishing. doi:10.1007/978-3-030-57031-6. ISBN 978-3-030-57030-9. S2CID 234329600.

2) Cossairt, J. Donald; Quinn, Matthew (2019). Accelerator Radiation Physics for Personnel and Environmental Protection (1 ed.). Boca Raton, FL : CRC Press, Taylor & Francis Group, [2019]: CRC Press. doi:10.1201/9780429491634. ISBN 978-0-429-49163-4. S2CID 189160205.

3) "Chapter 8 - Chemical Hazards". sp.ehs.cornell.edu. Retrieved 2016-04-07.

4) "Biological Agents and Biological Toxins". Occupational Safety and Health Administration. Retrieved 4 February 2015.

5) "An additional OSHA Safety and Health Topics page on Pandemic Influenza has been added in response to the 2009 H1N1 influenza pandemic". OSHA. Retrieved 4 February 2015.

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DEPARTMENT OF CHEMISTRY

VALUE ADDED COURSE

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Aim:

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Course Outcomes:

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UNIT -4

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UNIT -5

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2) Cossairt, J. Donald; Quinn, Matthew (2019). Accelerator Radiation Physics for Personnel and Environmental Protection (1 ed.). Boca Raton, FL : CRC Press, Taylor & Francis Group, [2019]: CRC Press. doi:10.1201/9780429491634. ISBN 978-0-429-49163-4. S2CID 189160205.

3) "Chapter 8 - Chemical Hazards". sp.ehs.cornell.edu. Retrieved 2016-04-07.

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Certificate Course on FOOD AND NUTRITION

Aim:

- To introduce students to food preparation, the scientific principles of novel biologically active compounds.

Objectives:

1. Gain insight into the chemistry of foods
2. Understand the scientific principles involved in food preparation
3. Understand the various properties exhibited by foods
4. Study the physico-chemical changes occurring in foods during cooking

Course Outcomes:

At the end of this unit, you will be able to:

The scientific principles involved in food preparation

The various properties exhibited by foods

The physico-chemical changes occurring in foods during cooking.

FOOD AND NUTRITION

Unit I Physico-chemical properties of foods a. Moisture in Foods, Hydrogen Bonding, Bound Water, Water Activity in Foods, Determination of Moisture Content in Foods b. True Solutions, Dispersions, Sols, Gels, Foams, Colloids and Emulsions

Unit II Chemistry of Starch and Sugars a. Components of Starch, Swelling of Starch Granules, Gel Formation, Retrogradation, Syneresis, b. Effect of Sugar, Acid, Alkali, Fat and Surface Active Agents on Starch c. Stages of Sugar Cookery, Crystal Formation and factors affecting it. Types of Candies, Action of Acid, Alkali and Enzymes. d. Chemistry of Milk Sugar, Non Enzymatic Browning

Unit III Chemistry of Proteins a. Components of Wheat Proteins, Structure, Gluten Formation b. Effect of Soaking, Fermentation and Germination on Pulse Proteins c. Properties of Egg Protein, Chemistry of Milk Protein, Changes in Milk, Egg and Meat Proteins during Heating Action of Heat, Acid, Alkalis on Vegetables Proteins and Animal Proteins

Unit IV Chemistry of Fats and Oils a. Physical and Chemical Properties of Fats and Oils, b. Rancidity, Hydrogenation, Winterization, Decomposition of Triglycerides, c. Shortening Power of Fats, Changes in Fats and Oils during Heating , Factors Affecting Fat Absorption in Foods

Unit V Chemistry of Plant Products a. Enzymatic Browning in Fruits and Vegetables b. Volatile Compounds from Cooked Vegetables, Essential Oils, Pungent Principles, Bitter Substances, Plant Pigments, Spices and condiments c. Pectins, Phenolic Compounds, Tannins

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Vegetables, Different Types of Plant Pigments – Water and Fat Soluble Pigments. 12 c. Properties and Active Principles of Spices and Condiments

Text Books

1. Shakuntala Manay, Shadaksharaswamy. M (2000) Foods, Facts and Principles, New Age International Pvt Ltd Publishers, 2nd Edition

2. Chandrasekhar, U. Food Science and applications in Indian Cookery (2002) Phoenix Publishing House, New Delhi

3. Swaminathan, M. Food Science, (2005) Chemistry and Experimental Foods, Bappco Publishers, Bangalore. Reference Books 1. Meyer, L.H, Food Chemistry, (2004) CBS Publishers and Distributors, 4th edition 2. Paul, P.C. and Palmer, H.H. Food Theory and Applications(2000) JohnWiley and Sons, New York, (Revised Edition) 3. Chopra H.K. Panesar, P.S, Food Chemistry (2010) Narosa Publishing House, New Delhi •

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Dean of Arts & Science
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MEETING OF BOARD OF STUDIES IN COMPUTER SCIENCE AND ENGINEERING (23.05.2018)

MINUTES OF THE MEETING

The Meeting of Board of Studies in the Department of Computer science and Engineering was held on 24.05.2018 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	Professor	Chair Person
2.	Dr.N.Gopalan	Professor, Department of CA NIT, Trichy	External Member
3.	Dr.R.Selvaraj	Senior manager BC and BS Stores Material Management, BHCEL,Trichy	External Member
4.	Dr.L.S. Usharani	Professor	Internal Member
5.	Dr.S.Nithyanandam	Professor	Internal Member
6.	Dr.S.Samundeeswari	Associate Professor	Internal Member
7.	Dr.A.Anthony Rai	Associate Professor	Internal Member
8.	S.Jancy Sickory Daisy	Assistant Professor	Internal Member
9.	K.Jayanthi	Assistant Professor	Internal Member
10	Prof.R.Tamizhselvan	Special Invitee-Dean	Internal Member
11	R.Selvakumar	Special Invitee-Alumnus/Alumna	Internal Member
12	M.Aishwarya	Special Invitee -Current student - UG or PG	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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- The members of the Board thoroughly scrutinized the existing curriculum and syllabi for both B.TECH-CSE (Full Time) and M.TECH-CSE (Full Time) and feedbacks on curriculum obtained from various stakeholders and it is resolved to consider the feedbacks during forthcoming syllabus revision.
- The members of the board unanimously recommended continuing with the existing curriculum and syllabi for the academic year 2018-19 for B. Tech (FT).
- The members of the board also recommended continuing with the existing curriculum and syllabi for the academic year 2018-19 for M. Tech (FT) along with addition of new electives for M. Tech (FT).
- The List of Electives decided to add are as follows:

  Big Data Analytics

  Principles of Programming Languages

  Mobile and Pervasive Computing

- After discussion, the subject for suggested subjects were assigned as follows:

S. No	Subject Code	Name of the Subject
1.	17250E32D	Big Data Analytics
2.	17250E33D	Principles of Programming Languages
3.	17250E34D	Mobile and Pervasive Computing

- The members of the Board recommended for the activity based assignment for the academic year 2018-19.
- From the consolidation of feedback obtained from various stake holders, members suggested to add the following courses as Value added courses for B.Tech (CSE)
  - Network Security and Blockchain
  - Virtualization and Azure Cloud
- 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.

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SIGNATURE OF TEAM MEMBERS

Designation	Name	SIGN
Chairperson	Dr.R.Latha	
External Expert-Academic	Dr.N.Gopalan	
External Expert- Industry	Dr.R.Selvaraj	
Professor	Dr.L.S. Usharani	
Professor	Dr.S.Nithyanandam	
Associate Professor	Dr.S.Samundeeswari	
Associate Professor	Dr.A.Anthony Raj	
Assistant Professor	S.Jancy Sickory Daisy	
Assistant Professor	K.Jayanthi	
Special Invitee-Dean	Prof.R.Tamizhselvan	
Special Invitee-Alumnus/Alumna	R.Selvakumar	
Special Invitee -Current student - UG or PG	M.Aishwarya	

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAM HANDBOOK

M.Tech

COMPUTER SCIENCE AND ENGINEERING
[FULL TIME]

[REGULATION 2017]
[for candidates admitted to M.Tech CSE program from June 2017 onwards]

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SEMESTER – I

Semester. no	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
I	17248S11A	Higher Mathematics	3	1	0	4
I	17250H12	Modern Operating System	4	0	0	4
I	17250H13	Parallel and High Performance Computing	4	0	0	4
I	17250H14	Adhoc and Sensor Network	4	0	0	4
I	17250H15	Advanced Data Structures and Algorithms	3	1	0	4
I	17250E16_	Elective - I	4	0	0	4
Practical						
I	17250L17	Advanced Web Technologies Lab	-	-	3	3
Research Skill Development(RSD) Courses						
I	17250HRS	Research Led Seminar	1	0	0	1
Total no of Credit						28

SEMESTER – II

Semester. no	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
II	17250H21	Middleware Technologies	3	1	0	4
II	17250H22	Object Oriented Software Engineering	4	0	0	4
II	17250H23	Digital Image Processing	4	0	0	4
II	17250E24_	Elective II	4	0	0	4
II	17250E25_	Elective – III	4	0	0	4
Practical						
II	17250L26	.NET Technologies Lab	-	-	3	3
II	172TECWR	Technical Writing /Seminars	-	-	3	3
Research Skill Development(RSD) Courses						
II	17250HRM	Research Methodology	3	0	0	3
II	17250HBR	Participation in Bounded Research (Level 2)	2	0	0	2
Total no of Credit						31

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SEMESTER – III

Semester.no	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
III	17250H31	Software Project Management	4	0	0	4
III	17250E32_	Elective-IV	4	0	0	4
III	17250E33_	Elective-V	4	0	0	4
III	17250E34_	Elective-VI	4	0	0	4
III	17250P35	Project Work- Phase I*	-	-	6	6
Research Skill Development(RSD) Courses						
III	17250HSR	Participation in Scaffolded Research (Level 3)	0	0	4	4
Total no of Credit						26

SEMESTER – IV

Semester no.	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
IV	17250P41	Project Work- Phase II*	-	-	12	12
Total no of Credit						12

* - Only review will be conducted

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SEMESTER – II - ELECTIVE – III

Semester no	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
II	17250E25A	Service Oriented Architecture	4	0	0	4
II	17250E25B	High Speed Networks	4	0	0	4
II	17250E25C	Embedded Systems	4	0	0	4

SEMESTER – III - ELECTIVE – IV

Semester no	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
III	17250E32A	Cloud Computing	4	0	0	4
III	17250E32B	Information Security	4	0	0	4
III	17250E32C	Soft Computing	4	0	0	4
III	17250E32D	Big Data Analytics	4	0	0	4

SEMESTER – III - ELECTIVE – V

Semester no	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
III	17250E33A	Advanced Database Technology	4	0	0	4
III	17250E33B	Mobile Communication Computing	4	0	0	4
III	17250E33C	Green Computing	4	0	0	4
III	17250E33D	Principles of Programming Languages	4	0	0	4

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SEMESTER – III - ELECTIVE – VI

Semester no	Subject Code	Subject Title	Periods per Week			C
			L	T	P	
III	17250E34A	Software Quality Assurance	4	0	0	4
III	17250E34B	Bio-Informatics	4	0	0	4
III	17250E34C	Wireless Application Protocols	4	0	0	4
III	17250E34D	Mobile and Pervasive Computing	4	0	0	4

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CREDITS DISTRIBUTION

Semester	Theory Courses		Elective Courses		Practical Courses		Courses on *RSD		Total Credits
	Nos.	Credits	Nos.	Credits	Nos.	Credits	Nos.	Credits	
I	05	20	01	04	01	03	01	01	28
II	04	12	02	08	02	06	02	05	31
III	01	04	03	12	-	-	02	10	26
IV	-	-	-	-	-	-	01	12	12
Total Credits									97

*RSD-Research Skill Development

TOTAL CREDITS	
Semester – I	28
Semester – II	31
Semester – III	26
Semester – IV	12
TOTAL	97

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17250E32D BIG DATA ANALYTICS L T P C
4 0 0 4

COURSE OBJECTIVES

- To understand the basics of big data analytics
- To understand the search methods and visualization
- To learn mining data streams
- To learn frameworks
- To gain knowledge on R language

UNIT I INTRODUCTION TO BIG DATA 9

Introduction to Big Data Platform – Challenges of Conventional Systems - Intelligent data analysis -Nature of Data - Analytic Processes and Tools - Analysis Vs Reporting - Modern Data Analytic Tools- Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

UNIT II SEARCH METHODS AND VISUALIZATION 9

Search by simulated Annealing – Stochastic, Adaptive search by Evaluation – Evaluation Strategies –Genetic Algorithm – Genetic Programming – Visualization – Classification of Visual Data Analysis Techniques – Data Types – Visualization Techniques – Interaction techniques – Specific Visual data analysis Techniques

UNIT III MINING DATA STREAMS 9

Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions

UNIT IV FRAMEWORKS 9

MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases - S3 - Hadoop Distributed File Systems – Case Study- Preventing Private Information Inference Attacks on Social NetworksGrand Challenge: Applying Regulatory Science and Big Data to Improve Medical Device Innovation

UNIT V R LANGUAGE 9

Overview, Programming structures: Control statements -Operators -Functions -Environment and scope issues -Recursion -Replacement functions, R data structures: Vectors -Matrices and arrays - Lists -Data frames -Classes, Input/output, String manipulations

TOTAL:45 PERIODS

COURSE OUTCOMES:

CO1:understand the basics of big data analytics

CO2: Ability to use Hadoop, Map Reduce Framework.

CO3: Ability to identify the areas for applying big data analytics for increasing the business outcome.

CO4:gain knowledge on R language

CO5: Contextually integrate and correlate large amounts of information to gain faster insights.

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17250E33D PRINCIPLES OF PROGRAMMING LANGUAGES L T P C
4 0 0 4

OBJECTIVES:

- To understand and describe syntax and semantics of programming languages.
- To understand Data, Data types, and Bindings.
- To learn the concepts of functional and logical programming.
- To explore the knowledge about concurrent Programming paradigms.

UNIT I ELEMENTS OF PROGRAMMING LANGUAGES 9

Reasons for studying, concepts of programming languages, Language Evaluation Criteria, influences on Language design, Language categories. Programming Language Implementation – Compilation, Hybrid Implementation, Pure Interpretation and Virtual Machines. Describing Syntax and Semantics -Introduction - The General Problem of Describing Syntax-Formal Methods of Describing Syntax - Attribute Grammars - Describing the Meanings of Programs: Dynamic Semantics.

UNIT II DATA TYPES-ABSTRACTION 9

Introduction - Primitive Data Types- Character String Types- User-Defined Ordinal TypesArray types- Associative Arrays-Record Types- Tuple Types-List Types -Union Types - Pointer and Reference Types -Type Checking- Strong Typing -Type Equivalence - Theory and Data Types-Variables-The Concept of Binding -Scope - Scope and Lifetime - Referencing Environments - Named Constants- The Concept of Abstraction- Parameterized Abstract Data Types-Encapsulation Constructs- Naming Encapsulations

UNIT III FUNCTIONAL PROGRAMMING 9

Introduction- Mathematical Functions- Fundamentals of Functional Programming Languages- The First Functional Programming Language: LISP- An Introduction to SchemeCommon LISP-Haskell-F# - ML : Implicit Types- Data Types- Exception Handling in ML. Functional Programming with Lists- Scheme, a Dialect of Lisp- The Structure of Lists- List Manipulation- A Motivating Example: Differentiation- Simplification of Expressions- Storage Allocation for Lists: 31

UNIT IV LOGIC PROGRAMMING 9

Relational Logic Programming- Syntax- Basics- Facts- Rules- Syntax- Operational Semantics-Relational logic programs and SQL operations- Logic Programming- SyntaxOperational semantics- Data Structures-Meta-tools: Backtracking optimization (cuts); Unify; Meta-circular interpreters- The Origins of Prolog- Elements- of Prolog-Deficiencies of PrologApplications of Logic Programming.

UNIT V CONCURRENT PROGRAMMING 9

Parallelism in Hardware- Streams: Implicit Synchronization-Concurrency as InterleavingLiveness Properties- Safe Access to Shared Data- Concurrency in Ada- Synchronized Access to Shared Variables- Synthesized Attributes- Attribute Grammars- Natural Semantics-Denotational Semantics -A Calculator in Scheme-Lexically Scoped Lambda Expressions- An Interpreter-Recursive Functions.

TOTAL: 45 PERIODS

OUTCOMES:

- Upon completion of this course, the students will be able to - Describe syntax and semantics of programming languages
- Explain data, data types, and basic statements of programming languages
- Design and implement subprogram constructs, Apply object - oriented, concurrency, pro
- and event handling programming constructs

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17250E34D MOBILE AND PERVASIVE COMPUTING L T P C
4 0 0 4

OBJECTIVES:

- To learn the basic architecture and concepts till Third Generation Communication systems.
- To understand the latest 4G Telecommunication System Principles.
- To introduce the broad perspective of pervasive concepts and management
- To explore the HCI in Pervasive environment
- To apply the pervasive concepts in mobile environment

UNIT I INTRODUCTION 9

History – Wireless communications: GSM – DECT – TETRA – UMTS – IMT – 2000 – Blue tooth, WiFi, WiMAX, 3G ,WATM,- Mobile IP protocols -WAP push architecture-Wml scripts and applications. Data networks – SMS – GPRS – EDGE – Hybrid Wireless100 Networks – ATM – Wireless ATM.

UNIT II OVERVIEW OF A MODERN 4G TELECOMMUNICATIONS SYSTEM 9

Introduction. LTE-A System Architecture. LTE RAN. OFDM Air Interface. Evolved Packet Core. LTE Requirements. LTE-Advanced. LTE-A in Release. OFDMA – Introduction. OFDM Principles. LTE Uplink—SC-FDMA. Summary of OFDMA.

UNIT III PERVASIVE CONCEPTS AND ELEMENTS 9

Technology Trend Overview - Pervasive Computing: Concepts - Challenges - Middleware - Context Awareness - Resource Management - Human–Computer Interaction - Pervasive Transaction Processing - Infrastructure and Devices - Wireless Networks - Middleware for Pervasive Computing Systems - Resource Management - User Tracking- Context Management - Service Management - Data Management - Security Management - Pervasive Computing Environments - Smart Car Space - Intelligent Campus 38

UNIT IV HCI IN PERVASIVE COMPUTING 9

Prototype for Application Migration - Prototype for Multimodalities - Human–Computer Interface in Pervasive Environments - HCI Service and Interaction Migration - ContextDriven HCI Service Selection - Interaction Service Selection Overview - User Devices - Service-Oriented Middleware Support - User History and Preference - Context Manager - Local Service Matching - Global Combination - Effective Region - User Active Scope - Service Combination Selection Algorithm

UNIT V PERVASIVE MOBILE TRANSACTIONS 9

Pervasive Mobile Transactions - Introduction to Pervasive Transactions - Mobile Transaction Framework - Unavailable Transaction Service - Pervasive Transaction Processing Framework - Context-Aware Pervasive Transaction Model - Context Model for Pervasive Transaction Processing - Context-Aware Pervasive Transaction Model - A Case of Pervasive Transactions - Dynamic Transaction Management - Context-Aware Transaction Coordination Mechanism - Coordination Algorithm for Pervasive Transactions - Participant Discovery - Formal Transaction Verification - Petri Net with Selective Transition.

TOTAL :45 PERIODS

OUTCOMES: Upon completion of this course the students should be able to: ☐ Obtain a through understanding of Basic architecture and concepts of till Third Generation Communication systems.Explain the latest 4G Telecommunication System Principles. ☐ Incorporate the pervasive concepts. ☐ Implement the HCI in Pervasive environment. ☐ Work on the pervasive concepts in mobile environment.

REFERENCES: 1. Alan Colman, Jun Han, and Muhammad Ashad Kabir, Pervasive Social Computing Socially-Aware Pervasive Systems and Mobile Applications, Springer, 2016.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Value added courses

195150NSB NETWORK SECURITY AND BLOCK CHAIN

UNIT I INTRODUCTION

Basics of cryptography, conventional and public-key cryptography, hash functions, authentication, and digital signatures.

UNIT II KEY MANAGEMENT AND AUTHENTICATION

Key Management and Distribution: Symmetric Key Distribution, Distribution of Public Keys, X.509 Certificates, Public-Key Infrastructure, User Authentication

UNIT III INTRODUCTION TO BLOCKCHAIN

History of Blockchain – Types of Blockchain – Consensus – Decentralization using Blockchain – Blockchain and Full Ecosystem Decentralization – Platforms for Decentralization.

UNIT IV BITCOIN BASICS

Bitcoin blockchain, Challenges and solutions, proof of work, Proof of stake, alternatives to Bitcoin consensus, Bitcoin scripting language and their use.

UNIT V SECURITY PRACTICES

Firewalls and Intrusion Detection Systems: Intrusion Detection Password Management, Firewall Characteristics Types of Firewalls, Firewall Basing, Firewall Location and Configurations. Blockchains, Cloud Security and IoT security

Duration: 45Hours

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Value added courses

195150VAC VISUALIZATION AND AZRUE CLOUD

UNIT I VIRTUALIZATION BASICS

Virtual Machine Basics – Taxonomy of Virtual Machines – Hypervisor – Key Concepts – Virtualization structure – Implementation levels of virtualization

UNIT II VIRTUALIZATION INFRASTRUCTURE AND DOCKER

Desktop Virtualization – Network Virtualization – Storage Virtualization – System-level of Operating Virtualization – Application Virtualization – Virtual clusters and Resource Management

UNIT III CLOUD DEPLOYMENT ENVIRONMENT

Google App Engine – Amazon AWS – Microsoft Azure; Cloud Software Environments-Eucalyptus – OpenStack.

UNIT IV CLOUD SECURITY

Virtualization System-Specific Attacks: Guest hopping – VM migration attack – hyperjacking. Data Security and Storage; Identity and Access Management (IAM) - IAM Challenges - IAM Architectureand Practice.

UNIT V VIRTUALIZATION TOOLS

VMWare-Amazon AWS-Microsoft HyperV- Oracle VM Virtual Box – IBM PowerVM-Google Virtualization.

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 31.05.2018 at 2.30 PM in Civil Lab at Prist Deneed to be University under the chairmanship of Dr. ASHUTOSH DAS

The following Members were present for the meeting:

S.No.	Name of the Member	Position	Role
1	Dr. ASHUTOSH DAS	Professor	Chair Person
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	R.JOSE RAVINDRA RAJ	Assistant Professor	Internal Member
10	D.JEYAKUMAR	Assistant Professor	Internal Member
11	A.BELCIYA MARY	Assistant Professor	Internal Member
12	K.SHANTH	Assistant Professor	Internal Member
13	J.SANTHIYAA JENIFER	Assistant Professor	Internal Member
14	R.DEVI	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.
- The members of the Board thoroughly scrutinized the existing curriculum and syllabi for B.TECH - CIVIL(Full Time), M.TECH - Structural Engineering (Full Time), B.TECH – Civil (Part Time), M.TECH Structural Engineering (Part Time) and feedbacks on curriculum obtained from various stakeholders and it is resolved to consider the feedbacks during forth coming syllabus revision.

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- In the current regulation the courses have been classified as core course, elective course, foundation course and non-CGPA courses.
- The members of the board also scrutinized and updated the panel of examiners and recommended to continue with existing panel of examiners for the B.TECH -Civil (FT) & M.TECH – Structural Engineering (FT), B.TECH – Civil (PT), M.TECH – Structural Engineering (PT) and submitted the same for the Academic Council for its approval.

The changes suggested are incorporated as follows:

B.Tech., Programme:

No Changes are made in the syllabi / Curriculum of the full time courses.

B.Tech., Sandwich Programme:

No Changes are made in the syllabi / Curriculum

M.Tech., (Structural Engineering) Full time Programme:

It is proposed to introduce three additional electives in third semester

SI.NO	Name of the Subject
1	Design of Storage Structures
2	Precast and Prefabricated Structures
3	Corrosion Engineering

M.Tech., (Structural Engineering) Part time Programme:

The curriculum and Syllabi of M.Tech. Part Time Programme which is to be introduced during the Academic year 2018-19 was scrutinized and approved.

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

- 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 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:
  - ✓ Total Station
  - ✓ Total station & GPS
  - ✓ Revit Architecture
  - ✓ STADD PRO
  - ✓ Sequence of Building Construction
  - ✓ Sustainable Transportation Systems

The meeting was concluded with a thanks from the BOS Chairman.

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Signature of the Member

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	
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M.Tech.Structural Engineering- Full Time-R2017

SEMESTER – I

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17248S11E	Advanced Engineering Mathematics	3	1	0	4
2	17255H12	Quality Control &Assurance in Construction	3	1	0	4
3	17255H13	Theory of Plasticity and Elasticity	3	1	0	4
4	17255H14	Structural Dynamics	3	1	0	4
5	17255H15	Maintenance and Rehabilitation of Structures	3	1	0	4
6	17255E16	Hard Core Elective I	3	1	0	4
7	17255L17	Core Practical (Computer Programming Lab)	0	0	3	3
8	17255CRS	Research Led Seminar	4	0	0	1
		TOTAL				28

SEMESTER – II

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255H21	Management Information System	3	1	0	4
2	17255H22	Finite Element Analysis	3	1	0	4
3	17255H23	Advanced Concrete Structural Design	3	1	0	4
4	17255E24	Hard Core Elective –II	3	1	0	4
5	17255E25	Hard Core Elective –III	3	1	0	4
6	17255L26	Core practical(Software Lab – Finite Element Analysis-ANSYS)	0	0	3	3
7	172TECWR	Technical writing / Seminars	0	0	3	3
8	17255CRM	Research Methodology	4	0	0	3
9	17255CBR	Participation in Bounded Research	1	0	0	2
		TOTAL				31

SEMESTER – III

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255H31	Advanced Steel Structures	3	1	0	4
2	17255E32	Hard Core Elective IV	3	1	0	4
3	17255E33	Hard Core Elective V	3	1	0	4
4	17255E34	Hard Core Elective VI	3	1	0	4
6	17255P35	Project Work Phase-I	0	0	6	6
7	17255CSR	Design Project / Socio -Technical Project	4	0	0	4
		TOTAL				26

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SEMESTER – IV

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255P41	Project Work Phase-II	0	0	12	12
TOTAL						12

LIST OF ELECTIVES
SEMESTER I
Hard Core Elective-I

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255E16A	Prestressed Concrete Design	3	1	0	4
2	17255E16B	High Rise Structures	3	1	0	4
3	17255E16C	Computer Aided Structural Design	3	1	0	4

SEMESTER II
Hard Core Elective - II

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255E24 A	Failure Analysis of Structures	3	1	0	4
2	17255E24 B	Advanced Concrete Technology	3	1	0	4
3	17255E24 C	Steel, Concrete Composite Structures	3	1	0	4

Hard Core Elective - III

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255E25A	Optimization in Structural Design	3	1	0	4
2	17255E25B	Design of Industrial Structures	3	1	0	4
3	17255E25 C	Elements of Earthquake Engineering	3	1	0	4

SEMESTER III
Hard Core Elective-IV

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255E32A	ExperimentalStressAnalysis	3	1	0	4
2	17255E32B	Soil Structure Interaction	3	1	0	4
3	17255E32C	Aseismic Design of Structures	3	1	0	4
4	17255E32D	Design of Storage Structures	3	1	0	4

Hard Core Elective – V

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255E33A	Prefabricated Structures	3	1	0	4
2	17255E33B	Disaster Resistant Structures	3	1	0	4
3	17255E33C	Nonlinear Analysis of Structures	3	1	0	4
4	17255E33D	Precast and Prefabricated Structures	3	1	0	4

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Hard Core Elective – VI

S. No	Subject Code	Name of the Subject	L	T	P	C
1	17255E34A	Offshore Structures	3	1	0	4
2	17255E34B	Stability of Structures	3	1	0	4
3	17255E34C	Mechanics of Composite Materials	3	1	0	4
4	17255E34D	Corrosion Engineering	3	1	0	4

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17255E32D

DESIGN OF STORAGE STRUCTURES

L T P C
3 0 0 3

COURSE OBJECTIVE

To introduce the students to limit state design of structural steel members subjected to compressive, tensile and bending loads, including connections and to provide the students the tools necessary for designing structural systems such as roof trusses and gantry girders as per provisions of current code (IS 800 - 2007) of practice.

UNIT I INTRODUCTION 9

Design of members subjected to lateral loads and axial loads - Principles of analysis and design of Industrial buildings and bents - Crane gantry girders and crane columns - Analysis and design of steel towers - Design of industrial stacks - Self supporting and guyed stacks lined and unlined.

UNIT II BEAM CONNECTION 9

Types of connections, Design of framed beam connections, Seated beam connection, Un- stiffened, Stiffened Seat connections, Continuous beam – to - beam connections and continuous beam–to–column connection both welded and bolted.

UNIT III STEEL SECTIONS 9

Cold formed Steel Sections - Types of cross sections - Local buckling and post buckling - Design of compression and Tension members - Beams - Deflection of beams - Combined stresses and connections.

UNIT IV COMPOSITE DESIGN 9

Introduction to composite design – shear connectors – types of shear connectors – degrees of shear connections – partial and full shear connections – composite sections under positive bending – negative bending – propped conditions – un-propped conditions – deflection of composite beams.

UNIT V COMPOSITE TRUSSES AND COMPOSITE FRAMES 9

Introduction – Composite slabs – profiled sheeting – sheeting parallel to span – sheeting perpendicular to span - Types of Composite columns – design of encased columns – design ofin-filled columns – axial, uni-axial and bi-axially loaded columns. Composite shear wall – double skinned composite deck panels – composite trusses – composite frames – composite plate girders.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

CO1 Recognize the design philosophy of steel structures and identify the different failure modes of bolted and welded connections, and determine their design strengths
CO2 Select the most suitable section shape and size for tension and compression members and beams according to specific design criteria
CO3 Apply the principles, procedures and current code requirements to the analysis and design of steel tension members, columns, column bases and beams
CO4 Identify and compute the design loads on Industrial structures, and gantry girder

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TEXT BOOKS

1. Duggal S.K., Design of Steel Structures, Tata McGraw Hill, Publishing Co. Ltd., New Delhi, 2010
2. Bhavikatti S.S, Design of Steel Structures, Ik International Publishing House, New Delhi, 2017.

References

1. Arya, A.S., Design of Steel Structures, New Chand & Brothers, New Delhi 1982.
2. R.P. Johnson, "Composite Structures of Steel & Concrete", Blackwell Scientificpublications, UK, 1994.
3. Necessary Indian & Eurocodes.

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17255E33D

PRECAST AND PREFABRICATED STRUCTURES

L T P C

3 0 0 3

COURSE OBJECTIVE:

- To introduce the basic concepts of prefabrication.
- To acquire the knowledge of prefabrication components and systems.
- To understand the design principles in prefabricate.
- To perceive the types of joints and connections in structural members.
- To impart knowledge about the structural stability.

UNIT I INTRODUCTION 9

Need for prefabrication -Advantages and limitations – Principles of prefabrication – Modular coordination — Standarization– Loads and load combinations– Materials — Production — Transportation — Erection.

UNIT II PREFABRICATED COMPONENTS AND SYSTEMS 9

Behaviour and types of structural components– roof and floor slabs – Walls panels - Shear walls -Beams - Columns – skeletal system- portal frame system-Large panel systems- block system

UNIT III DESIGN PRINCIPLES 9

Design philosophy- Design of cross section based on efficiency of material used — Problems in design because of joint flexibility – Allowance for joint deformation - Demountable precast concrete systems- Design for stripping , stacking ,transportation and erection of elements

UNIT IV JOINTS AND CONNECTIONS IN STRUCTURAL MEMBERS 9

Types of Joints — based on action of forces - compression joints - shear joints - tension joints - based on function - construction joints , contraction joints, expansion joints. Design of expansion joints - Dimensions and detailing - Types of sealants - Types of structural connections - Beam to Column - Column to Column - Beam to Beam - Column to foundation.

UNIT V DESIGN FOR ABNORMAL LOADS 9

Progressive collapse – Codal provisions – Equivalent design loads for considering abnormal effects such as earthquakes, cyclones, etc., - Importance of avoidance of progressive collapse -case study.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

Students will be able to

CO1 Understand concepts about principles of prefabrication, production, transportation, erection.
CO2 Acquire knowledge about panel systems, slabs, beams, shear walls and columns used in precast construction.
CO3 Acquire knowledge about design of cross section, joint flexibility.
CO4 Acquire knowledge about joints and connection in precast construction.
CO5 Acquire knowledge about structural stability.

TEXTBOOKS:

1. Bruggeling A.S. G and Huyghe G.F. "Prefabrication with Concrete", A.A. Balkema Publishers,USA,1991.
2. Lewitt,M. " Precast Concrete- Materials, Manufacture, Properties And Usage ,CRC Press, 2019
3. Alfred Steinle, Hubert Bachmann, Mathias Tillmann, Philip Thrift . "Precast Concrete Structures",Ernst & Sohn, Berlin, 2019.

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REFERENCES:

1. Koncz T., "Manual of precast concrete construction", Vol. I, II and III, Bauverlag, GMBH, 1976.
2. "Handbook on Precast Concrete Buildings", Indian Concrete Institute, 2016.
3. " Precast concrete connection details", Structural Design manual, Society for the studies in the use of precast concrete, Netherland Betor Verlag, 2009.

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CORROSIONENGINEERING

LTPC
3003

OBJECTIVES

- To impart knowledge on corrosion in petroleum refining.

UNIT I TYPES OF CORROSION AND TESTING METHODS

Basic principles of corrosion and its control – Forms of corrosion, uniform, Galvanic, Crevis, pitting, selective leaching, erosion, stress-corrosion, cracking – Cavitation phenomena & their effects – Corrosion testing – Field testing – Electrochemical techniques for measurement of corrosion rates, corrosion detection and components examination – Accelerated salt-spray testing.

UNIT II CORROSION PROTECTION METHODS

Corrosion inhibitors, electroplated coatings, conversion coatings, anodizing, hot dipping, spray metal coatings, zinc coating by alloying, electrophoteric coatings and electro painting, powder coating, electrical methods of corrosion protection, composite materials in corrosion minimization – Cathodic and Anodic protections.

UNIT III CORROSIONINSPECIFICENVIRONMENTS

Corrosion damage to concrete in industrial - marine environments and its protection; biological corrosion - halogen corrosion of metals - environmental degradation of materials, corrosion - inspection managements in chemical processing - petrochemical industries.

UNIT IV CORROSION IN SPECIFIC CASES AND CONTROL

Corrosion in structure – corrosion of stainless steels – corrosion in power equipments,corrosion in electrical and electronic industry – corrosion and selection of materialsof pulp and paper plants – corrosion aspects in nuclear power plants – corrosion of surgical implants and prosthetic devices.

UNIT V CORROSION AND COUNTRY'S ECONOMY

Corrosion protection management–process. maintenance procedures under corrosion Environments

TOTAL:45PERIODS

OUTCOMES

- Students learn about the types of corrosion, protection methods, corrosion in specific environments, corrosion in specific cases and control.

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REFERENCE

1. Fontana,M.G.,"CorrosionEngineering",Edn3,McGrawHill,1989
2. Roberge,P.R.,HandbookofCorrosionEngineering,McGraw-Hill,2000

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ANNEXURE II
VALUE ADDED COURSES

TOTAL STATION

S.No	Topics	Minimum
1.	Learn the concept of total surveying	5 hrs
2.	Understand how total station surveying	5 hrs
3.	Learn and practice the skill of total station surveying like:	5 hrs
4.	Total station orientation with various back sight methods	5 hrs
5.	Redial shooting/ side shots	5 hrs
6.	Traversing	5 hrs
7.	Demarcation/side out	5 hrs
8.	Use COGO FUNCTION	5 hrs
9.	Learn to download and upload data from total station tocad packages	5 hrs

Duration of the Course: 45 hours
Learning outcomes:

1. Setting up total station, Stationing and orienting to a direction and back sight point.
2. Resection/free stationing from known points.
3. Setting out lines and levels for buildings, kerbs, manholes or gullies.
4. Prism and reflector less surveying, OSI Planning Packs - digital & paper.
5. Calculating areas and volumes, Quality control.

TOTAL STATION & GPS

S.No	Topics	Minimum
1.	Total Station Operation	7 hrs
2.	Centring, Levelling And Focusing.	7 hrs
3.	Importing Data from Total Station to CADD Software	7 hrs
4.	Contour Survey , Building Marking , Angle & Distance Measurement	7 hrs
5.	Calculation of Area, Measurement of Volume.	7 hrs
6.	Introduction To GIS.	7 hrs
7.	Spatial Data Models & Non-Spatial Data Models.	7 hrs
8.	GIS Data Input, And Geo-Correction.	6 hrs
9.	Preparation Of Fluvio-Geomorphic Maps.	5 hrs

Duration of the Course: 60 hours.
Learning outcomes:

1. Setting up total station, Stationing and orienting to a direction and back sight point.
2. Resection/free stationing from known points.
3. Setting out lines and levels for buildings, kerbs, manholes or gullies.
4. Gaining the basic knowledge of mapping the earth and its features.
5. Be able to successfully organize, manage, and present results in the form of a GIS project.

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6. Understand how GIS methodologies can be used to address spatial analysis from the theoretical perspecti

REVIT ARCHITECTURE

S.No	Topics	Minimum
1.	Introduction To Revit Architecture & BIM	5 hrs
2.	Starting the Project & Building the Model.	5 hrs
3.	Detailing of the Model .	5 hrs
4.	Adding Flooring, Ceiling, Roofing & Balcony.	5 hrs
5.	Material Application & New Material.	5 hrs
6.	Massing & Site: Topo Surface, Site Component.	5 hrs
7.	3D Model of the House With Massing & Site Components.	5 hrs
8.	Extrusions & Opening.	5 hrs
9.	Finishing the Model.	5 hrs

Duration of the Course: 45 hours

Learning outcomes:

1. Students will learn to capture and analyze concepts, and maintain your vision through design, documentation, and construction.
2. Students will learn to do building element energy analysis; use the API to perform pipe/duct calculations; perform static analysis from the cloud; create/manage the structural analytical model; automatically update your model with analysis results; and improve BIM-based building performance workflows.
3. Student will learn to dock dialogs in a single window; more easily model, edit, and document designs; place air terminal devices on duct faces; restrict angles for pipe, duct, and cable tray; cap open ends of pipe or duct content quickly; rebar placement constraints customization; gain control over rebar placement; and get more rebar options when modeling.

STADD PRO

S.NO	TOPICS	MINIMUM
1.	Introduction to STAAD PRO	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.

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Ponnaiyah Ramajayam Institute of
Science & Technology (PRIST)
(Institution Deemed to be University
U/s 3 of the UGC Act, 1956)
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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 customize.
5. Students will know to perform code check, member selection, and optimized member selection consisting of analysis/design.

SEQUENCE OF BUILDING CONSTRUCTION

S.No	Topics	Minimum
1	Paper Work	5hrs
2	Marking of Layout	5hrs
3	Excavation	5hrs
4	Foundation Work	5hrs
5	Column Casting	5hrs
6	Construction of Walls	5hrs
7	Lintel	5hrs
8	Roofing	5hrs
9	Miscellaneous Works	5hrs

Duration of the Course: 45hours
Learning outcomes:

1. The student will able to explain basic concepts related building.
2. The student will able to explain properties of building elements and prepare the drawings.
3. The student will able to explain principles of costruction in mass buildings and use of the technical knowledges project drawings.

SUSTAINABLE TRANSPORTATION SYSTEMS

S.No	Topics	Minimum
1	Introduction to Environmental Impact Assessment (EIA) and Transportation systems	5hrs
2	Land-use plans, zoning schemes and provisions	5hrs
3	Urban and regional transport planning	5hrs
4	Impacts on humans, flora and fauna, soil, water, air, climate and landscape	5hrs
5	Establishment of baseline conditions w.r.t soil, water and air quality	5hrs
6	Noise, air and water pollution modelling	5hrs
7	Modelling of impacts and scenario-based analysis	5hrs
8	Assessment of potential project impacts including indirect, cumulative and synergistic impacts	5hrs
9	Decision support systems for EIA of transport infrastructures	5hrs

Duration of the Course: 45 hours
Learning outcomes:

1. After completing the programme, the successful candidate is expected to have the following knowledge, skills and competences

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2. Be able to present and communicate professional issues relevant to sustainable transport and urban mobility.
3. Be able to read scientific papers and other scientific work from a critical standpoint.

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