SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF ENGLISH

B.A ENGLISH CURRICULUM - REGULATION 2019

B.A Graduate Attributes

- Research and inquiry
- Information Literacy
- Personal and intellectual autonomy
- Ethical, social and professional understanding
- Communication

B.A Programme Educational Objectives

- PEO1-To understand British Literature, American Literature, Indian Writing in English, Commonwealth Literature and their landscape, tradition, milieu, spirit, socio-cultural ethos, national identity etc.
- PEO2-To know the social and the literary background of the English society
- PEO3-To impart the figures of speech and literary forms
- PEO4-To introduce Linguistic aspects through Phonetics.
- PEO5-To understand the art of criticism
- PEO6-To appreciate the works of Oliver Goldsmith and Tagore
- PEO7-To develop the skill of English Language teaching
- PEO8-To enthuse the art of translation
- PEO9-To know the different classifications of Novel and Poetry
- PEO10-To understand the steps in research process and the suitable methods
- PEO11-To learn the concomitant grammatical terms and enhance communication skill
- PEO12-To develop computer knowledge

B.A Programme Outcome=PO

- PO1-Understand literature as a body of knowledge open to multiple interpretations
- PO2-Know the different genres of British Literature, American Literature, Indian Writing in English, commonwealth literature
- PO3-Recognise, interpret and explain the connections between their own experiences and the world using the texts
- PO4-Personal and intellectual autonomy
- PO5-Ethical, social and professional understanding
- PO6-Ability to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools.
- PO7-Communicate effectively
- PO8-Improve computer knowledge

B.A Courses-C1

- C1-Literature in 1400-1600 Period
- C2-Literature in Elizabethan Period
- C3-Social History of England-I & II
- C4-History of English Literature-I & II
- C5-Literature in Augustan Period
- C6-Literature in Romantic Period
- C7-Literary Forms and Prosody
- C8-Shakespeare
- C9-Language and Linguistics
- C10-Literature in Victorian Period
- C11-Literary Criticism
- C12-Indian and European Classics in Translation
- C13-Literature in Modern Period-I & II
- C14-American Literature
- C15-Indian Writing in English
- C16-Translation
- C17-Single Author Study- Tagore
- C18-Single Author Study-Oliver Goldsmith
- C19-English Language Teaching
- C20-Commonwealth Literature
- C21-Study of a Genre-Poetry
- C22-Study of a Genre-Novel
- C23-Research Led Seminar
- C24-Research Methodology
- C25-Participation in Bounded Research
- C26-Communicative English Lab-I to VI
- C27-Packages Lab –I to VI
- C28-Project Work

B.A Curriculum Mapping

Programme Educational Objectives vs Programme Outcome

PO PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PEO1	*	*		*				
PEO2		*		*				
PEO3		*					*	
PEO4					*		*	
PEO5			*	*				
PEO6			*	*	*			
PEO7				*	*		*	*

PEO8				*		*		
PEO9	*	*					*	
PEO10				*		*	*	
PEO11				*			*	
PEO12				*		*		*

B.A Curriculum Mapping

Programme Outcome vs Courses Outcome

PO **CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	*	*	*	*	*			
CO2	*	*	*	*	*			
CO3	*	*	*	*	*			
CO4	*	*	*	*	*			
CO5	*	*	*	*	*			
CO6	*	*	*	*	*			
CO7				*	*			
CO8	*	*	*	*	*			
CO9				*	*			
CO10	*	*	*	*	*			
CO11			*	*	*			
CO12	*	*	*	*	*			
CO13	*	*	*	*	*			
CO14	*	*	*	*	*			
CO15	*	*	*	*	*			
CO16			*	*	*			
CO17	*	*	*	*	*			
CO18	*	*	*	*	*			
CO19			*	*	*			
CO20	*	*	*	*	*			
CO21	*	*	*	*	*			
CO22	*	*	*	*	*			
CO23	*					*		
CO24						*		
CO25	*					*		
CO26							*	
CO27								*
CO28		*				*		

M.A. CURRICULUM - REGULATION 2019

M.A. Graduate Attributes

- Research and inquiry
- Information literacy
- Personal and intellectual autonomy
- Ethical, social and professional understanding
- Communication

M.A Programme Educational Objective-PEO

- PEO1-To acquaint with the historical evolution and development of English Language and structure.
- PEO2-To understand the genius and the craftsmanship of Shakespeare.
- PEO3-To learn different genres of British Literature
- PEO4-To have a deeper insight into the genesis of Indian English literature and its output in different forms.
- PEO5-To appreciate the works of writers influenced by the Romantic Movement
- PEO6-To learn the features of the various literary movements
- PEO7-To know the components of research methodology
- PEO8-To enhance students to have a good stead for the career of English teacher
- PEO9-To know the background and features of the post colonial literature
- PEO10-To understand comparative literature and world classics in translation
- PEO11-To understand American Literature, Canadian literature, Australian literature, African Literature and their landscape, tradition, milieu, spirit, socio-cultural ethos, national identity etc.
- PEO12-To explore the literary corpus produced by the writers from the diasporic locations.
- PEO13-To analyse a text using various approaches
- PEO14-To develop the translation skill
- PEO15-To interpret a text using various theories of literary criticism
- PEO16-To know the writings intended for the mass and those that find favour with large audience.
- PEO17-To keep abreast with feminine writings
- PEO18-To take up a competitive examination.
- PEO19-To understand the fiction in other languages in India
- PEO20-To develop suitable methods of data collection and interpretation
- PEO21-To carry out basic literature survey using the common data-bases

M.A Programme Outcome-PO

- PO1-Understand literature as a body of knowledge open to multiple interpretations
- PO2-Know the different genres of British Literature, American Literature, Indian Writing in English, Canadian literature, Australian literature, African Literature

- PO3-Understand, analyse and evaluate any text using various approaches and theories
- PO4-Recognise, interpret and explain the connections between their own experiences and the world using the texts
- PO5-Personal and intellectual autonomy
- PO6-Ethical, social and professional understanding
- PO7-Research and inquiry
- PO8-Take up a competitive examination.
- PO9-Ability to develop research hypothesis and carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools.

M.A Course –C

- C1-History of English Language and Structure
- C2-Shakespeare
- C3-British Literature
- C4-Indian Writing in English
- C5-Romantic Movement
- C6-Literary Movement
- C7-Research Led Seminar
- C8-Women's Writings in English
- C9-Post-Colonial literature
- C10-Comparative Literature & World Classics in Translation
- C11-Diaspora literature
- C12-Canadian Literature
- C13-Research Methodology
- C14-Participation in Bounded Research
- C15-Critical Approaches to English Literature
- C16-American Literature
- C17-Literary Criticism
- C18-African Literature
- C19-Popular Literature
- C20-Participation in Scaffold research
- C21-Translation
- C22-English Language Teaching
- C23-English Literature for Competitive Examination
- C24-Australian Literature
- C25-Indian Fiction in Translation
- C26-Project Work

M.A Curriculum Mapping

Programme Educational Objectives VS Programme Outcome

Programme Outcome-PO Programme Educational Objectives-PEO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
PEO1	*			*		*			
PEO2			*	*	*	*			

PEO3	*	*	*						
PEO4	*	*	*	*					
PEO5	*			*	*				
PEO6	*			*	*				
PEO7							*		*
PEO8			*	*	*			*	
PEO9	*	*		*		*			
PEO10		*	*	*					
PEO11	*	*	*	*					
PEO12		*	*	*		*			
PEO13	*	*	*	*	*	*			
PEO14				*	*				
PEO15			*	*			*		
PEO16			*	*	*				
PEO17	*		*	*	*				
PEO18								*	
PEO19			*	*	*	*			
PEO20							*		
PEO21							*		*

M.A Curriculum Mapping

Programme Outcome vs Course Outcome

Programme Outcome-PO Course Outcome-CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	*			*	*				
CO2	*			*	*				
CO3	*	*	*	*		*		*	
CO4	*	*	*	*		*		*	
CO5	*		*	*	*	*			
CO6	*		*	*	*	*			
CO7					*		*		
CO8	*		*		*	*		*	
CO9	*	*	*	*		*		*	
CO10	*	*	*	*	*	*		*	
CO11	*	*	*	*	*	*		*	
CO12	*	*	*	*	*	*		*	
CO13	*		*	*	*	*			*
CO14				*	*	*		*	
CO15			*	*	*	*		*	
CO16	*	*	*	*	*	*			
CO17	*	*	*	*	*	*			
CO18	*	*	*	*	*	*		*	
CO19	*	*	*	*	*	*		*	
CO20	*	*		*	*	*	*	*	
CO21	*	*	*	*	*	*			
CO22	*	*	*	*	*	*			

CO23									*
CO24	*	*	*	*		*		*	
CO25	*	*	*	*					
CO26			*	*					*

DEPARTMENT OF CHEMISTRY

B.Sc CURRICULUM – REGULATION 2019

B.Sc. Graduate Attributes

- Domain knowledge
- Critical thinking
- Effective Communication
- Reflective learning
- Critical thinking

B.Sc Programme Educational Objectives – PEO

- PE01- Acquired the knowledge with facts and figures related to various subjects in pure sciences .
- PE02- Understood the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life.
- PE03- Acquired the skills in handling scientific instruments, planning and performing in laboratory experiments.
- PE04- The skills of observations and drawing logical inferences from the scientific experiments.
- PE05- Analyzed the given scientific data critically and systematically and the ability to draw the objective conclusions.
- PE06- Been able to think creatively (divergently and convergent) to propose novel ideas in explaining facts and figures or providing new solution to the problems.

- PE07-Realized how developments in any science subject helps in the development of other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments.
- PE08- Developed scientific outlook not only with respect to science subjects but also in all aspects related to life.
- PE09- Realized that knowledge of subjects in other faculties such as humanities, performing arts, social sciences etc.
- PE10- Can have greatly and effectively influence which inspires in evolving new scientific theories and inventions.
- PE11- Imbibed ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.

- PE12- Developed various communication skills such as reading, listening, speaking, etc., which we will help in expressing ideas and views clearly and effectively.
- PE13- Realized that pursuit of knowledge is a lifelong activity and in combination with untiring efforts and positive attitude and other necessary qualities leads towards a successful life.

B.Sc Programme Outcome - PO

- PO1- To understand basic facts and concepts in Chemistry while retaining the exciting aspects of Chemistry so as to develop interest in the study of chemistry as a discipline.
- PO2- To develop the ability to apply the principles of Chemistry.
- PO3- To appreciate the achievements in Chemistry and to know the role of Chemistry in nature and in society. To develop problem solving skills.
- PO4- To be familiarised with the emerging areas of Chemistry and their applications in various spheres of Chemical sciences and to apprise the students of its relevance in future studies.
- PO5- To develop skills in the proper handling of apparatus and chemicals.
- PO6- To be exposed to the different processes used in industries and their applications.

B.Sc. Course – C

- C1- General Chemistry – I
- C2- Volumetric Analysis Lab
- C3- Mathematics – I
- C4- Mathematics – II
- C5- General Chemistry – II
- C6- Organic Analysis Lab
- C7- Mathematics - III
- C8- Mathematics – IV
- C9- Research Led Seminar

- C10- General Chemistry – III
- C11- Physical Chemistry Lab – I
- C12- Physics - I & II
- C13- Physics Lab – I & II
- C14- Research Methodology
- C15- General Chemistry - IV
- C16- Physical Chemistry Lab – II
- C17- Inorganic Chemistry – I
- C18- Organic Chemistry – I
- C19- Physical Chemistry – I
- C20- Inorganic Qualitative Analysis Lab
- C21- Gravimetric Analysis Lab
- C22-Participation in Bounded Research
- C23- Inorganic Chemistry – II
- C24- Organic Chemistry – II
- C25- Physical Chemistry – II
- C26- Project Work
- C27- Package Lab I to VI
- C28- Communication Lab I to VI

B.Sc Curriculum Mapping

Programme Educational Objectives Vs Programme Outcome

Programme Outcome-PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
Programme Educational Outcome - PEO						
PE01	✓					
PE02						
PE03			✓			

PE04				✓		
PE05						
PE06					✓	
PE07					✓	
PE08						✓
PE09		✓			✓	
PE10			✓	✓		
PE11						
PE12					✓	
PE13		✓		✓		✓

B.Sc Curriculum Mapping

Programme Outcome vs Courses Outcome

Programme Outcome-PO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
Courses Outcome-CO						
CO1			*	*		*
CO2		*		*	*	*
CO3	*	*			*	
CO4			*	*		*
CO5			*	*		*
CO6		*		*	*	*
CO7	*	*			*	
CO8		*	*		*	
CO9	*	*			*	*
CO10		*	*	*		*
CO11		*		*	*	

CO12	*	*		*	*	
CO13		*	*	*	*	
CO14		*	*	*	*	*
CO15	*		*		*	
CO16		*		*		*
CO17	*		*		*	
CO18		*		*	*	
CO19	*	*		*		*
CO20			*	*	*	
CO21	*		*	*		*
CO22	*	*		*		*
CO23			*	*	*	
CO24	*	*	*		*	*
CO25	*	*		*		*
CO26	*	*		*	*	
CO27		*	*	*		
CO28	*	*			*	

M.Sc CHEMISTRY – REGULATION 2019

M.Sc. Graduate Attributes

- Domain knowledge
- Investigative
- Critical thinking
- Resourceful and Responsible
- Effective Communication
- Ethical and Moral values

M.Sc. Programme Educational Objective – PEO

- PEO1-To demonstrate broad knowledge of descriptive Chemistry.
- PEO2-To impart the basic analytical and technical skills to work effectively in the various fields of chemistry.
- PE03- To motivate critical thinking and analysis skills to solve complex chemical problems, e.g., analysis of data, synthetic logic, spectroscopy, structure and modeling, team-based problem solving, etc.

- PEO4-To demonstrate an ability to conduct experiments in the above sub-disciplines with mastery of appropriate techniques and proficiency using core chemical instrumentation and modeling methods.
- PEO5-To demonstrate the ability to perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions.
- PEO6-To develop skills in quantitative modeling of static and dynamic chemical systems.
- PEO7-To develop laboratory competence in relating chemical structure to spectroscopic phenomena.
- PEO8-To demonstrate the ability to synthesize, separate and characterize compounds using published reactions, protocols, standard laboratory equipment, and modern instrumentation.

M.Sc Pragramme Outcome –PO

- PO1-Think critically and analyze chemical problems.
- PO2-Present scientific and technical information resulting from laboratory experimentation in both written and oral formats.
- PO3-Work effectively and safely in a laboratory environment.
- PO4-Use technologies/instrumentation to gather and analyze data.
- PO5-Work in teams as well as independently.
- PO6-Apply modern methods of analysis to chemical systems in a laboratory setting.

M.Sc Course -C

- C1-Organic Chemistry-I
- C2-Inorganic Chemistry-I
- C3-Physical Chemistry-I
- C4-Research Led Seminar
- C5-Organic Chemistry-II
- C6-Inorganic Chemistry-II
- C7-Physical Chemistry-II
- C8-Research Methodology
- C9-Participation in Bounded Research

- C10-Organic Chemistry-III
- C11-Inorganic Chemistry-III
- C12-Physical Chemistry-III
- C13- Participation in Scaffold Research
- C14-Project Work

M.Sc Curriculum Mapping

Programme Educational Objectives Vs Programme Outcome

Programme Outcome-PO Programme Educational Outcome - PEO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
PE01	✓					
PE02						
PE03		✓				
PE04			✓			
PE05						
PE06					✓	
PE07				✓		
PE08						✓

M.Sc Curriculum Mapping
Programme Outcome vs Courses Outcome

Programme Outcome-PO Courses Outcome-CO	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1			*	*		*
CO2		*		*	*	*
CO3	*	*			*	
CO4			*	*		*
CO5			*	*		*
CO6		*		*	*	*
CO7	*	*			*	
CO8		*	*		*	
CO9	*	*			*	*
CO10		*	*	*		*
CO11		*		*	*	
CO12	*	*		*	*	
CO13		*	*	*	*	
CO14		*	*	*	*	*

Department of Computer Science

Department : COMPUTER SCIENCE

B.Sc (Computer Science)

Programme :

B.Sc C.S. Graduate Attributes :

- Information Literacy
- Problem Analysis
- Design/development of solutions
- Modern tool usage
- Professional and Ethical understanding

B.Sc C.S. Programme Objectives-PEO

- POE1- To study about I/O management, storage management
- POE2- To know the methods of connecting them to the peripheral devices.
- POE3- To learn Software design and Implementation
- POE4- To learn the basic principles of database and database design
- POE5- To understand computational development of graphics with mathematics

B.Sc C.S. Programme Outcomes -PO

- PO1- Understand dynamic memory allocation and pointers.
- PO2- Trace the flow of information from one node to another node in the network.
- PO3- Understand the format and use of objects.
- PO4- Able to Measure the product and process performance using various metrics
- PO5- Design Secure applications.
- PO6- Apply the various optimization techniques.

B.Sc C.S. Courses -C

- **C1-** Programming in C with C++
- **C2-** Internet and Java Programming
- **C3-** Visual Programming
- **C4-** Active Server Programming
- **C5-** E-Business Technology
- **C6-** Operating System
- **C7-** Microprocessor and its Applications
- **C8-** .NET Programming
- **C9-** Relational Data Base Management System

B.Sc C.S. Curriculum Mapping

Programme Educational Objectives-PEO vs Programme Outcome-PO

Programme Outcome-PO **Programme Educational Objectives-PEO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
PEO1		✓			✓	
PEO2	✓					
PEO3			✓			✓
PEO4						✓
PEO5			✓		✓	

B.Sc C.S. Curriculum Mapping

Programme Outcome-PO VS Course Outcome-CO

Programme Outcome-PO Course Outcome-CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	✓					
CO2	✓		✓			
CO3	✓		✓		✓	
CO4			✓			✓
CO5		✓				
CO6				✓		✓
CO7						✓
CO8			✓			✓
CO9					✓	✓

Department of Computer Science

Department	:	COMPUTER SCIENCE
Programme	:	BCA

GRADUATE ATTRIBUTES :

- Information Literacy
- Problem Analysis
- Design/development of solutions
- Modern tool usage
- Professional and Ethical understanding

PROGRAMME OBJECTIVES:

- Be exposed to the syntax of C.
- Be Familiar with the Basics of C Programming Language.
- To study about Graphics programming using java Language
- Design and implement reliable and maintainable object-oriented applications of moderate complexity composed of several classes
- To learn the basic principles of database and database design
- To understand computational development of graphics with mathematics

PROGRAMME OUTCOMES (O_I):

- Able to understand and design the solution to a problem using object-oriented programming concepts
- Trace the flow of information from one node to another node in the network
- Design Databases for applications.
- Able to Measure the product and process performance using various metrics
- Gain the knowledge of different media streams in multimedia transmission
- Apply the various optimization techniques.

COURSES (C_I):

- Core -I Programming in C with C++
- Core -II Data Structure and Algorithms

- Core -III Internet and Java Programming
- Core –IV Visual Programming
- Core –V Relational Database Management Systems
- Core –VI .NET Programming
- Core –VII Designing and supporting Computer Networks
- Core –VIII Advanced Web Technology
- Core –IX Operating System

CURRICULUM MAPPING

	O_1	O_2	O_3	O_4	O_5	O_6
C_1	✓					
C_2	✓		✓			
C_3	✓		✓			
C_4			✓			✓
C_5		✓				
C_6			✓	✓		✓
C_7						✓
C_{8A}			✓			✓
C_{8B}					✓	✓
C_9			✓		✓	
C_{10}			✓		✓	✓
C_{11A}			✓			✓
C_{11B}						✓
C_{12}					✓	✓

Department of Computer Science

Department : COMPUTER SCIENCE

Programme : M.Sc Computer Science

M.Sc C.S. Graduate Attributes :

- Information Literacy
- Problem Analysis
- Design/development of solutions
- Modern tool usage
- Professional and Ethical understanding

M.Sc C.S. Programme Objectives-PEO

- PEO1- To understand the different methods of organizing large amounts of data.
- PEO2- To introduce GUI programming using Microsoft Foundation Classes
- PEO3- To learn the fundamental concept of Web Design.
- PEO4- To develop network programs in java.
- PEO5- Provides idea on VLAN, VTP, STP and Inter-VLAN Routing.
- PEO6- To know the network security tools and system level security used
- PEO7- To get an idea about Sharing Files.

M.Sc C.S. Programme Outcomes -PO

- PO1- Apply the different data structures for implementing solutions to practical problems
- PO2- Trace the flow of information from one node to another node in the network
- PO3- Understand the format and use of objects
- PO4- Able to Measure the product and process performance using various metrics
- PO5- Design Secure applications

- PO6- Apply the various optimization techniques

M.Sc C.S. Courses -C

- C1- J2EE Programming
- C2- RDBMS
- C3- Python Programming
- C4- Cryptography & Network Security
- C5- Software Engineering
- C6- Open Source programming
- C7- .NET Programming.
- C8- Software Testing
- C9- Human Computer interaction

M.Sc C.S. Curriculum Mapping

Programme Educational Objectives-PEO vs Programme Outcome-PO

Programme Outcome-PO **Programme Educational Objectives-PEO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
PEO1		✓			✓	
PEO2	✓					
PEO3			✓			✓
PEO4						✓
PEO5			✓		✓	
PEO6	✓			✓		
PEO7	✓				✓	

M.Sc C.S. Curriculum Mapping

Programme Outcome-PO VS Course Outcome-CO

Programme Outcome-PO Course Outcome-CO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	✓					
CO2	✓		✓			
CO3	✓		✓		✓	
CO4			✓			✓
CO5		✓				
CO6				✓		✓
CO7						✓
CO8			✓			✓
CO9					✓	✓

DEPARTMENT OF BIOCHEMISTRY

B. Sc., Curriculum-Regulation 2019

PROGRAMME OUTCOME (POs). The Biochemistry graduate will be able to acquire

a. Critical Thinking and Language Training: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives. To train them to communicate science by improving their English vocabulary. Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

b. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

c. Social Interaction: Elicit views of others, mediate disagreements and help reach conclusions in group settings. Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

d. Understanding cellular function: To equip them with basic and advanced knowledge in cell biology in order to get entry/placed in cell based research and development institution/laboratories.

e. Protein based skills: To make them understand protein, enzymes and human physiology to lay solid foundation and to get through competitive examinations. To equip them to get placed in recombinant protein production industries/laboratory.

f. Understanding of endocrine system and metabolism: To train them on the regulatory role of hormone on the metabolism of carbohydrates, lipids, amino acids and nucleic acid.

g. Molecular and Genetic understanding: To train them on the genetic regulation of immune system and to use computational tools. h. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

i. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.

j. Skill development: To gain hands on experience on various biochemical experiments and to equip them to interpret the data.

PROGRAMME EDUCATIONAL OBJECTIVE (PEO)

I. To give students a basic knowledge in biochemistry and to teach on ethics.

II. To develop analytical and critical-thinking skills that allows independent exploration of biological phenomena through the scientific methods.

III. To acquaint knowledge on modern methods of biochemical experimentation to implement for future studies.

IV. To motivate students for social responsibilities and to educate them on ethical values in addition to inculcating environmental awareness.

V. To enable them to execute a research objective through experimentation.

Mapping of PEOs and PO

B.SC BIOCHEMISTRY(C1)

C1- Biomolecules

C2 - Biomolecules Lab-I

C3 - Inorganic , Organic and Physical Chemistry –I

C4 - Volumetric Analysis Lab–I

C5 - Analytical Techniques

C6 - Biomolecules Lab-II

C7 - Organic Analysis Lab

C8- Inorganic , Organic and Physical Chemistry – II

C9 - Biochemical Techniques Lab-I

C10 - Programming in C

C11 - Programming in C Lab

C12- Biochemical Techniques Lab-II

C13 - Fundamentals of Computing

C14 - Web Design Lab

C15 - Food Analysis Lab

C16 - Enzyme Analysis Lab

C17 - Blood Analysis Lab

C18 - Urine Analysis Lab

C19 - Cell Biology and Genetics

C20 - Human Physiology

C21 - Enzymes

C22 - Metabolism

C23 - Immunology

C24- Clinical Biochemistry

C25 - Molecular Biology

C26 - Research LED Seminar

C27 - Research Methodology

C28 – Package Lab I- VI

C29 – Communicative English Lab I- VI

B. Sc., Curriculum Mapping

Programme Educational Objectives vs Programme Outcome

POs	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**
PEO I	**X**	**X**		**X**		X	X			
PEO II			X			X				
PEO III			X	X	X		X			
PEO IV								X		X
PEO V				X	X				X	X

B. Sc., Curriculum Mapping

Programme Outcome vs Course Outcome

Programme Outcome-PO Course Outcome-CO	**O1**	**O2**	**O3**	**O4**	**O5**	**O6**	**O7**	**O8**
C1	*	*	*	*	*			

C2	*	*	*	*	*			
C3	*	*	*	*	*			
C4	*	*	*	*	*			
C5	*	*	*	*	*			
C6	*	*	*	*	*			
C7				*	*			
C8	*	*	*	*	*			
C9				*	*			
C10	*	*	*	*	*			
C11			*	*	*			
C12	*	*	*	*	*			
C13	*	*	*	*	*			
C14	*	*	*	*	*			
C15	*	*	*	*	*			
C16			*	*	*			
C17	*	*	*	*	*			
C18	*	*	*	*	*			
C19			*	*	*			
C20	*	*	*	*	*			
C21	*	*	*	*	*			
C22	*	*	*	*	*			
C23						*		
C24							*	
C25		*	*	*	*			*
C26	*	*	*	*				
C27				*	*	*	*	

C28		*	*	*	*			
C29				*	*	*	*	

M. Sc., Curriculum-Regulation 2019

PROGRAMME OUTCOME (POs)

PG biochemistry graduate will be able to achieve

a. **Critical Thinking and Effective Communication:** The teaching is intended to kindle the critical thinking of the student to address problems (Problem based learning) and equip them to list out their understanding (Activity based learning). The syllabus also includes journal paper presentation and analysis on specific topics of all subjects which will be evaluated by faculty handling the subject.

b. **Future Career:** To prepare students for future careers in the various fields of biochemistry such as academic and research institution.

c. **Societal Contribution and Social Interaction:** The Biochemistry Programme will benefit the society on the whole by adding to the highly skilled scientific workforce, particularly for the biomedical research sectors, in the academic, industry as well as for research laboratories across the country and the globe. Inside the classrooms group discussion is encouraged on topics during the last five minutes of class to improve the understanding and to share the knowledge and view point. Outside the classroom, various outreach programme are conducted on various health initiatives.

d. **Identification and Differential Diagnosis:** To acquire **b**iochemist position in leading hospitals and scientist position in industries.

e. **Ethics:** Students learn about the significance of having right moral features to develop good interpersonal skills.

f. **Environment and Sustainability:** Understand the role of citizen to maintain sustainable environment and encourage Eco-friendly initiatives.

g. **Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest context of health and disease.

PROGRAMME EDUCATIONAL OBJECTIVE (PEOs)

I. The course aims to impart advanced and in depth understanding on all the human physiological and pathological state. To understand the molecular process and their perturbation during disease.

II. The programme covers various aspects of Biomolecule estimation and regulation to ascertain health and disease state. metabolic pathways alterations along with their regulation at the replication, transcriptional, translational, and post-translational levels including by studying DNA, RNA and protein molecules, immunology, endocrinology, advancements in rDNA technologies to circumvent genetic disorders.

III. Further to enrich research understanding various genomic, proteomic and bioinformatics tools are added. Animal cell culture, IPR, Biostatistics, research methodology, clinical research and Plant tissue culture are offered as elective papers to get specialized in a specific area. The final semester is devoted exclusively to enrich the students to address specific research objective.

M.Sc., BIOCHEMISTRY Courses (C_i)

C1- Biomolecules

C2 - Biochemical and Instrumental analysis

C3 - Enzymology

C4 - Biochemical Techniques Lab

C5 – Cellular Biochemistry

C6 – Metabolism and Regulation

C7 - Bioinformatics

C8 - Enzymology Lab

C9- Molecular Biology

C10 - Clinical Biochemistry

C11 - Clinical Biochemistry Lab

12 - Research LED Seminar

C13 - Research Methodology

M. Sc., Curriculum Mapping

Programme Educational Objectives vs Programme Outcome

POs	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
PEO I	**X**		**X**			X					
PEO II	X		X	X	X	X		X	X	X	X

PEO III	X	X	X	X	X		X	X		X	X

M.

Sc., Curriculum Mapping

Programme Outcome vs Course Outcome

Programme Outcome-PO Course Outcome-CO	**O1**	**O2**	**O3**	**O4**	**O5**	**O6**	**O7**	**O8**
C1	*	*	*	*	*			
C2	*	*	*	*	*			
C3	*	*	*	*	*			
C4	*	*	*	*	*			
C5	*	*	*	*	*			
C6	*	*	*	*	*			
C7				*	*			
C8	*	*	*	*	*			
C9				*	*			
C10	*	*	*	*	*			
C11			*	*	*			
C12	*	*	*					
C13		*	*	*				
C14	*	*	*		*			

DEPARTMENT OF BIOTECHNOLOGY

B.sc., CURRICULUM - REGULATION-2019

B.sc., Graduate Attributes

- **Research, inquiry and analytical thinking abilities.**
- **Capability and motivation for intellectual development.**
- **Ethical, social and professional understanding.**
- **Communication in** intra and inter disciplinary
- **Teamwork, collaborative and management skills in scientific research**
- **Information literacy in respective discipline**

B.sc., Program Educational Objectives PEO

- **PEO 1** : To obtain detailed information about the fundamentals of Biotechnology, allied subjects and life skills.

- **PEO 2** : To provide information about the molecular methods which involved in cellular processes of living systems such as microbes to higher order organisms for applied aspects. To address the emerging need for skilled scientific manpower with research ethics involving organisms.
- **PEO 3** : To impart the basics and current molecular tools in the areas of Molecular Diagnostics, Fermentation Technology, Plant, Animal & Environmental Biotechnology are included to train the students for man power development and also sensitize them to scope for research. The practical subjects will provide information about the careers in the industry and applied research where biological system is employed.
- **PEO 4** : To make the graduates of Biotechnology to learn and to adopt in a competitive world of technology update and contribute to all forms of life

B.sc., Program Outcome PO

- PO1 Graduates will acquire in-depth understanding of basic concept, knowledge about biochemistry and cell organelles, their functions for applied field, allied subject and life skills.
- PO2 The students will be able to discuss the metabolic aspects of biomolecules.
- PO3 The Graduates will gain the technical capability of handling, isolating and identifying various organisms from different sources.
- PO4 Understanding and better knowledge of the causes, types and control methods for environmental pollution by the students.
- PO5 The student will be able to discuss the mechanisms associated with gene expression system in prokaryotes and eukaryotes.

B.Sc., Biotechnology (C)

C1- Fundamentals of Biological System
C2- Fundamentals of Biological System Lab
C3- Biological Chemistry
C4- Biological Chemistry Lab
C5-Cell Biology and Genetics
C6- Cell Biology and Genetics Lab
C7- Microbiology
C8- Microbiology Lab
C9- Research LED Seminar
C10-Plant Physiology
C11-Plant Physiology Lab
C12- Immunology
C13- Immunology Lab
C14- Research Methodology
C15- Animal Physiology
C16- Animal Physiology Lab
C17- Bioinformatics and Biostatistics
C18- Bioinformatics and Biostatistics Lab
C19- Development Biology
C20- Cell and Tissue Culture
C21- Enzyme and Enzyme Technology
C22- Development Biology, Tissue Culture Lab

C23- Enzyme and Enzyme Technology Lab
C24-Discipline Specific Elective
C25- Plant and animal Biotechnology
C26- Applied Biotechnology
C27- Plant, Animal and Applied Biotechnology Lab
C28- Environmental Biotechnology Lab
C29- Discipline Specific Elective
C30-Package lab- I-VI
C31- Communicative English LabI-VI

B.sc., Curriculum Mapping

Programme educational objectives Vs Programme Outcome

Programme Outcome PO				
Programme educational outcome PEO	PO1	PO2	PO3	PO4
	*			
PEO1				
PEO2			*	
PEO3		*	*	
PEO4		*	*	
PEO5		*	*	
PEO6	*	*	*	
PEO7		*	*	
PEO8		*		*
PEO9				*
PEO10		*		*
PEO11	*			*
PEO12				*

B.Sc Biotechnology Curriculum Mapping

Programme Outcome Vs Course Outcome

Programme Outcome- PO Courses Outcome-CO	PO1	PO2	PO3	PO4	PO5
CO1	*	*	*	*	*
CO2	*	*	*	*	*
CO3	*	*	*	*	*
CO4	*	*	*	*	*
CO5	*	*	*	*	*
CO6	*	*	*	*	*
CO7				*	*
CO8	*	*	*	*	*
CO9				*	*
CO10	*	*	*	*	*
CO11			*	*	*
CO12	*	*	*	*	*
CO13	*	*	*	*	*
CO14	*	*	*	*	*
CO15	*	*	*	*	*
CO16	*	*	*	*	*
CO17	*	*	*	*	*
CO18	*	*	*	*	*
CO19	*	*	*	*	*
CO20				*	*
CO21	*	*	*	*	*
CO22				*	*
CO23	*	*	*	*	*
CO24			*	*	*
CO25	*	*	*	*	*

CO26	*	*	*	*	*
CO27	*	*	*	*	*
CO28	*	*	*	*	*
CO29	*	*	*	*	*
CO30	*	*	*	*	*
CO31	*	*	*	*	*

M.Sc. BIOTECHNOLOGY CURRICULUM - REGULATION-2019

M.sc., Graduate Attributes

- Research, inquiry and analytical thinking abilities.
- Capability and motivation for intellectual development.
- Ethical, social and professional understanding.
- Communication in intra and inter disciplinary
- Teamwork, collaborative and management skills in scientific research
- Information literacy in respective discipline

M.sc., Program Educational Objectives-PEO

- PEO-1To gain and apply knowledge of Biotechnology concept to solve the problems.
- PEO-2 To identify, analyse and understand the problems related to biotechnology.
- PEO-3 Ability to design and develop solution to biotechnology.
- PEO-4Ability to design, perform experiments, analyse, and interpret data for investigating complex problems.
- PEO-5 To decide and apply appropriate tools and techniques in biotechnologicals manipulations

M.sc., Program Outcome-PO

- PO-1 Facilitates the students to acquire knowledge in biotechnology.
- PO-2 Learn about the usage of statistical tools in biological systems.
- PO-3 Analyses to leran the recent developments in the field of human genome and gene concepts.
- PO-4 Analyse the importance of classification of Biological system.
- PO-5 To understand the basic unit of the organism.

M.Sc., Biotechnology (C)

C1- General Microbiology
C2- Molecular Genetics
C3- Biochemistry

C4- Microbiology & Molecular Genetics - Lab
C5- Discipline specific elective
C6- Research Led Seminar
C7- Cell & Molecular Biology
C8- Biophysics & Bioinformatics
C9- Industrial Biotechnology
C10- Molecular Biology & Industrial Biotechnology - Lab
C11- Discipline specific elective
C12- Research Methodology
C13- Recombinant DNA Technology
C14- Plant Biotechnolog
C15-Animal Biotechnology
C16-DNA Technology & Animal Biotechnology – Lab
C17- Discipline specific elective
C18-Participation in scaffold research (Design/Societal Project)
C19-Project Work

M.sc., Curriculum Mapping

Programme Educational Objectives Vs Programme Outcomes

Programme Outcome-PO **Programme educational Outcome-PEO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
PEO1	*	*			*
PEO2		*			*
PEO3		*	*	*	*
PEO4	*		*	*	*
PEO5	*	*			*

Programme outcome Vs Course Outcome

Programme Outcome-PO Course Outcome-CO	PO1	PO2	PO3	PO4	PO5
CO1	*	*	*	*	*
CO2	*	*	*	*	*
CO3	*	*	*	*	*
CO4	*	*	*	*	*
CO5	*	*	*	*	*
CO6	*	*	*	*	*
CO7				*	*
CO8	*	*	*	*	*
CO9				*	*
CO10	*	*	*	*	*
CO11			*	*	*
CO12	*	*	*	*	*
CO13	*	*	*	*	*
CO14				*	*
CO15	*	*	*	*	*
CO16				*	*
CO17	*	*	*	*	*
CO18		*	*	*	*
CO19	*	*	*	*	*

B.Sc. Hons. (Agriculture)

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 71 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

B.Arch.

DEPARTMENT OF ARCHITECTURE

Program educational objectives

- Rapidly become certified Engineer Interns (EI) and Associate Constructors (AC) employed in architecture, engineering, construction, or related fields or pursuing graduate or professional education in engineering, business, law, architecture, etc.
- Become licensed Professional Engineers (PE) and/or Certified Professional Constructors (CPC) after gaining the required professional experience and the requisite knowledge to pass the licensing and/or certification exams.
- Engage in lifelong learning, through on-the-job training, participation in professional societies, additional formal education, continuing education and professional development, research, and self-study, in order to use state-of-the-art knowledge to design and build safe and effective buildings and/or provide high quality service to the general public, employers, clients, and other professionals.

Programme Outcomes

- An ability to apply knowledge of mathematics, science, and engineering.
- . An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- An ability to function on multidisciplinary teams.
- An ability to identify, formulate, and solve engineering problems.
- An understanding of professional and ethical responsibility.
- An ability to communicate effectively.
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- A recognition of the need for, and an ability to engage in life-long learning.
- A knowledge of contemporary issues. k. An ability t

B.Ed. & M.Ed. CURRICULUM – REGULATION 2019

B.Ed. & M.Ed. Graduate Attributes

- **Personal abilities of graduates**
  - A commitment to ethical practice
  - Willing to face and learn from errors and listen openly to feedback
  - Being flexible and adaptable
- **Interpersonal abilities of graduates**
  - Willing to listen to different points of view before coming to a decision

- Ability to empathize with and work productively with people from a wide range of backgrounds
- Able to develop and use networks of colleagues to help solve key workplace problems

- **Intellectual abilities of graduates**
  - Able to set and justify priorities
  - Able to readjust a plan of action in the light of what happens as it is implemented
  - Able to see how apparently unconnected activities are linked and make up an overall picture
- **Specific skills and knowledge**
  - Able to communicate effectively
  - Able to organize work and manage time effectively
  - Able to use IT effectively to communicate & perform key work functions

B.Ed., Programme Educational Objective - PEO

Bachelor of Education curriculum is designed to prepare the graduates having attitude and knowledge to

1. acquire knowledge of Education:
2. understand the process, functions of education and knowledge;
3. state the theory of knowledge and facets of knowledge;.
4. Have the teacher's favorable attitudes and adequate interest which will enable them to foster all round development?
5. Make the teacher efficient enough to offer educational guidance and counseling to individual learners.
6. Enable the teacher trainees undertake action research to solve their professional problems.
7. Reduce the gap between theory and practice, teacher and education curriculum and school realities.
8. The course (B.Ed) will provide adequate theoretical orientation regarding the objectives of education in the Indian Background.

B.Ed., Programme Outcome - PO

The graduates will have the ability to

a. Acquire knowledge about the different methods of teaching in education
b. Describe the concept of education and understand the knowledge of schools .
c. Explore the educational thoughts of great thinkers and understand the issues and challenges in Indian Society and educational solutions.
d. Understand the constitutional provisions for education and identify the ways and means for including values.
e. Study the Social Customs prevailing in the local community and submit a report.
f. Study the religious diversities existing in the community and describe the root causes for such diversities.

g. Education and vertical/ Horizontal Social Mobility – Conduct a Survey in a village/ward and prepare a report.

h. Study the Social Stratification in a Village/ ward and prepare a report on it.

i. Study the Essential skills & Life skills in education and prepare a report on it.

j. Survey the continuous and comprehensive assessment practices followed in sc Role play of different innovative methods of teaching

k. Role play of different innovative methods of teaching

l. Identify the nutritional disturbance of the students

B.Ed., Curriculum Mapping

PEO \ PO	a	b	c	d	e	f	g	h	i	j	k	l
1.	√	√	√		√	√			√	√		
2.	√	√		√		√		√	√		√	√
3.	√	√	√		√	√	√		√	√	√	√
4.	√		√	√	√		√	√		√		
5.	√	√	√	√		√	√		√		√	√
6.	√	√	√		√	√		√		√	√	
7.		√		√	√	√	√		√	√	√	√
8.	√	√		√		√		√		√		√

M.Ed., Programme Educational Objective - PEO

Master of Education curriculum is designed to prepare the graduates having attitude and knowledge to

1. Understand The Nature Of Education As A Discipline
2. Develop Specialized Knowledge And Understanding Of The Bases Of Education
3. Develop National And International Perspectives On Educational Theory And Practice
4. Develop Understanding Of Human Behaviour And Personality For Guiding Efficient And Effective Learning

5. Acquire Skills Required To Take Up Leadership Roles In The Areas Of Education
6. Develop A Rational Conceptualization Of Educational Research
7. Enhance Essential ICT Skills Required For Educational Practice And Professional Empowerment

M.Ed., Programme Outcome - PO

The graduates will have the ability to

a. Review critically the concerns arises from vision of school education and teacher education and also the vision of great Educational exponents.
b. Reflect on the multiple contexts in which the school and teacher education institutions are interlinked with each other
c. Emerge new dimensions of school education and Teacher education
d. Link with education and other development sectors
e. Improve the support systems in Education like multimedia and ICT.
f. Understand the sociological foundations of Education
g. Realise the functions of family and other agencies of education towards effective socialization at school level.
h. Analyse critically social stratification and mobility
i. Practice the aims in the Basic Scheme and the Kothari Commission Report
j. Make Educational Planning for a changing environment
k. Appreciate inter-relatedness and interdependence of individual and society in context of human development.
l. Identify group dynamics and its bearing on teaching- Learning.

M.Ed., Curriculum Mapping

PEO \ PO	a	b	c	d	e	f	g	h	i	j	k	l
1.	√		√		√		√	√		√	√	
2.		√		√		√	√		√	√		√
3.	√		√		√	√		√		√	√	
4.	√	√		√	√		√			√		√

5.	√	√	√	√				√	√	√		√
6.	√	√			√	√	√	√				√
7.	√	√		√	√		√			√		

SCHOOL OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

B.Tech.

PROGRAMME EDUCATIONAL OBJECTIVES:

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

1. Have a successful career in Mechanical Engineering and allied industries.
2. Have expertise in the areas of Design, Thermal, Materials and Manufacturing.
3. Contribute towards technological development through academic research and industrial practices.
4. Practice their profession with good communication, leadership, ethics and social

responsibility.

5. Graduates will adapt to evolving technologies through life-long learning.

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

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

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

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

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

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

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

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

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

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

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

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

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

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOMES

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

1-Reasonable: 2- Significant: 3- Strong

Course Outcome

COMMUNICATIVE ENGLISH

- Read articles of a general kind in magazines and newspapers.
- Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
- Comprehend conversations and short talks delivered in English
- Write short essays of a general kind and personal letters and emails in English.

ENGINEERING MATHEMATICS – I

- Use both the limit definition and rules of differentiation to differentiate functions.
- Apply differentiation to solve maxima and minima problems.
- Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
- Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.

- Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
- Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
- Apply various techniques in solving differential equations.

ENGINEERING PHYSICS

- The students will gain knowledge on the basics of properties of matter and its applications,
- The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
- The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,
- The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
- The students will understand the basics of crystals, their structures and different crystal growth techniques.

ENGINEERING CHEMISTRY

- The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes

  and applications for further learning.

ENGINEERING GRAPHICS

- familiarize with the fundamentals and standards of Engineering graphics
- perform freehand sketching of basic geometrical constructions and multiple views of objects.
- project orthographic projections of lines and plane surfaces.
- draw projections and solids and development of surfaces.
- visualize and to project isometric and perspective sections of simple solids.

PROBLEM SOLVING AND PYTHON PROGRAMMING

Develop algorithmic solutions to simple computational problems

Read, write, execute by hand simple Python programs.

Structure simple Python programs for solving problems.

Decompose a Python program into functions.

Represent compound data using Python lists, tuples, dictionaries.

Read and write data from/to files in Python Programs.

MATERIALS SCIENCE

- the students will have knowledge on the various phase diagrams and their applications
- the students will acquire knowledge on Fe-Fe_3C phase diagram,various microstructures and alloys
- the students will get knowledge on mechanical properties of materials and their measurement
- the students will gain knowledge on magnetic, dielectric and superconducting properties of materials

the students will understand the basics of ceramics, composites and nanomaterials

ENVIRONMENTAL SCIENCE AND ENGINEERING

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters

BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION

Understand electric circuits and working principles of electrical machines
Understand the concepts of various electronic devices

Choose appropriate instruments for electrical measurement for a specific application

ENGINEERING MECHANICS

- illustrate the vectorial and scalar representation of forces and moments
- analyse the rigid body in equilibrium
- evaluate the properties of surfaces and solids
- calculate dynamic forces exerted in rigid body
- determine the friction and the effects by the laws of friction

ENGINEERING THERMODYNAMICS

CO1	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions.
CO2	Apply second law of thermodynamics to open and closed systems and calculate entropy and availability.
CO3	Apply Rankine cycle to steam power plant and compare few cycle improvement methods
CO4	Derive simple thermodynamic relations of ideal and real gases
CO5	Calculate the properties of gas mixtures and moist air and its use in psychometric processes

FLUID MECHANICS AND MACHINERY

- Apply mathematical knowledge to predict the properties and characteristics of a fluid.
- Can analyse and calculate major and minor losses associated with pipe flow in piping networks.
- Can mathematically predict the nature of physical quantities
- Can critically analyse the performance of pumps
- Can critically analyse the performance of turbines.

PRODUCTION TECHNOLOGY – I

CO1	Explain different metal casting processes, associated defects, merits and demerits
CO2	Compare different metal joining processes.
CO3	Summarize various hot working and cold working methods of metals.
CO4	Explain various sheet metal making processes.
CO5	Distinguish various methods of manufacturing plastic components.

ELECTRICAL DRIVES AND CONTROLS

- Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance

THEORY OF MACHINES-I

CO1 Discuss the basics of mechanism

CO2 Calculate velocity and acceleration in simple mechanisms

CO3 Develop CAM profiles

CO4 Solve problems on gears and gear trains

CO5 Examine friction in machine elements

PRODUCTION TECHNOLOGY – II

CO1 Explain the mechanism of material removal processes.

CO2 Describe the constructional and operational features of centre lathe and other special purpose lathes.

CO3 Describe the constructional and operational features of shaper, planner, milling, drilling, sawing and broaching machines.

CO4 Explain the types of grinding and other super finishing processes apart from gear manufacturing processes.

CO5 Summarize numerical control of machine tools and write a part program.

ENGINEERING METALLURGY

CO1 Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification.

CO2 Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes.

CO3 Clarify the effect of alloying elements on ferrous and non-ferrous metals

CO4 Summarize the properties and applications of non metallic materials.

CO5 Explain the testing of mechanical properties. .

STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS

- Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.
- Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.
- Apply basic equation of simple torsion in designing of shafts and helical spring
- Calculate the slope and deflection in beams using different methods.

Analyze and design thin and thick shells for the applied internal and external pressures

THERMAL ENGINEERING – I

CO1	Apply thermodynamic concepts to different air standard cycles and solve problems.
CO2	Solve problems in single stage and multistage air compressors
CO3	Explain the functioning and features of IC engines, components and auxiliaries.
CO4	Calculate performance parameters of IC Engines.
CO5	Explain the flow in Gas turbines and solve problems.

THERMAL ENGINEERING – II

CO1	Solve problems in Steam Nozzle
CO2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters.
CO3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems.
CO4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat Exchangers
CO5	Solve problems using refrigerant table / charts and psychrometric charts

DESIGN OF MACHINE ELEMENTS

CO1	Explain the influence of steady and variable stresses in machine component design.
CO2	Apply the concepts of design to shafts, keys and couplings.
CO3	Apply the concepts of design to temporary and permanent joints.
CO4	Apply the concepts of design to energy absorbing members, connecting rod and crank shaft.
CO5	Apply the concepts of design to bearings.

METROLOGY AND MEASUREMENTS

CO1	Describe the concepts of measurements to apply in various metrological instruments
CO2	Outline the principles of linear and angular measurement tools used for industrial Applications
CO3	Explain the procedure for conducting computer aided inspection
CO4	Demonstrate the techniques of form measurement used for industrial components
CO5	Discuss various measuring techniques of mechanical properties in industrial applications

THEORY OF MACHINES-II

CO1	Calculate static and dynamic forces of mechanisms.
CO2	Calculate the balancing masses and their locations of reciprocating and rotating masses.
CO3	Compute the frequency of free vibration.
CO4	Compute the frequency of forced vibration and damping coefficient.
CO5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.

DESIGN OF TRANSMISSION SYSTEMS

CO1	apply the concepts of design to belts, chains and rope drives.
CO2	apply the concepts of design to spur, helical gears.
CO3	apply the concepts of design to worm and bevel gears.
CO4	apply the concepts of design to gear boxes .
CO5	apply the concepts of design to cams, brakes and clutches

COMPUTER AIDED DESIGN AND MANUFACTURING

CO1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics
CO2	Explain the fundamentals of parametric curves, surfaces and Solids
CO3	Summarize the different types of Standard systems used in CAD
CO4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines
CO5	Summarize the different types of techniques used in Cellular Manufacturing and FMS

HEAT AND MASS TRANSFER

CO1	Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems
CO2	Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems
CO3	Explain the phenomena of boiling and condensation, apply LMTD and NTU methods of thermal analysis to different types of heat exchanger configurations and solve problems
CO4	Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types of surfaces to solve problems
CO5	Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications

FINITE ELEMENT ANALYSIS

CO1	Summarize the basics of finite element formulation.
CO2	Apply finite element formulations to solve one dimensional Problems.
CO3	Apply finite element formulations to solve two dimensional scalar Problems.
CO4	Apply finite element method to solve two dimensional Vector problems.
CO5	Apply finite element method to solve problems on iso parametric element and dynamic Problems.

HYDRAULICS AND PNEUMATICS

CO1 Explain the Fluid power and operation of different types of pumps.

CO2 Summarize the features and functions of Hydraulic motors, actuators and Flow control Valves

CO3 Explain the different types of Hydraulic circuits and systems

CO4 Explain the working of different pneumatic circuits and systems

CO5 Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.

POWER PLANT ENGINEERING

CO1 Explain the layout, construction and working of the components inside a thermal power plant.

CO2 Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.

CO3 Explain the layout, construction and working of the components inside nuclear power plants.

CO4 Explain the layout, construction and working of the components inside Renewable energy power plants.

CO5 Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

PROCESS PLANNING AND COST ESTIMATION

CO1 select the process, equipment and tools for various industrial products.

CO2 prepare process planning activity chart.

CO3 explain the concept of cost estimation.

CO4 compute the job order cost for different type of shop floor.

CO5 calculate the machining time for various machining operations.

MECHATRONICS

CO1 Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology.

CO2 Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller.

CO3 Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various device Interfacing

CO4 Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.

CO5 Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and also from the given case studies

Department of CIVIL ENGINEERING

B.Tech.

Program Educational Objectives

PEO1 To produce graduates who have developed the skills required to design Civil Engineering systems and facilities, including the graduate's abilities to formulate problems, to think creatively, to synthesize information, and to work collaboratively in teams.

PEO2 To produce graduates who are trained thoroughly in methods of analysis, including the mathematical and computational skills appropriate for Civil Engineers to use when problem solving.

PEO3 To produce graduates who are prepared for life-long learning and successful careers as Civil Engineers & also taught to use current, experimental and data analysis techniques for Civil Engineering applications.

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

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

N. **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.

O. **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.

P. **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.

Q. **The engineer and society**: An ability to develop the professional status using the broad education to understand the potential impact of Engineering solutions in various geographical settings including societal and environmental contexts.

R. **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.

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

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

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

V. **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.

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

MAPPING OF PROGRAMME EDUCATIONAL OBJECTIVES WITH PROGRAMME OUTCOMES

Programme Educational Objectives	Programme Outcomes										
	A	B	C	D	E	F	G	H	I	J	K
PEO 1	3	3	2	3	2	1	1	2	1	1	3
PEO 2	3	3	3	3	3	1	1	1	1	1	1
PEO 3	3	3	3	3	3	2	2	3	1	2	2

1-Reasonable: 2- Significant: 3- Strong

COURSE OUTCOMES:

17147S11 COMMUNICATIVE ENGLISH

OUTCOMES: At the end of the course, learners will be able to:

- Read articles of a general kind in magazines and newspapers.
- Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
- Comprehend conversations and short talks delivered in English

Write short essays of a general kind and personal letters and emails in English

17148S12 ENGINEERING MATHEMATICS–I

OUTCOMES :

After completing this course, students should demonstrate competency in the following skills:

- Use both the limit definition and rules of differentiation to differentiate functions.

- Apply differentiation to solve maxima and minima problems.
- Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
- Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
- Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
- Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
- Apply various techniques in solving differential equations.

17149S13 ENGINEERING PHYSICS

OUTCOMES:

Upon completion of this course,

- the students will gain knowledge on the basics of properties of matter and its applications,
- the students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
- the students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,
- the students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
- the students will understand the basics of crystals, their structures and different crystal growth techniques.

17149S14 ENGINEERING CHEMISTRY

OUTCOMES:

- The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

17154S15 ENGINEERING GRAPHICS

OUTCOMES:

On successful completion of this course, the student will be able to

- familiarize with the fundamentals and standards of Engineering graphics
- Perform freehand sketching of basic geometrical constructions and multiple views of objects.
- Project orthographic projections of lines and plane surfaces.
- Draw projections and solids and development of surfaces.
- Visualize and to project isometric and perspective sections of simple solids.

17150S16 PROBLEM SOLVING AND PYTHON PROGRAMMING

OUTCOMES:

Upon completion of the course, students will be able to

- Develop algorithmic solutions to simple computational problems

- Read, write, execute by hand simple Python programs.
- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.
- Represent compound data using Python lists, tuples, and dictionaries.
- Read and write data from/to files in Python Programs.

17150L17 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY

OUTCOMES:

Upon completion of the course, students will be able to

- Write, test, and debug simple Python programs.
- Implement Python programs with conditionals and loops.
- Develop Python programs step-wise by defining functions and calling them.
- Use Python lists**,** tuples, dictionaries for representing compound data.
- Read and write data from/to files in Python.

17149L18 PHYSICS AND CHEMISTRY LABORATORY

OUTCOMES:

Upon completion of the course, the students will be able to
Apply principles of elasticity, optics and thermal properties for engineering applications

The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters

17147S21 TECHNICAL ENGLISH

OUTCOMES:

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

- Read technical texts and write area- specific texts effortlessly.
- Listen and comprehend lectures and talks in their area of specialisation successfully.
- Speak appropriately and effectively in varied formal and informal contexts.
- Write reports and winning job applications.

17148S22A ENGINEERING MATHEMATICS-II

OUTCOMES:

After successfully completing the course, the student will have a good understanding of the following topics and their applications:

- Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
- Gradient, divergence and curl of a vector point function and related identities.
- Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
- Analytic functions, conformal mapping and complex integration.
- Laplace transform and inverse transform of simple functions, properties, various related

theorems and application to differential equations with constant coefficients.

17149S23D PHYSICS FOR CIVIL ENGINEERING

OUTCOMES:

Upon completion of this course,

- the students will have knowledge on the thermal performance of buildings,
- the students will acquire knowledge on the acoustic properties of buildings,
- the students will get knowledge on various lighting designs for buildings,
- the students will gain knowledge on the properties and performance of engineering materials, and
- the students will understand the hazards of buildings.

17149S24A ENVIRONMENTAL SCIENCE AND ENGINEERING

OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions

Development and improvement in std. of living has lead to serious environmental disaster

17153S25E BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

OUTCOMES:

- Ability to identify the electrical components and explain the characteristics of electrical machines.
- ability to identify electronics components and understand the characteristics

17154S26D ENGINEERING MECHANICS

OUTCOMES:

On successful completion of this course, the student will be able to

- illustrate the vectorial and scalar representation of forces and moments
- analyse the rigid body in equilibrium
- evaluate the properties of surfaces and solids
- calculate dynamic forces exerted in rigid body
- determine the friction and the effects by the laws of friction

17154L27 ENGINEERING PRACTICES LABORATORY

OUTCOMES:

On successful completion of this course, the student will be able to

- Fabricate carpentry components and pipe connections including plumbing works.
- Use welding equipments to join the structures.
- Carry out the basic machining operations
- Make the models using sheet metal works
- Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundry and fittings
- Carry out basic home electrical works and appliances
- Measure the electrical quantities
- Elaborate on the components, gates, soldering practices.

17155L28E COMPUTER AIDED BUILDING DRAWING

OUTCOMES:

- The students will be able to draft the plan, elevation and sectional views of the buildings, industrial structures, and framed buildings using computer software's.

17148S31C TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS

OUTCOMES:

Upon successful completion of the course, students should be able to:

- Understand how to solve the given standard partial differential equations.
- Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
- Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
- Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.

Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems

17155C32 STRENGTH OF MATERIALS I

OUTCOMES:

Students will be able to

- Understand the concepts of stress and strain, principal stresses and principal planes.
- Determine Shear force and bending moment in beams and understand concept of theory of simple bending.
- Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.
- Apply basic equation of torsion in design of circular shafts and helical springs, .
- Analyze the pin jointed plane and space trusses

17155C33 FLUID MECHANICS

OUTCOMES:

At the end of the course students will be able to

- Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.
- Understand and solve the problems related to equation of motion.
- Gain knowledge about dimensional and model analysis.
- Learn types of flow and losses of flow in pipes.
- Understand and solve the boundary layer problems.

17155C34 SURVEYING

OUTCOMES:

At the end of the course the student will be able to understand

- The use of various surveying instruments and mapping
- Measuring Horizontal angle and vertical angle using different instruments
- Methods of Levelling and setting Levels with different instruments
- Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth
- Concept and principle of modern surveying.

17155C35 CONSTRUCTION MATERIALS

OUTCOMES:

On completion of this course the students will be able to

- Compare the properties of most common and advanced building materials.
- understand the typical and potential applications of lime, cement and aggregates
- Know the production of concrete and also the method of placing and making of concrete elements.
- understand the applications of timbers and other materials
- Understand the importance of modern material for construction.

17155C36 ENGINEERING GEOLOGY

OUTCOMES:

The students completing this course

- Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies.
- Will get basics knowledge on properties of minerals.
- Gain knowledge about types of rocks, their distribution and uses.
- Will understand the methods of study on geological structure.
- Will understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbour

17155L37 CONSTRUCTION MATERIALS LABORATORY

OUTCOME:

- the students will have the required knowledge in the area of testing of construction materials and components of construction elements experimentally.

17155 L 38 SURVEYING LABORATORIES

OUTCOME:

- Students completing this course would have acquired practical knowledge on handling basic survey instruments including Theodolite, Tacheometry, Total Station and GPS and have adequate knowledge to carryout Triangulation and Astronomical surveying including general field marking for various engineering projects and Location of site etc.

17147L39 INTERPERSONAL SKILLS/LISTENING AND SPEAKING

OUTCOMES:

At the end of the course Learners will be able to:

- Listen and respond appropriately.
- Participate in group discussions
- Make effective presentations
- Participate confidently and appropriately in conversations both formal and informal

17148S41C NUMERICAL METHODS

OUTCOMES:
Upon successful completion of the course, students should be able to:

- Understand the basic concepts and techniques of solving algebraic and transcendental equations.
- Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
- Apply the numerical techniques of differentiation and integration for engineering problems.
- Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
- Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

17155C42 CONSTRUCTION TECHNIQUES AND PRACTICES

OUTCOMES:
On successful completion of this course, students will be able to:

- know the different construction techniques and structural systems
- Understand various techniques and practices on masonry construction, flooring, and roofing.
- Plan the requirements for substructure construction.
- Know the methods and techniques involved in the construction of various types of super structures
- Select, maintain and operate hand and power tools and equipment used in the building construction sites.

17155C43 STRENGTH OF MATERIALS II

OUTCOMES:
Students will be able to

- Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.
- Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.
- find the load carrying capacity of columns and stresses induced in columns and cylinders
- Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure
- Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.

17155C44 APPLIED HYDRAULIC ENGINEERING

OUTCOMES:
On completion of this course the students will be able to

- Apply their knowledge of fluid mechanics in addressing problems in open channels.

- Able to identify a effective section for flow in different cross sections.
- To solve problems in uniform, gradually and rapidly varied flows in steady state conditions.
- Understand the principles, working and application of turbines.
- Understand the principles, working and application of pumps.

17155C45 CONCRETE TECHNOLOGY

OUTCOMES:

Students will be able to understand

- The various requirements of cement, aggregates and water for making concrete
- The effect of admixtures on properties of concrete
- The concept and procedure of mix design as per IS method
- The properties of concrete at fresh and hardened state
- The importance and application of special concretes.

17155L46 SOIL MECHANICS

OUTCOMES:

Students will be able to

- Classify the soil and assess the engineering properties, based on index properties.
- Understand the stress concepts in soils
- Understand and identify the settlement in soils.
- Determine the shear strength of soil
- Analyze both finite and infinite slopes.

17155L47 STRENGTH OF MATERIALS LABORATORY

OUTCOME:

- The students will have the required knowledge in the area of testing of materials and components of structural elements experimentally.

17155 L 48 HYDRAULIC ENGINEERING LABORATORIES

OUTCOMES:

- The students will be able to measure flow in pipes and determine frictional losses.
- The students will be able to develop characteristics of pumps and turbines.

17147L49 ADVANCED READING AND WRITING

OUTCOMES:

At the end of the course Learners will be able to:

- Write different types of essays.
- Write winning job applications.
- Read and evaluate texts critically.

17155C51 DESIGN OF REINFORCED CEMENT CONCRETE ELEMENTS

OUTCOMES:

Students will be able to

- Understand the various design methodologies for the design of RC elements.
- Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.

- design the various types of slabs and staircase by limit state method.
- Design columns for axial, uniaxial and biaxial eccentric loadings.
- Design of footing by limit state method.

17155C52 STRUCTURAL ANALYSIS I

OUTCOMES:
Students will be able to
- Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method
- Analyze the continuous beams and rigid frames by slope defection method.
- Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
- Analyze the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.
- Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.

17155C53 WATER SUPPLY ENGINEERING

OUTCOMES:
The students completing the course will have
- an insight into the structure of drinking water supply systems, including water transport, treatment and distribution
- the knowledge in various unit operations and processes in water treatment
- an ability to design the various functional units in water treatment
- an understanding of water quality criteria and standards, and their relation to public health
- the ability to design and evaluate water supply project alternatives on basis of chosen criteria.

17155C56 FOUNDATION ENGINEERING

OUTCOMES:
Students will be able to
- Understand the site investigation, methods and sampling.
- Get knowledge on bearing capacity and testing methods.
- Design shallow footings.
- Determine the load carrying capacity, settlement of pile foundation.
- Determine the earth pressure on retaining walls and analysis for stability.

17155L57 SOIL MECHANICS LABORATORY

OUTCOME:
- Students are able to conduct tests to determine both the index and engineering properties of soils and to characterize the soil based on their properties.

17155L58 WATER AND WASTE WATER ANALYSIS LABORATORY

COURSE OUTCOME:
On the completion of the course, the students will be able to:
- Quantify the pollutant concentration in water and wastewater

- Suggest the type of treatment required and amount of dosage required for the treatment
- Examine the conditions for the growth of micro-organisms

17155CRM RESEARCH METHODOLOGY

OUTCOME:

Ability to carry out independent literature survey corresponding to the specific publication type and assess basic experimental as well as conceptual set up.

17155C61 DESIGN OF STEEL STRUCTURAL ELEMENTS

OUTCOMES:

Students will be able to

- Understand the concepts of various design philosophies
- Design common bolted and welded connections for steel structures
- Design tension members and understand the effect of shear lag.
- Understand the design concept of axially loaded columns and column base connections.
- Understand specific problems related to the design of laterally restrained and unrestrained steel beams.

17155C62 STRUCTURAL ANALYSIS II

OUTCOMES:

Students will be able to

- Draw influence lines for statically determinate structures and calculate critical stress resultants.
- Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.
- Analyse of three hinged, two hinged and fixed arches.
- Analyse the suspension bridges with stiffening girders
- Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.

17155C63 IRRIGATION ENGINEERING

OUTCOMES:

Students will be able to

- Have knowledge and skills on crop water requirements.
- Understand the methods and management of irrigation.
- Gain knowledge on types of Impounding structures
- Understand methods of irrigation including canal irrigation.
- Get knowledge on water management on optimization of water use.

17155C64 HIGHWAY ENGINEERING

OUTCOMES:

Students will be able to

- Get knowledge on planning and aligning of highway.
- Geometric design of highways
- Design flexible and rigid pavements.
- Gain knowledge on Highway construction materials, properties, testing methods

- Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.

17155C65 WASTEWATER ENGINEERING

OUTCOMES:

The students completing the course will have

- An ability to estimate sewage generation and design sewer system including sewage pumping stations
- The required understanding on the characteristics and composition of sewage, self-purification of streams
- An ability to perform basic design of the unit operations and processes that are used in sewage treatment
- Understand the standard methods for disposal of sewage.

17155 L 67 HIGHWAY ENGINEERING LABORATORIES

OUTCOME:

- Student knows the techniques to characterize various pavement materials through relevant tests.

17155L68 IRRIGATION AND ENVIRONMENTAL ENGINEERING DRAWING

OUTCOME:

- The students after completing this course will be able to design and draw various units of Municipal water treatment plants and sewage treatment plants.

17155C71 ESTIMATION, COSTING AND VALUATION ENGINEERING

OUTCOMES:

The student will be able to

- Estimate the quantities for buildings,
- Rate Analysis for all Building works, canals, and Roads and Cost Estimate.
- Understand types of specifications, principles for report preparation, tender notices types.
- Gain knowledge on types of contracts
- Evaluate valuation for building and land.

17155C72 RAILWAYS, AIRPORTS, DOCKS AND HARBOUR ENGINEERING

OUTCOMES:

Students who successfully complete this course will be able to:

- Understand the methods of route alignment and design elements in Railway Planning and Constructions.
- Understand the Construction techniques and Maintenance of Track laying and Railway stations.
- Gain an insight on the planning and site selection of Airport Planning and design.
- Analyze and design the elements for orientation of runways and passenger facility systems.
- Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.

17155C73 STRUCTURAL DESIGN AND DRAWING

OUTCOMES:

At the end of the course the student will be able to

- Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls
- Design and draw flat slab as per code provisions
- Design and draw reinforced concrete and steel bridges
- Design and draw reinforced concrete and steel water tanks

- Design and detail the various steel trusses and cantry girders

17155L77 INDUSTRIAL TRAINING

OUTCOMES:

At the end of the course the student will be able to understand

- The intricacies of implementation textbook knowledge into practice
- The concepts of developments and implementation of new techniques
-

17155PW83 PROJECT WORK

OUTCOME:

On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology

M.TECH -STRUCTURAL ENGINEERING

PROGRAMME OUTCOMES

- Apply principles of engineering mechanics and use appropriate tools to solve problems in structural engineering.
- Design and evaluate structural components and systems to meet the desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, constructability, and sustainability.
- Plan, compose, and integrate verbal, written, and graphical communication to technical and non-technical audiences.
- Function effectively as a member of an engineering team.
- Discuss professional responsibility in light of social context of engineering problems.

COURSE OUTCOMES

SEMESTER-I

19248S11E ADVANCED ENGINEERING MATHEMATICS

OUTCOMES:

- Introduce students to ordinary differential equations and the methods for solving these equations
- Use differential equations as models for real world phenomena
- Integrate the knowledge accumulated in the calculus sequence to solve applied problems
- Introduce the fundamentals of Linear Algebra and Complex Analysis
- Provide a rigorous introduction to upper level mathematics which is necessary for students of engineering, physical sciences and mathematics

19255H12 QUALITY CONTROL AND ASSURANCE IN CONSTRUCTION

OUTCOMES:

- Understand the fundamentals of quality management for a project-based industry.
- Demonstrate knowledge of the theories, principles and processes in quality management.
- Recognise the differences between quality control and quality management.
- Apply quality management best practice in construction in terms of both processes and attitudes.

19255 H 13 THEORIES OF PLASTICITY AND ELASTICITY

OUTCOMES:

- The students shall be able to demonstrate the application of plane stress and plane strain in a given situation. The student will demonstrate the ability to analyze the structure using plasticity.
- To impart the knowledge of stress-strain relations for linearly elastic solids, and Torsion.

19255H14 STRUCTURAL DYNAMICS

OUTCOMES:

- Compute analytical and numerical solutions for general cases of equations of motions.

- Deduce the natural frequencies and mode shapes for multi degree of freedom systems.
- Analyze the response of a structure by time domain methods and frequency domain methods.

19255H15 MAINTENANCE & REHABILITATION OF STRUCTURES

OUTCOMES:

- Suggest maintenance and repair strategies (k2).
- examine the durability due to various climate conditions(k4)
- suggest the suitable materials and techniques for repair(k2)
- choose various rehabilitation and retrofitting techniques.(k3)
- select suitable demolition techniques for structures(k3)

19255E16A PRESTRESSED CONCRETE DESIGN

OUTCOMES:

- To design prestressed concrete beam CO2 To design prestressed composite beams

19255L17 COMPUTER PROGRAMMING LAB- AUTO CAD

OUTCOMES:

- The students will be able to draft the plan, elevation and sectional views of the buildings, industrial structures, and framed buildings using computer software's.

19255CRS RESEARCH LED SEMINAR

- To understand the approaches towards and constraints in good research.
- To identify various statistical tools used in research methodology
- To appreciate and compose the manuscript for publication
- To train in basic computational and excel- skills for research in engineering.

SEMESTER-II

19255H21 MANAGEMENT INFORMATION SYSTEM

OUTCOMES:

- Recognize contemporary MIS theory and how information systems support business strategy, business processes, and practical applications in an organization. 2. Interrelate how various support systems can be used for business decisions and to sustain competitive advantage

19255 H 22 FINITE ELEMENT ANALYSES

OUTCOMES:

- Understand the numerical methods involved in Finite Element Theory 2. Understand the role and significance of shape functions in finite element formulations and use linear, quadratic, and cubic shape functions for interpolation

19255H23 ADVANCED CONCRETE STRUCTURAL DESIGN

OUTCOMES:

- Use the knowledge of the structural properties of materials i.e. steel and concrete in assessing the strength.

19255E24B ADVANCED CONCRETE TECHNOLOGY

OUTCOMES:

- Discuss the concrete ingredients and its influence at gaining strength.
- Design of concrete mix and grade as per IS codes.
- Summarise the concepts of conventional concrete and its differences with other concretes like no fines, light weight etc.
- Describe the application and use of fiber reinforced concrete.
- Design and develop the self compacting and high performance concrete.

19255E25C ELEMENTS OF EARTHQUAKE ENGINEERING

OUTCOMES:

- Understand and apply the basics of structural dynamics in analysis of structures subjected to earthquakes.
- Understand plate tectonics.
- Understand ground motion magnitude, intensity, and frequency.
- Understand and compute ground motion intensity measures and attenuation relationships.
- Understand and compute earthquake hazard and design response spectra.

19255 L 26 SOFTWARE LABS

OUTCOMES:

- An ability to apply knowledge of mathematics, science, and engineering to problem solving.

19255CRM RESEARCH METHODOLOGY

OUTCOMES:

- prepare a project proposal (to undertake a project) • organize and conduct research (advanced project) in a more appropriate manner

SEMESTER-III

19255H31 ADVANCED STEEL STRUCTURES

OUTCOMES:

- Students who successfully complete this course will be able to: 1. Identify and compute the design loads on a typical steel building

19255E32A EXPERIMENTAL STRESS ANALYSIS

OUTCOMES:

- Explain the measurement of strain under static and dynamic loads.
- Describe the Mechanical, optical, pneumatic and electrical strain gauges for strain measurement.
- Create awareness about the fixing of gauges and temperature effects in bonded gauges and measure of stress in stress gauges.
- Analysis of measuring circuits and strains of different strain gauge rosettes.
- Describe the measurements by using transducers and exciters

19255E33A PREFABRICATED STRUCTURES

OUTCOMES:

- Upon Completion of the course, the students will be able to: Appreciate modular construction of prefabricated elements
- Classify the components of prefabricated
- Design of disuniting structures
- Analyze the joints in structural detailing of prefabricated
- Refer the codal provisions for abnormal load of prefabricated structure

19255E34A OFFSHORE STRUCTURES

OUTCOMES:

- At the end of the course, students will be able to understand the basic theoretical concepts in offshore engineering and apply them to actual problems.
- They will be able to calculate wave forces on fixed and floating structures and calculate the dynamic response.
- They will be able to use design codes to check the capacity of structural members.
- They will be proficient in the use of finite element software to perform computer simulations, thus being prepared for the practical needs of the industry.

Department of CSE

B.Tech.

PROGRAMME EDUCATIONAL OBJECTIVES:

PEO1: Graduates will pursue higher education and research, or have a successful career in industries associated with Computer Science and Engineering, or as entrepreneurs.

PEO2: Graduates will have the ability and attitude to adapt to emerging technological changes

PROGRAMME OUTCOMES: Engineering Graduates will be able to:

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

Y. **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.

Z. **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.

AA. **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.

BB. **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.

CC. **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.

DD. **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.

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

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

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

HH. **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.

II. **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 OBJECTIVE WITH PROGRAMME OUTCOMES

Contribution 1: Reasonable 2: Significant 3:Strong

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)	PROGRAMME OUTCOMES (POs)											
	A	B	C	D	E	F	G	H	I	J	K	L
1	3	3	3	3	2	2	2	3	3	3	2	1
2	1	1	2	2	3	2	1	1	2	2	2	3

Course Outcome

COMMUNICATIVE ENGLISH

OUTCOMES: AT THE END OF THE COURSE, LEARNERS WILL BE ABLE TO:

- Read articles of a general kind in magazines and newspapers.
- Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
- Comprehend conversations and short talks delivered in English
- Write short essays of a general kind and personal letters and emails in English.

ENGINEERING MATHEMATICS – I

OUTCOMES: After completing this course, students should demonstrate competency in the following skills:

- Use both the limit definition and rules of differentiation to differentiate functions.
- Apply differentiation to solve maxima and minima problems.
- Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
- Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
- Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.

 Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
 Apply various techniques in solving differential equations.

ENGINEERING PHYSICS

OUTCOMES:

Upon completion of this course,

 The students will gain knowledge on the basics of properties of matter and its applications,
 The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
 The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,
 The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
 The students will understand the basics of crystals, their structures and different crystal growth techniques.

ENGINEERING CHEMISTRY

OUTCOMES:

 The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

PROBLEM SOLVING AND PYTHON PROGRAMMING

OUTCOMES: Upon completion of the course, students will be able to

 Develop algorithmic solutions to simple computational
 problems Read, write, execute by hand simple Python programs.
 Structure simple Python programs for solving problems.
 Decompose a Python program into functions.
 Represent compound data using Python lists, tuples, dictionaries.
 Read and write data from/to files in Python Programs.

ENGINEERING GRAPHICS

OUTCOMES: On successful completion of this course, the student will be able to:

 Familiarize with the fundamentals and standards of Engineering graphics
 Perform freehand sketching of basic geometrical constructions and multiple views of objects.
 Project orthographic projections of lines and plane surfaces.
 Draw projections and solids and development of surfaces.
 Visualize and to project isometric and perspective sections of simple solids.

PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY

OUTCOMES: Upon completion of the course, students will be able to:

- Write, test, and debug simple Python programs.
- Implement Python programs with conditionals and loops.
- Develop Python programs step-wise by defining functions and calling them.
- Use Python lists, tuples, dictionaries for representing compound data.
- Read and write data from/to files in Python.

PHYSICS AND CHEMISTRY LABORATORY (Common to all branches of B.E. / B.Tech Programmes)

OUTCOMES: Upon completion of the course, the students will be able to

- Apply principles of elasticity, optics and thermal properties for engineering applications.

CHEMISTRY LABORATORY: (Any seven experiments to be conducted)

OUTCOMES: The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

TECHNICAL ENGLISH

OUTCOMES: At the end of the course learners will be able to:

- Read technical texts and write area- specific texts effortlessly.
- Listen and comprehend lectures and talks in their area of specialisation successfully.
- Speak appropriately and effectively in varied formal and informal contexts.
- Write reports and winning job applications.

ENGINEERING MATHEMATICS – II

OUTCOMES :

After successfully completing the course, the student will have a good understanding of the following topics and their applications:

- Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
- Gradient, divergence and curl of a vector point function and related identities.
- Evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
- Analytic functions, conformal mapping and complex integration.
- Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

PHYSICS FOR INFORMATION SCIENCE (Common to CSE & IT)

OUTCOMES:

At the end of the course, the students will able to

- Gain knowledge on classical and quantum electron theories, and energy band structuues, Acquire knowledge on basics of semiconductor physics and its applications in various devices,
- Get knowledge on magnetic properties of materials and their applications in data storage,
- Have the necessary understanding on the functioning of optical materials for optoelectronics,
- Understand the basics of quantum structures and their applications in carbon electronics..

BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING

OUTCOMES: **Upon completion of the course, the students will be able to:**

- Discuss the essentials of electric circuits and analysis.
- Discuss the basic operation of electric machines and transformers
- Introduction of renewable sources and common domestic loads.
- Introduction to measurement and metering for electric circuits.

ENVIRONMENTAL SCIENCE AND ENGINEERING

OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters

PROGRAMMING IN C

OUTCOMES: Upon completion of the course, the students will be able to

- Develop simple applications in C using basic constructs
- Design and implement applications using arrays and strings
- Develop and implement applications in C using functions and pointers. Develop applications in C using structures.
- Design applications using sequential and random access file processing.

ENGINEERING PRACTICES LABORATORY

OUTCOMES: On successful completion of this course, the student will be able to
Fabricate carpentry components and pipe connections including plumbing works. Use welding equipments to join the structures. Carry out the basic machining operations Make the models using sheet metal works Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings Carry out basic home electrical works and appliances Measure the electrical quantities Elaborate on the components, gates, soldering practices.

LIST OF EQUIPMENT FOR A BATCH OF 30 STUDENTS:

CIVIL

OUTCOMES: Upon completion of the course, the students will be able to:

- Develop C programs for simple applications making use of basic constructs, arrays and strings.
- Develop C programs involving functions, recursion, pointers, and structures.
- Design applications using sequential and random access file processing.

DISCRETE MATHEMATICS

OUTCOMES: At the end of the course, students would:

- Have knowledge of the concepts needed to test the logic of a program.
- Have an understanding in identifying structures on many levels.
- Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
- Be aware of the counting principles.
- Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.

DIGITAL PRINCIPLES AND SYSTEM DESIGN

OUTCOMES:
On Completion of the course, the students should be able to:

- Simplify Boolean functions using KMap
- Design and Analyze Combinational and Sequential Circuits
- Implement designs using Programmable Logic Devices
- Write HDL code for combinational and Sequential Circuits

DATA STRUCTURES

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

- Implement abstract data types for linear data structures.
- Apply the different linear and non-linear data structures to problem solutions.
- Critically analyze the various sorting algorithms.

OBJECT ORIENTED PROGRAMMING

OUTCOMES:
Upon completion of the course, students will be able to:

- Develop Java programs using OOP principles
- Develop Java programs with the concepts inheritance and interfaces
- Build Java applications using exceptions and I/O streams
- Develop Java applications with threads and generics classes
- Develop interactive Java programs using swings

COMMUNICATION ENGINEERING

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

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

DATA STRUCTURES LABORATORY

OUTCOMES: At the end of the course, the students will be able to:

- Write functions to implement linear and non-linear data structure operations
- Suggest appropriate linear / non-linear data structure operations for solving a given problem
- Appropriately use the linear / non-linear data structure operations for a given problem
- Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval

OBJECT ORIENTED PROGRAMMING LABORATORY

OUTCOMES
Upon completion of the course, the students will be able to

- Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.

- Develop and implement Java programs with arraylist, exception handling and multithreading .

- Design applications using file processing, generic programming and event handling.

DIGITAL SYSTEMS LABORATORY

OUTCOMES: Upon Completion of the course, the students will be able to:

- Implement simplified combinational circuits using basic logic gates
- Implement combinational circuits using MSI devices
- Implement sequential circuits like registers and counters
- Simulate combinational and sequential circuits using HDL

INTERPERSONAL SKILLS/LISTENING&SPEAKING

OUTCOMES: At the end of the course Learners will be able to:

- Listen and respond appropriately.
- Participate in group discussions
- Make effective presentations
- Participate confidently and appropriately in conversations both formal and informal

PROBABILITY AND QUEUING THEORY

OUTCOMES: Upon successful completion of the course, students should be able to:

- Understand the fundamental knowledge of the concepts of probability and have knowledge

of standard distributions which can describe real life phenomenon.

- Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
- Apply the concept of random processes in engineering
- disciplines. Acquire skills in analyzing queueing models.
- Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner

COMPUTER ARCHITECTURE

OUTCOMES:

On Completion of the course, the students should be able to: Understand the basics structure of computers, operations and instructions. Design arithmetic and logic unit.
Understand pipelined execution and design control unit.
Understand parallel processing architectures.
Understand the various memory systems and I/O communication.

DATABASE MANAGEMENT SYSTEMS

OUTCOMES: Upon completion of the course, the students will be able to:

- Classify the modern and futuristic database applications based on size and complexity
- Map ER model to Relational model to perform database design effectively Write queries using normalization criteria and optimize queries
-
- Compare and contrast various indexing strategies in different database systems Appraise how advanced databases differ from traditional databases.

DESIGN AND ANALYSIS OF ALGORITHMS

OUTCOMES: At the end of the course, the students should be able to:

- Design algorithms for various computing
- problems. Analyze the time and space
- complexity of algorithms.
- Critically analyze the different algorithm design techniques for a given problem. Modify existing algorithms to improve efficiency.

OPERATING SYSTEMS

OUTCOMES: At the end of the course, the students should be able to:

- Analyze various scheduling algorithms.
- Understand deadlock, prevention and avoidance
- algorithms. Compare and contrast various memory
- management schemes. Understand the functionality of
- file systems.
- Perform administrative tasks on Linux Servers. Compare iOS and Android Operating Systems.

SOFTWARE ENGINEERING

OUTCOMES:
On Completion of the course, the students should be able to:

- Identify the key activities in managing a software
- project. Compare different process models.
- Concepts of requirements engineering and Analysis Modeling.
- Apply systematic procedure for software design and deployment.
- Compare and contrast the various testing and maintenance.
- Manage project schedule, estimate project cost and effort required.

DATABASE MANAGEMENT SYSTEMS LABORATORY

OUTCOMES: Upon completion of the course, the students will be able to:

- Use typical data definitions and manipulation
- commands. Design applications to test Nested and
- Join Queries Implement simple applications that use
- Views
- Implement applications that require a Front-end Tool
- Critically analyze the use of Tables, Views, Functions and Procedures

OPERATING SYSTEMS LABORATORY

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

- Compare the performance of various CPU Scheduling Algorithms
- Implement Deadlock avoidance and Detection Algorithms Implement Semaphores
- Create processes and implement IPC
- Analyze the performance of the various Page Replacement
- Algorithms Implement File Organization and File Allocation
- Strategies

ADVANCED READING AND WRITING

OUTCOMES: At the end of the course Learners will be able to:

Write different types of essays.
Write winning job applications.
Read and evaluate texts critically.
Display critical thinking in various professional contexts.

ALGEBRA AND NUMBER THEORY

OUTCOMES: Upon successful completion of the course, students should be able to:

- Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
- Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
- Demonstrate accurate and efficient use of advanced algebraic techniques.
- Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
- Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

COMPUTER NETWORKS

- **OUTCOMES:**
- **On Completion of the course, the students should be able to:**
- Understand the basic layers and its functions in computer networks.
- Evaluate the performance of a network.
- Understand the basics of how data flows from one node to another.
- Analyze and design routing algorithms.
  Design protocols for various functions in the network.
  Understand the working of various application layer protocols.

MICROPROCESSORS AND MICROCONTROLLERS

OUTCOMES: At the end of the course, the students should be able to:

- Understand and execute programs based on 8086
- microprocessor. Design Memory Interfacing circuits.
- Design and interface I/O circuits.
- Design and implement 8051 microcontroller based systems.

THEORY OF COMPUTATION

OUTCOMES:

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

- Construct automata, regular expression for any pattern. Write Context free grammar for any construct.
- Design Turing machines for any language.
- Propose computation solutions using Turing machines. Derive whether a problem is decidable or not.

OBJECT ORIENTED ANALYSIS AND DESIGN

OUTCOMES: At the end of the course, the students will be able to:

- Express software design with UML
- diagrams Design software applications
- using OO concepts.
- Identify various scenarios based on software requirements
- Transform UML based software design into pattern based design using design patterns Understand the various testing methodologies for OO software

MICROPROCESSORS AND MICROCONTROLLERS LABORATORY

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

- Write ALP Programmes for fixed and Floating Point and Arithmetic
- operations Interface different I/Os with processor
- Generate waveforms using
- Microprocessors Execute Programs
- in 8051
  Explain the difference between simulator and Emulator

OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY

OUTCOMES: Upon completion of this course, the students will be able to:

- Perform OO analysis and design for a given problem

specification. Identify and map basic software requirements in UML mapping.

Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns

- Test the compliance of the software with the SRS.

NETWORKS LABORATORY

- **OUTCOMES: Upon Completion of the course, the students will be able to:**
- Implement various protocols using TCP and UDP.
- Compare the performance of different transport layer protocols.
- Use simulation tools to analyze the performance of various network protocols.
- Analyze various routing algorithms. Implement error correction codes.

INTERNET PROGRAMMING

OUTCOMES:

- **At the end of the course, the students should be able to:**
- Construct a basic website using HTML and Cascading Style Sheets.
- Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
- Develop server side programs using Servlets and JSP.
- Construct simple web pages in PHP and to represent data in XML format. Use AJAX and web services to develop interactive web applications

ARTIFICIAL INTELLIGENCE

OUTCOMES: Upon completion of the course, the students will be able to:

- Use appropriate search algorithms for any AI problem
- Represent a problem using first order and predicate logic
- Provide the apt agent strategy to solve a given problem
- Design software agents to solve a problem
- Design applications for NLP that use Artificial Intelligence.

MOBILE COMPUTING

OUTCOMES:

- **At the end of the course, the students should be able to:**
- Explain the basics of mobile telecommunication systems
- Illustrate the generations of telecommunication systems in wireless networks
- Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
- Explain the functionality of Transport and Application layers
- Develop a mobile application using android/blackberry/ios/Windows SDK

COMPILER DESIGN

OUTCOMES:

- **On Completion of the course, the students should be able to:**
- Understand the different phases of compiler.
- Design a lexical analyzer for a sample language.
- Apply different parsing algorithms to develop the parsers for a given grammar.
- Understand syntax-directed translation and run-time environment.
- Learn to implement code optimization techniques and a simple code generator.
- Design and implement a scanner and a parser using LEX and YACC tools.

DISTRIBUTED SYSTEMS

OUTCOMES: At the end of this course, the students will be able to:

- Elucidate the foundations and issues of distributed systems
- Understand the various synchronization issues and global state for distributed systems.
- Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems
- Describe the agreement protocols and fault tolerance mechanisms in distributed
- systems. Describe the features of peer-to-peer and distributed shared memory systems

INTERNET PROGRAMMING LABORATORY

OUTCOMES: Upon Completion of the course, the students will be able to:

Construct Web pages using HTML/XML and style sheets.
Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
Develop dynamic web pages using server side scripting.
Use PHP programming to develop web applications.
Construct web applications using AJAX and web services.

MOBILE APPLICATION DEVELOPMENT LABORATORY

OUTCOMES: Upon Completion of the course, the students will be able to:

- Develop mobile applications using GUI and Layouts.
- Develop mobile applications using Event Listener.
- Develop mobile applications using Databases.
- Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.
- Analyze and discover own mobile app for simple needs.

PROFESSIONAL COMMUNICATION

OUTCOMES: At the end of the course Learners will be able to:

• Make effective presentations
• Participate confidently in Group Discussions.
• Attend job interviews and be successful in them.
• Develop adequate Soft Skills required for the workplace

PRINCIPLES OF MANAGEMENT

OUTCOMES:

- Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

CRYPTOGRAPHY AND NETWORK SECURITY OUTCOMES:

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

- Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
- Apply the different cryptographic operations of symmetric cryptographic
- algorithms Apply the different cryptographic operations of public key
- cryptography
- Apply the various Authentication schemes to simulate different applications. Understand various Security practices and System security standards

CLOUD COMPUTING

OUTCOMES: On Completion of the course, the students should be able to:

- Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
- Learn the key and enabling technologies that help in the development of cloud.
- Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
- Explain the core issues of cloud computing such as resource management and
- security. Be able to install and use current cloud technologies.
- Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.

CLOUD COMPUTING LABORATORY

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

- Configure various virtualization tools such as Virtual Box, VMware
- workstation. Design and deploy a web application in a PaaS environment.
- Learn how to simulate a cloud environment to implement new
- schedulers. Install and use a generic cloud environment that can be used
- as a private cloud. Manipulate large data sets in a parallel environment.

SECURITY LABORATORY

OUTCOMES: Upon Completion of the course, the students will be able to:

- Develop code for classical Encryption Techniques to solve the problems.
- Build cryptosystems by applying symmetric and public key encryption algorithms. Construct code for authentication algorithms.
- Develop a signature scheme using Digital signature standard.
- Demonstrate the network security system using open source tools

DATA WAREHOUSING AND DATA MINING

OUTCOMES:

Upon completion of the course, the students should be able to:

- Design a Data warehouse system and perform business analysis with OLAP tools.
- Apply suitable pre-processing and visualization techniques for data analysis Apply frequent pattern and association rule mining techniques for data analysis Apply appropriate classification and clustering techniques for data analysis

SOFTWARE TESTING

OUTCOMES: At the end of the course the students will be able to: Design test cases suitable for a software development for different domains. Identify suitable tests to be carried out.

Prepare test planning based on the document.
Document test plans and test cases designed.
Use automatic testing tools.
Develop and validate a test plan.

EMBEDDED SYSTEMS

OUTCOMES: Upon completion of the course, students will be able to:

- Describe the architecture and programming of ARM processor. Explain the concepts of embedded systems
- Understand the Concepts of peripherals and interfacing of sensors. Capable of using the system design techniques to develop firmware Illustrate the code for constructing a system

AGILE METHODOLOGIES

OUTCOMES: Upon completion of the course, the students will be able to:

- Realize the importance of interacting with business stakeholders in determining the requirements for a software system
- Perform iterative software development processes: how to plan them, how to execute them.
- Point out the impact of social aspects on software development success.
- Develop techniques and tools for improving team collaboration and software quality.
- Perform Software process improvement as an ongoing task for development teams.
- Show how agile approaches can be scaled up to the enterprise level.

GRAPH THEORY AND APPLICATIONS

OUTCOMES:

Upon completion of this course, the students should be able to

- Understand the basic concepts of graphs, and different types of
- graphs Understand the properties, theorems and be able to prove
- theorems.
- Apply suitable graph model and algorithm for solving applications.

DIGITAL SIGNAL PROCESSING

OUTCOMES:

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

- Perform mathematical operations on signals.
- Understand the sampling theorem and perform sampling on continuous-time signals to get discrete time signal by applying advanced knowledge of the sampling theory.
- Transform the time domain signal into frequency domain signal and vice-versa.
- Apply the relevant theoretical knowledge to design the digital IIR/FIR filters for the given analog specifications.

INTELLECTUAL PROPERTY RIGHTS

OUTCOME:

- Ability to manage Intellectual Property portfolio to enhance the value of the firm.

BIG DATA ANALYTICS

OUTCOMES: Upon completion of the course, the students will be able to:

Work with big data tools and its analysis techniques
Analyze data by utilizing clustering and classification algorithms
Learn and apply different mining algorithms and recommendation systems for large volumes of data

- Perform analytics on data streams
- Learn NoSQL databases and management.

MACHINE LEARNING TECHNIQUES

OUTCOMES: At the end of the course, the students will be able to

- Differentiate between supervised, unsupervised, semi-supervised machine learning approaches
- Discuss the decision tree algorithm and indentity and overcome the problem of
- overfitting Discuss and apply the back propagation algorithm and genetic algorithms to various problems
- Apply the Bayesian concepts to machine learning
- Analyse and suggest appropriate machine learning approaches for various types of problems

COMPUTER GRAPHICS AND MULTIMEDIA

OUTCOMES:

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

- Design two dimensional graphics.
- Apply two dimensional
- transformations. Design three
- dimensional graphics.
- Apply three dimensional transformations.
- Apply Illumination and color models.

Apply clipping techniques to graphics.
Understood Different types of Multimedia File Format Design Basic 3d Scenes using Blender

SOFTWARE PROJECT MANAGEMENT OUTCOMES:

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

- Understand Project Management principles while developing software.
- Gain extensive knowledge about the basic project management concepts, framework and the process models.
- Obtain adequate knowledge about software process models and software effort estimation

techniques.

- Estimate the risks involved in various project activities.
- Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles.
- Learn staff selection process and the issues related to people management

INTERNET OF THINGS

OUTCOMES: Upon completion of the course, the student should be able to:

- Explain the concept of
- IoT. Analyze various
- protocols for IoT.
- Design a PoC of an IoT system using Rasperry
- Pi/Arduino Apply data analytics and use cloud offerings related to IoT. Analyze applications of IoT in real time scenario

SERVICE ORIENTED ARCHITECTURE

OUTCOMES: Upon successful completion of this course, the students will be able to:

- Understand XML technologies
- Understand service orientation, benefits
- of SOA Understand web services and
- WS standards
- Use web services extensions to develop solutions

Understand and apply service modeling, service oriented analysis and design for application development

TOTAL QUALITY MANAGEMENT

OUTCOME:

- The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

MULTI-CORE ARCHITECTURES AND PROGRAMMING

OUTCOMES: At the end of the course, the students should be able to:

- Describe multicore architectures and identify their characteristics and
- challenges. Identify the issues in programming Parallel Processors.
-
- Write programs using OpenMP and MPI.
- Design parallel programming solutions to common problems.

Compare and contrast programming for serial processors and programming for parallel processors.

HUMAN COMPUTER INTERACTION

OUTCOMES: Upon completion of the course, the students should be able to:

- Design effective dialog for HCI
- Design effective HCI for individuals and persons with
- disabilities. Assess the importance of user feedback.
- Explain the HCI implications for designing multimedia/ ecommerce/ e-learning
- Web sites. Develop meaningful user interface.

Department:ECE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
B.TECH – FULL TIME – R2017

PROGRAMME EDUCATIONAL OBJECTIVES:

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

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

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

PROGRAM SPECIFIC OBJECTIVES (PSOs)

PSO1: To analyze, design and develop solutions by applying foundational concepts of electronics and communication engineering.

PSO2: To apply design principles and best practices for developing quality products for scientific and business applications.

PSO3: To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions to existing/novel problems.

PROGRAMME OUTCOMES:

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

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 WITH PROGRAMME OUTCOMES

A broad relation 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	3	2	3	2	1	1	1	1	1	1	2
PEO2	3	3	3	3	3	2	2	3	1	3	3	3
PEO3	3	3	3	3	3	3	3	2	1	1	1	3

Contribution 1: Reasonable 2: Significant 3: Strong

MAPPING OF PROGRAM SPECIFIC OBJECTIVES WITH PROGRAMME OUTCOMES

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	3	2	3	2	1	1	1	1	1	1	2
PSO2	3	3	3	3	3	2	2	3	1	3	3	3
PSO3	3	3	3	3	3	3	3	2	1	1	1	3

Contribution 1: Reasonable 2: Significant 3: Strong

COURSE OBJECTIVES AND OUTCOMES

REGULATION 2017

SEMESTER - I

NAME OF THE COURSE: COMMUNICATIVE ENGLISH COURSE CODE: 17147S11

COURSE OBJECTIVES:

- To develop the basic reading and writing skills of first year engineering and technology students.

Department:ECE

- To help learners develop their listening skills, which will, enable them listen to lectures and comprehend them by asking questions; seeking clarifications.
- To help learners develop their speaking skills and speak fluently in real contexts.
- To help learners develop vocabulary of a general kind by developing their reading skills

COURSE OUTCOMES:

At the end of the course, learners will be able to:

- Read articles of a general kind in magazines and newspapers.
- Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
- Comprehend conversations and short talks delivered in English
- Write short essays of a general kind and personal letters and emails in English.

NAME OF THE COURSE: ENGINEERING MATHEMATICS COURSE CODE: 17148S12

COURSE OBJECTIVES:

- The goal of this course is to achieve conceptual understanding and to retain the best traditions of traditional calculus. The syllabus is designed to provide the basic tools of calculus mainly for the purpose of modelling the engineering problems mathematically and obtaining solutions. This is a foundation course which mainly deals with topics such as single variable and multivariable calculus and plays an important role in the understanding of science, engineering, economics and computer science, among other disciplines.

COURSE OUTCOMES:

After completing this course, students should demonstrate competency in the following skills:

- Use both the limit definition and rules of differentiation to differentiate functions.
- Apply differentiation to solve maxima and minima problems.
- Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
- Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
- Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
- Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
- Apply various techniques in solving differential equations.

NAME OF THE COURSE: ENGINEERING PHYSICS COURSE CODE: 17149S13

COURSE OBJECTIVES:

- To enhance the fundamental knowledge in Physics and its applications relevant to various streams of Engineering and Technology.

COURSE OUTCOMES:

Upon completion of this course,

- The students will gain knowledge on the basics of properties of matter and its applications,
- The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
- The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,

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- The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
- The students will understand the basics of crystals, their structures and different crystal growth techniques.

NAME OF THE COURSE: ENGINEERING CHEMISTRY COURSE CODE: 17149S14

COURSE OBJECTIVES:

- To make the students conversant with boiler feed water requirements, related problems and water treatment techniques.
- To develop an understanding of the basic concepts of phase rule and its applications to single and two component systems and appreciate the purpose and significance of alloys.
- Preparation, properties and applications of engineering materials.
- Types of fuels, calorific value calculations, manufacture of solid, liquid and gaseous fuels.
- Principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells.

COURSE OUTCOMES:

- The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

NAME OF THE COURSE: PROBLEM SOLVING AND PYTHON PROGRAMMING
COURSE CODE: 17150S15

COURSE OBJECTIVES:

- To know the basics of algorithmic problem solving
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures –- lists, tuples, dictionaries.
- To do input/output with files in Python.

COURSE OUTCOMES:
Upon completion of the course, students will be able to

- Develop algorithmic solutions to simple computational problems
- Read, write, execute by hand simple Python programs.
- Structure simple Python programs for solving problems.
- Decompose a Python program into functions.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python Programs.

NAME OF THE COURSE: ENGINEERING GRAPHICS COURSE CODE: 17154S16

COURSE OBJECTIVES:

- To develop in students, graphic skills for communication of concepts, ideas and design of Engineering products.
- T o expose them to existing national standards related to technical drawings.

COURSE OUTCOMES:
On successful completion of this course, the student will be able to:

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- Familiarize with the fundamentals and standards of Engineering graphics
- Perform freehand sketching of basic geometrical constructions and multiple views of objects.
- Project orthographic projections of lines and plane surfaces.
- Draw projections and solids and development of surfaces.
- Visualize and to project isometric and perspective sections of simple solids.

NAME OF THE COURSE: PROBLEM SOLVING ANDPYTHON PROGRAMMING LABORATORY

COURSE CODE: 17150L17

COURSE OBJECTIVES

- To write, test, and debug simple Python programs.
- To implement Python programs with conditionals and loops.
- Use functions for structuring Python programs.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python.

COURSE OUTCOMES

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

- Write, test, and debug simple Python programs.
- Implement Python programs with conditionals and loops.
- Develop Python programs step-wise by defining functions and calling them.
- Use Python lists, tuples, dictionaries for representing compound data.
- Read and write data from/to files in Python.

NAME OF THE COURSE: PHYSICS AND CHEMISTRY LABORATORY

COURSE CODE: 17149L18

PHYSICS LABORATORY

COURSE OBJECTIVES:

To introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics, properties of matter and liquids.

COURSE OUTCOMES:

Upon completion of the course, the students will be able toapply principles of elasticity, optics and thermal properties for engineering applications.

CHEMISTRY LABORATORY

COURSE OBJECTIVES:

- To make the student to acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
- To acquaint the students with the determination of molecular weight of a polymer by viscometery.

COURSE OUTCOMES:

The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

Department:ECE

SEMESTER - II

NAME OF THE COURSE: **TECHNICAL ENGLISH** **COURSE CODE:** **17147S21**

COURSE OBJECTIVES:

The Course prepares second semester engineering and Technology students to:

- Develop strategies and skills to enhance their ability to read and comprehend engineering and technology texts.
- Foster their ability to write convincing job applications and effective reports.
- Develop their speaking skills to make technical presentations, participate in group discussions.
- Strengthen their listening skill which will help them comprehend lectures and talks in their areas of specialization.

COURSE OUTCOMES:

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

- Read technical texts and write area- specific texts effortlessly.
- Listen and comprehend lectures and talks in their area of specialisation successfully.
- Speak appropriately and effectively in varied formal and informal contexts.
- Write reports and winning job applications.

NAME OF THE COURSE: **ENGINEERING MATHEMATICS– II**
COURSE CODE: **17148S22A**

COURSE OBJECTIVES :

This course is designed to cover topics such as Matrix Algebra, Vector Calculus, Complex Analysis and Laplace Transform. Matrix Algebra is one of the powerful tools to handle practical problems arising in the field of engineering. Vector calculus can be widely used for modelling the various laws of physics. The various methods of complex analysis and Laplace transforms can be used for efficiently solving the problems that occur in various branches of engineering disciplines.

COURSE OUTCOMES:

After successfully completing the course, the student will have a good understanding of the following topics and their applications:

- Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
- Gradient, divergence and curl of a vector point function and related identities.
- Evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
- Analytic functions, conformal mapping and complex integration.
- Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

NAME OF THE COURSE: **PHYSICS FOR ELECTRONICS ENGINEERING**
COURSE CODE: **17149S23B**

COURSE OBJECTIVES:

To understand the essential principles of Physics of semiconductor device and Electron transport properties. Become proficient in magnetic, dielectric and optical properties of materials and nano devices.

Department:ECE

COURSE OUTCOMES:

At the end of the course, the students will able to

- Gain knowledge on classical and quantum electron theories, and energy band structuues,
- Acquire knowledge on basics of semiconductor physics and its applications in various devices,
- Get knowledge on magnetic and dielectric properties of materials,
- Have the necessary understanding on the functioning of optical materials for optoelectronics,
- Understand the basics of quantum structures and their applications in spintronics and carbon electronics.

NAME OF THE COURSE: CIRCUIT ANALYSIS COURSE CODE: 17153S24B

COURSE OBJECTIVES:

- To introduce the basic concepts of DC and AC circuits behavior
- To study the transient and steady state response of the circuits subjected to step and sinusoidal excitations.
- To introduce different methods of circuit analysis using Network theorems, duality and topology.

COURSE OUTCOMES:

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

- Develop the capacity to analyze electrical circuits, apply the circuit theorems in real time
- Design and understand and evaluate the AC and DC circuits.

NAME OF THE COURSE: BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING

COURSE CODE: 17153S25B

COURSE OBJECTIVES:

To impart knowledge on

- Operation of Three phase electrical circuits and power measurement
- Working principles of Electrical Machines
- Working principle of Various measuring instruments

COURSE OUTCOMES:

At the end of the course the students will be able to

- Understand the concept of three phase power circuits and measurement.
- Comprehend the concepts in electrical generators, motors and transformers
- Choose appropriate measuring instruments for given application

NAME OF THE COURSE: ELECTRONIC DEVICES COURSE CODE: 17152S26B

COURSE OBJECTIVES:

To acquaint the students with the construction, theory and operation of the basic electronic devices such as PN junction diode, Bipolar and Field effect Transistors, Power control devices, LED, LCD and other Opto-electronic devices

COURSE OUTCOMES:

At the end of the course the students will be able to:

- Explain the V-I characteristic of diode, UJT and SCR

- Describe the equivalence circuits of transistors
- Operate the basic electronic devices such as PN junction diode, Bipolar and Field effect Transistors, Power control devices, LED, LCD and other Opto-electronic devices

NAME OF THE COURSE: **ENGINEERING PRACTICES LABORATORY**
COURSE CODE: 17154L27

COURSE OBJECTIVES:

To provide exposure to the students with hands on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.

COURSE OUTCOMES:
On successful completion of this course, the student will be able to

- Fabricate carpentry components and pipe connections including plumbing works.
- Use welding equipments to join the structures.
- Carry out the basic machining operations
- Make the models using sheet metal works
- Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
- Carry out basic home electrical works and appliances
- Measure the electrical quantities
- Elaborate on the components, gates, soldering practices.

NAME OF THE COURSE: **CIRCUITS AND DEVICES LABORATORY**
COURSE CODE: 17152L28B

COURSE OBJECTIVES:

- To learn the characteristics of basic electronic devices such as Diode, BJT,FET, SCR
- To understand the working of RL,RC and RLC circuits
- To gain hand on experience in Thevinin & Norton theorem, KVL & KCL, and Super Position Theorems

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

- Analyze the characteristics of basic electronic devices
- Design RL and RC circuits
- Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems

SEMESTER – III

NAME OF THE COURSE: **LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS**
COURSE CODE: 17148S31B

COURSE OBJECTIVES:

To introduce the basic notions of groups, rings, fields which will then be used to solve related problems.

- To understand the concepts of vector space, linear transformations and diagonalization.
- To apply the concept of inner product spaces in orthogonalization.
- To understand the procedure to solve partial differential equations.
- To give an integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.

Department:ECE

COURSE OUTCOMES:

Upon successful completion of the course, students should be able to:

- Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
- Demonstrate accurate and efficient use of advanced algebraic techniques.
- Demonstrate their mastery by solving non - trivial problems related to the concepts and by proving simple theorems about the statements proven by the text.
- Able to solve various types of partial differential equations.
  Able to solve engineering problems using Fourier series.

NAME OF THE COURSE: CONTROL SYSTEMS ENGINEERING
COURSE CODE: 17152C32

COURSE OBJECTIVES:

- To introduce the components and their representation of control systems
- To learn various methods for analyzing the time response, frequency response and stability of the systems.
- To learn the various approach for the state variable analysis.

COURSE OUTCOMES:

Upon completion of the course, the student should be able to:

- Identify the various control system components and their representations.
- Analyze the various time domain parameters.
- Analysis the various frequency response plots and its system.
- Apply the concepts of various system stability criterions.
- Design various transfer functions of digital control system using state variable models.

NAME OF THE COURSE: FUNDAMENTALS OF DATA STRUCTURES IN C
COURSE CODE: 17152C33

COURSE OBJECTIVES:

- To learn the features of C
- To learn the linear and non-linear data structures
- To explore the applications of linear and non-linear data structures
- To learn to represent data using graph data structure
- To learn the basic sorting and searching algorithms

COURSE OUTCOMES:

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

- Implement linear and non-linear data structure operations using C
- Suggest appropriate linear / non-linear data structure for any given data set.
- Apply hashing concepts for a given problem
- Modify or suggest new data structure for an application
- Appropriately choose the sorting algorithm for an application

Department:ECE

NAME OF THE COURSE: DIGITAL ELECTRONICS COURSE CODE: 17152C34

COURSE OBJECTIVES:

- To present the Digital fundamentals, Boolean algebra and its applications in digital systems
- To familiarize with the design of various combinational digital circuits using logic gates
- To introduce the analysis and design procedures for synchronous and asynchronous sequential circuits
- To explain the various semiconductor memories and related technology
- To introduce the electronic circuits involved in the making of logic gates

COURSE OUTCOMES:

At the end of the course:

- Use digital electronics in the present contemporary world
- Design various combinational digital circuits using logic gates
- Do the analysis and design procedures for synchronous and asynchronous sequential circuits
- Use the semiconductor memories and related technology
- Use electronic circuits involved in the design of logic gates

NAME OF THE COURSE: SIGNALS AND SYSTEMS COURSE CODE: 17152C35

COURSE OBJECTIVES:

- To understand the basic properties of signal & systems
- To know the methods of characterization of LTI systems in time domain
- To analyze continuous time signals and system in the Fourier and Laplace domain
- To analyze discrete time signals and system in the Fourier and Z transform domain

COURSE OUTCOMES:

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

- To be able to determine if a given system is linear/causal/stable
- Capable of determining the frequency components present in a deterministic signal
- Capable of characterizing LTI systems in the time domain and frequency domain
- To be able to compute the output of an LTI system in the time and frequency domains

NAME OF THE COURSE: ELECTRONIC CIRCUITS I COURSE CODE: 17152C36

COURSE OBJECTIVES:

- To understand the methods of biasing transistors
- To design and analyze single stage and multistage amplifier circuits
- To analyze the frequency response of small signal amplifiers
- To design and analyze the regulated DC power supplies.
- To troubleshoot and fault analysis of power supplies.

COURSE OUTCOMES:

After studying this course, the student should be able to:

- Acquire knowledge of
  - Working principles, characteristics and applications of BJT and FET
  - Frequency response characteristics of BJT and FET amplifiers
- Analyze the performance of small signal BJT and FET amplifiers - single stage and multi stage amplifiers

- Apply the knowledge gained in the design of Electronic circuits

NAME OF THE COURSE: **FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY**

COURSE CODE: 17152L37

COURSE OBJECTIVES:

- To understand and implement basic data structures using C
- To apply linear and non-linear data structures in problem solving.
- To learn to implement functions and recursive functions by means of data structures
- To implement searching and sorting algorithms

COURSE OBJECTIVES:

- To understand and implement basic data structures using C
- To apply linear and non-linear data structures in problem solving.
- To learn to implement functions and recursive functions by means of data structures
- To implement searching and sorting algorithms

NAME OF THE COURSE: **ANALOG AND DIGITAL CIRCUITS LABORATORY**
COURSE CODE: 17152L38

COURSE OBJECTIVES:

The student should be made to:

- Study the Frequency response of CE, CB and CC Amplifier
- Learn the frequency response of CS Amplifiers
- Study the Transfer characteristics of differential amplifier
- Perform experiment to obtain the bandwidth of single stage and multistage amplifiers
- Perform SPICE simulation of Electronic Circuits
- Design and implement the Combinational and sequential logic circuits

COURSE OUTCOMES:

On completion of this laboratory course, the student should be able to:

- Design and Test rectifiers, filters and regulated power supplies.
- Design and Test BJT/JFET amplifiers.
- Differentiate cascode and cascade amplifiers.
- Analyze the limitation in bandwidth of single stage and multi stage amplifier
- Measure CMRR in differential amplifier
- Simulate and analyze amplifier circuits using PSpice.
- Design and Test the digital logic circuits.

NAME OF THE COURSE: **INTERPERSONAL SKILLS / LISTENING &SPEAKING**
COURSE CODE: 17152L39

COURSE OBJECTIVES:

The Course will enable learners to:

- Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills.
- Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities.
- improve general and academic listening skills

- Make effective presentations.

COURSE OBJECTIVES:

The Course will enable learners to:

- Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills.
- Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities.
- improve general and academic listening skills
- Make effective presentations.

SEMESTER – IV

NAME OF THE COURSE: **PROBABILITY AND RANDOM PROCESSES**
COURSE CODE: 17148S41B

COURSE OBJECTIVES :

- To provide necessary basic concepts in probability and random processes for applications such as random signals, linear systems in communication engineering.
- To understand the basic concepts of probability, one and two dimensional random variables and to introduce some standard distributions applicable to engineering which can describe real life phenomenon.
- To understand the basic concepts of random processes which are widely used in IT fields.
- To understand the concept of correlation and spectral densities.
- To understand the significance of linear systems with random inputs.

COURSE OUTCOMES:

Upon successful completion of the course, students should be able to:

- Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
- Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
- Apply the concept random processes in engineering disciplines.
- Understand and apply the concept of correlation and spectral densities.
- The students will have an exposure of various distribution functions and help in acquiring skills in handling situations involving more than one variable. Able to analyze the response of random inputs to linear time invariant systems.

NAME OF THE COURSE: **ELECTRONIC CIRCUITS II** **COURSE CODE: 17152C42**

COURSE OBJECTIVES:

- To give a comprehensive exposure to all types of amplifiers and oscillators constructed with discrete components. This helps to develop a strong basis for building linear and digital integrated circuits
- To study about feedback amplifiers and oscillators principles
- To design oscillators.
- To study about turned amplifier.
- To understand the analysis and design of LC and RC oscillators, amplifiers, multi vibrators, power amplifiers and DC convertors.

Department:ECE

COURSE OUTCOMES:

Upon completion of the course, the student should be able to:

- Analyze different types of amplifier, oscillator and multivibrator circuits
- Design BJT amplifier and oscillator circuits
- Analyze transistorized amplifier and oscillator circuits
- Design and analyze feedback amplifiers
- Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, power amplifier and DC convertors.

NAME OF THE COURSE: COMMUNICATION THEORY COURSE CODE: 17152C43

COURSE OBJECTIVES:

- To introduce the concepts of various analog modulations and their spectral characteristics
- To understand the properties of random process
- To know the effect of noise on communication systems
- To study the limits set by Information Theory

COURSE OUTCOMES:

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

- Design AM communication systems
- Design Angle modulated communication systems
- Apply the concepts of Random Process to the design of Communication systems
- Analyze the noise performance of AM and FM systems
- Gain knowledge in sampling and quantization

NAME OF THE COURSE: ELECTROMAGNETIC FIELDS COURSE CODE: 17152C44

COURSE OBJECTIVES:

- To gain conceptual and basic mathematical understanding of electric and magnetic fields in free space and in materials
- To understand the coupling between electric and magnetic fields through Faraday's law, displacement current and Maxwell's equations
- To understand wave propagation in lossless and in lossy media
- To be able to solve problems based on the above concepts

COURSE OUTCOMES:

By the end of this course, the student should be able to:

- Display an understanding of fundamental electromagnetic laws and concepts
- Write Maxwell's equations in integral, differential and phasor forms and explain their physical meaning
- Explain electromagnetic wave propagation in lossy and in lossless media
- Solve simple problems requiring estimation of electric and magnetic field quantities based on these concepts and laws

NAME OF THE COURSE: LINEAR INTEGRATED CIRCUITS COURSE CODE: 17152C45

COURSE OBJECTIVES:

- To introduce the basic building blocks of linear integrated circuits
- To learn the linear and non-linear applications of operational amplifiers

Department:ECE

- To introduce the theory and applications of analog multipliers and PLL
- To learn the theory of ADC and DAC
- To introduce the concepts of waveform generation and introduce some special function ICs

COURSE OUTCOMES:

Upon completion of the course, the student should be able to:

- Design linear and non linear applications of OP – AMPS
- Design applications using analog multiplier and PLL
- Design ADC and DAC using OP – AMPS
- Generate waveforms using OP – AMP Circuits
- Analyze special function ICs

NAME OF THE COURSE: ENVIRONMENTAL SCIENCE AND ENGINEERING
COURSE CODE: 17149S46

COURSE OBJECTIVES:

- To study the nature and facts about environment.
- To finding and implementing scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- To study the dynamic processes and understand the features of the earth‟s interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

COURSE OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.

- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters

NAME OF THE COURSE: CIRCUITS DESIGN AND SIMULATION LABORATORY
COURSE CODE: 17152L47

COURSE OBJECTIVES:

- To gain hands on experience in designing electronic circuits
- To learn simulation software used in circuit design
- To learn the fundamental principles of amplifier circuits
- To differentiate feedback amplifiers and oscillators.
- To differentiate the operation of various multivibrators

COURSE OUTCOMES:

On completion of this laboratory course, the student should be able to:

- Analyze various types of feedback amplifiers
- Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators
- Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.

Department:ECE

NAME OF THE COURSE: **LINEAR INTEGRATED CIRCUITS LABORATORY**
COURSE CODE: 17152L48

COURSE OBJECTIVES:

- To understand the basics of linear integrated circuits and available ICs
- To understand the characteristics of the operational amplifier.
- To apply operational amplifiers in linear and nonlinear applications.
- To acquire the basic knowledge of special function IC.
- To use SPICE software for circuit design

COURSE OUTCOMES:

On completion of this laboratory course, the student should be able to:

- Design amplifiers, oscillators, D-A converters using operational amplifiers.
- Design filters using op-amp and performs an experiment on frequency response.
- Analyze the working of PLL and describe its application as a frequency multiplier.
- DesignDC power supply using ICs.
- Analyze the performance of filters, multivibrators, A/D converter and analog multiplier using SPICE.
-

SEMESTER – V

NAME OF THE COURSE: **DIGITAL COMMUNICATION** **COURSE CODE: 17152C51**

COURSE OBJECTIVES:

- To know the principles of sampling & quantization
- To study the various waveform coding schemes
- To learn the various baseband transmission schemes
- To understand the various band pass signaling schemes
- To know the fundamentals of channel coding

COURSE OUTCOMES:

Upon completion of the course, the student should be able to

- Design PCM systems
- Design and implement base band transmission schemes
- Design and implement band pass signaling schemes
- Analyze the spectral characteristics of band pass signaling schemes and their noise performance
- Design error control coding schemes

NAME OF THE COURSE: DISCRETE-TIME SIGNAL PROCESSING
COURSE CODE: 17152C52

COURSE OBJECTIVES:

- To learn discrete fourier transform, properties of DFT and its application to linear filtering
- To understand the characteristics of digital filters, design digital IIR and FIR filters and apply these filters to filter undesirable signals in various frequency bands
- To understand the effects of finite precision representation on digital filters
- To understand the fundamental concepts of multi rate signal processing and its applications
- To introduce the concepts of adaptive filters and its application to communication engineering

Department:ECE

COURSE OUTCOMES:

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

- Apply DFT for the analysis of digital signals and systems
- Design IIR and FIR filters
- Characterize the effects of finite precision representation on digital filters
- Design multirate filters
- Apply adaptive filters appropriately in communication systems

NAME OF THE COURSE: COMPUTER ARCHITECTURE AND ORGANIZATION
COURSE CODE: 17152C53

COURSE OBJECTIVES:

- To make students understand the basic structure and operation of digital computer
- To familiarize with implementation of fixed point and floating-point arithmetic operations
- To study the design of data path unit and control unit for processor
- To understand the concept of various memories and interfacing
- To introduce the parallel processing technique

COURSE OUTCOMES:

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

- Describe data representation, instruction formats and the operation of a digital computer
- Illustrate the fixed point and floating-point arithmetic for ALU operation
- Discuss about implementation schemes of control unit and pipeline performance
- Explain the concept of various memories, interfacing and organization of multiple processors
- Discuss parallel processing technique and unconventional architectures

NAME OF THE COURSE: COMMUNICATION NETWORKS COURSE CODE: 17152C55

COURSE OBJECTIVES:

The student should be made to:

- Understand the division of network functionalities into layers.
- Be familiar with the components required to build different types of networks
- Be exposed to the required functionality at each layer
- Learn the flow control and congestion control algorithms

COURSE OUTCOMES:

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

- Identify the components required to build different types of networks
- Choose the required functionality at each layer for given application
- Identify solution for each functionality at each layer
- Trace the flow of information from one node to another node in the network

NAME OF THE COURSE: DIGITAL SIGNAL PROCESSING LABORATORY
COURSE CODE: 17152L57

COURSE OBJECTIVES:

The student should be made:

- To perform basic signal processing operations such as Linear Convolution, Circular Convolution, Auto Correlation, Cross Correlation and Frequency analysis in MATLAB
- To implement FIR and IIR filters in MATLAB and DSP Processor
- To study the architecture of DSP processor

- To design a DSP system to demonstrate the Multi-rate and Adaptive signal processing concepts.

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COURSE OUTCOMES:

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

- Carryout basic signal processing operations
- Demonstrate their abilities towards MATLAB based implementation of various DSP systems
- Analyze the architecture of a DSP Processor
- Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
- Design a DSP system for various applications of DSP

NAME OF THE COURSE: COMMUNICATION SYSTEMS LABORATORY
COURSE CODE: 17152L58

COURSE OBJECTIVES:

The student should be made:

- To visualize the effects of sampling and TDM
- To Implement AM & FM modulation and demodulation
- To implement PCM & DM
- To simulate Digital Modulation schemes
- To simulate Error control coding schemes

COURSE OUTCOMES:

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

- Simulate & validate the various functional modules of a communication system
- Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes
- Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system
- Simulate end-to-end communication Link

NAME OF THE COURSE: COMMUNICATION NETWORKS LABORATORY
COURSE CODE: 17152L59

COURSE OBJECTIVES:

The student should be made to:

- Learn to communicate between two desktop computers
- Learn to implement the different protocols
- Be familiar with IP Configuration
- Be familiar with the various routing algorithms
- Be familiar with simulation tools

COURSE OUTCOMES:

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

- Communicate between two desktop computers
- Implement the different protocols
- Program using sockets.
- Implement and compare the various routing algorithms
- Use the simulation tool.

Department:ECE

NAME OF THE COURSE: **RESEARCH METHODOLOGY**
COURSE CODE: 17152CRM

COURSE OBJECTIVES:

- To understand the approaches towards and constraints in good research.
- To identify various statistical tools used in research methodology
- To appreciate and compose the manuscript for publication
- To train in basic computational and excel- skills for research in engineering.

COURSE OUTCOMES:

- Understand the approaches towards and constraints in good research.Use the statistical tools used in research methodology
- Compose the manuscript for publication
- Obtain computational and excel- skills for research in engineering

SEMESTER – VI

NAME OF THE COURSE: **MICROPROCESSORS AND MICROCONTROLLERS**
COURSE CODE: 17152C61

COURSE OBJECTIVES:

- To understand the Architecture of 8086 microprocessor.
- To learn the design aspects of I/O and Memory Interfacing circuits.
- To interface microprocessors with supporting chips.
- To study the Architecture of 8051 microcontroller.
- To design a microcontroller based system

COURSE OUTCOMES:
At the end of the course, the students should be able to:

- Understand and execute programs based on 8086 microprocessor.
- Design Memory Interfacing circuits.
- Design and interface I/O circuits.
- Design and implement 8051 microcontroller based systems.

NAME OF THE COURSE: **VLSI DESIGN** **COURSE CODE: 17152C62**

COURSE OBJECTIVES:

- Study the fundamentals of CMOS circuits and its characteristics.
- Learn the design and realization of combinational & sequential digital circuits.
- Architectural choices and performance tradeoffs involved in designing and realizing the circuits in CMOS technology are discussed
- Learn the different FPGA architectures and testability of VLSI circuits.

COURSE OUTCOMES:
UPON COMPLETION OF THE COURSE, STUDENTS SHOULD be ABLE TO

- Realize the concepts of digital building blocks using MOS transistor.
- Design combinational MOS circuits and power strategies.
- Design and construct Sequential Circuits and Timing systems.
- Design arithmetic building blocks and memory subsystems.
- Apply and implement FPGA design flow and testing.

Department:ECE

NAME OF THE COURSE: **WIRELESS COMMUNICATION** **COURSE CODE:** **17152C63**

COURSE OBJECTIVES:

- To study the characteristic of wireless channel
- To understand the design of a cellular system
- To study the various digital signaling techniques and multipath mitigation techniques
- To understand the concepts of multiple antenna techniques

COURSE OUTCOMES:

The student should be able to:

- Characterize a wireless channel and evolve the system design specifications
- Design a cellular system based on resource availability and traffic demands
- Identify suitable signaling and multipath mitigation techniques for the wireless channel and system under consideration.

NAME OF THE COURSE: **PRINCIPLES OF MANAGEMENT** **COURSE CODE:** **17152S64**

COURSE OBJECTIVES:

- To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization.

COURSE OUTCOMES:

- Upon completion of the course, students will be able to have clear understanding
- Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

NAME OF THE COURSE: **TRANSMISSION LINES AND RF SYSTEMS**
COURSE CODE: **17152C65**

COURSE OBJECTIVES:

- To introduce the various types of transmission lines and its characteristics
- To give thorough understanding about high frequency line, power and impedance measurements
- To impart technical knowledge in impedance matching using smith chart
- To introduce passive filters and basic knowledge of active RF components
- To get acquaintance with RF system transceiver design

COURSE OUTCOMES:

Upon completion of the course, the student should be able to:

- Explain the characteristics of transmission lines and its losses
- Write about the standing wave ratio and input impedance in high frequency transmission lines
- Analyze impedance matching by stubs using smith charts
- Analyze the characteristics of TE and TM waves
- Design a RF transceiver system for wireless communication

NAME OF THE COURSE: **MICROPROCESSORS AND MICROCONTROLLERS LABORATORY**
COURSE CODE: **17152L67**

COURSE OBJECTIVES:

- To Introduce ALP concepts, features and Coding methods

- Write ALP for arithmetic and logical operations in 8086 and 8051
- Differentiate Serial and Parallel Interface
- Interface different I/Os with Microprocessors
- Be familiar with MASM

COURSE OUTCOMES:

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

- Write ALP Programmes for fixed and Floating Point and Arithmetic operations
- Interface different I/Os with processor
- Generate waveforms using Microprocessors
- Execute Programs in 8051
- Explain the difference between simulator and Emulator

NAME OF THE COURSE: VLSI DESIGN LABORATORY COURSE CODE: 17152L68

COURSE OBJECTIVES:

The student should be made:

- To learn Hardware Descriptive Language(Verilog/VHDL)
- To learn the fundamental principles of VLSI circuit design in digital and analog domain
- To familiarize fusing of logical modules on FPGAs
- To provide hands on design experience with professional design (EDA) platforms

COURSE OUTCOMES:

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

- Write HDL code for basic as well as advanced digital integrated circuit
- Import the logic modules into FPGA Boards
- Synthesize Place and Route the digital IPs
- Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools

NAME OF THE COURSE: PROFESSIONAL COMMUNICATION
COURSE CODE: 17152L69

COURSE OBJECTIVES:

The course aims to:

- Enhance the Employability and Career Skills of students
- Orient the students towards grooming as a professional
- Make them Employable Graduates
- Develop their confidence and help them attend interviews successfully.

COURSE OUTCOMES:

At the end of the course Learners will be able to:

- Make effective presentations
- Participate confidently in Group Discussions.
- Attend job interviews and be successful in them.
- Develop adequate Soft Skills required for the workplace

Department:ECE

SEMESTER VII

NAME OF THE COURSE: **ANTENNAS AND MICROWAVE ENGINEERING**
COURSE CODE: 17152C71

COURSE OBJECTIVES:

- To enable the student to understand the basic principles in antenna and microwave system design
- To enhance the student knowledge in the area of various antenna designs.
- To enhance the student knowledge in the area of microwave components and antenna for practical applications.

COURSE OUTCOMES:
The student should be able to:

- Apply the basic principles and evaluate antenna parameters and link power budgets
- Design and assess the performance of various antennas
- Design a microwave system given the application specifications

NAME OF THE COURSE: **OPTICAL COMMUNICATION** **COURSE CODE: 17152C72**

COURSE OBJECTIVES:

- To study about the various optical fiber modes, configuration and transmission characteristics of optical fibers
- To learn about the various optical sources, detectors and transmission techniques
- To explore various idea about optical fiber measurements and various coupling techniques
- To enrich the knowledge about optical communication systems and networks

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

- Realize basic elements in optical fibers, different modes and configurations.
- Analyze the transmission characteristics associated with dispersion and polarization techniques.
- Design optical sources and detectors with their use in optical communication system.
- Construct fiber optic receiver systems, measurements and coupling techniques.
- Design optical communication systems and its networks.

NAME OF THE COURSE: **EMBEDDED AND REAL TIME SYSTEMS**
COURSE CODE: 17152C73

COURSE OBJECTIVES:
The student should be made to:

- Understand the concepts of embedded system design and analysis
- Learn the architecture and programming of ARM processor
- Be exposed to the basic concepts of embedded programming
- Learn the real time operating systems

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

- Describe the architecture and programming of ARM processor
- Outline the concepts of embedded systems
- Explain the basic concepts of real time operating system design

- Model real-time applications using embedded-system concepts

NAME OF THE COURSE: AD HOC AND WIRELESS SENSOR NETWORKS
COURSE CODE: 17152C75

COURSE OBJECTIVES:

- Learn Ad hoc network and Sensor Network fundamentals
- Understand the different routing protocols
- Have an in-depth knowledge on sensor network architecture and design issues
- Understand the transport layer and security issues possible in Ad hoc and Sensor networks
- Have an exposure to mote programming platforms and tools

COURSE OUTCOMES:
At the end of the course, the student would be able to:

- Know the basics of Ad hoc networks and Wireless Sensor Networks
- Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement
- Apply the knowledge to identify appropriate physical and MAC layer protocols
- Understand the transport layer and security issues possible in Ad hoc and sensor networks.
- Be familiar with the OS used in Wireless Sensor Networks and build basic modules

NAME OF THE COURSE: EMBEDDED LABORATORY
COURSE CODE: 17152L77

COURSE OBJECTIVES:
The student should be made to:

- Learn the working of ARM processor
- Understand the Building Blocks of Embedded Systems
- Learn the concept of memory map and memory interface
- Write programs to interface memory, I/Os with processor
- Study the interrupt performance

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

- Write programs in ARM for a specific Application
- Interface memory, A/D and D/A convertors with ARM system
- Analyze the performance of interrupt
- Write program for interfacing keyboard, display, motor and sensor.
- Formulate a mini project using embedded system

NAME OF THE COURSE: ADVANCED COMMUNICATION LABORATORY
COURSE CODE: 17152L78

COURSE OBJECTIVES:
The student should be made to:

- Understand the working principle of optical sources, detector, fibers
- Develop understanding of simple optical communication link
- Understand the measurement of BER, Pulse broadening
- Understand and capture an experimental approach to digital wireless communication
- Understand actual communication waveforms that will be sent and received across wireless channel

Department:ECE

COURSE OUTCOMES:

On completion of this lab course, the student would be able to

- Analyze the performance of simple optical link by measurement of losses and Analyzing the mode characteristics of fiber
- Analyze the Eye Pattern, Pulse broadening of optical fiber and the impact on BER
- Estimate the Wireless Channel Characteristics and Analyze the performance of Wireless Communication System
- Understand the intricacies in Microwave System design

ELECTIVE – I

NAME OF THE COURSE: **MEDICAL ELECTRONICS** **COURSE CODE:** **17152E56B**

COURSE OBJECTIVES:

The student should be made:

- To gain knowledge about the various physiological parameters both electrical and non electrical and the methods of recording and also the method of transmitting these parameters
- To study about the various assist devices used in the hospitals
- To gain knowledge about equipment used for physical medicine and the various recently developed diagnostic and therapeutic techniques.

COURSE OUTCOMES:

On successful completion of this course, the student should be able to:

- Know the human body electro- physiological parameters and recording of bio-potentials
- Comprehend the non-electrical physiological parameters and their measurement – body temperature, blood pressure, pulse, blood cell count, blood flow meter etc.
- Interpret the various assist devices used in the hospitals viz. pacemakers, defibrillators, dialyzers and ventilators
- Comprehend physical medicine methods eg. ultrasonic, shortwave, microwave surgical diathermies , and bio-telemetry principles and methods
- Know about recent trends in medical instrumentation

NAME OF THE COURSE: **TOTAL QUALITY MANAGEMENT**
COURSE CODE: **17152E56G**

COURSE OBJECTIVES:

- To facilitate the understanding of Quality Management principles and process.

COURSE OUTCOMES:

- The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

NAME OF THE COURSE: **NANO TECHNOLOGY AND APPLICATIONS**
COURSE CODE: **17152E56E**

COURSE OBJECTIVES:

- To provide a broad view of the nascent field of nanoscience and nanotechnology to undergraduates
- To explore the basics of nanomaterial synthesis and characterization.
- To introduce the applications of nanotechnology

COURSE OUTCOMES:

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

- Describe the basic science behind the properties of materials.
- Interpret the creation, characterization, and manipulation of nanoscale materials.
- Comprehend the exciting applications of nanotechnology at the leading edge of scientific research
- Apply their knowledge of nanotechnology to identify how they can be exploited for new applications.

ELECTIVE – II

NAME OF THE COURSE: **CRYPTOGRAPHY AND NETWORK SECURITY**
COURSE CODE: 17152E66A

COURSE OBJECTIVES:

- To understand Cryptography Theories, Algorithms and Systems.
- To understand necessary Approaches and Techniques to build protection mechanisms in order to secure computer networks.

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

- Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
- Apply the different cryptographic operations of symmetric cryptographic algorithms
- Apply the different cryptographic operations of public key cryptography
- Apply the various Authentication schemes to simulate different applications.
- Understand various Security practices and System security standards

NAME OF THE COURSE: **MULTIMEDIA COMPRESSION AND COMMUNICATION**
COURSE CODE: 17152E66D

COURSE OBJECTIVES:
The student should be made:

- To understand the compression schemes for text, voice, image and video
- To understand the QoS issues in multimedia network
- To know the communication protocols for multimedia networking

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

- Design audio compression techniques
- Configure Text, image and video compression techniques
- Select suitable service model for specific application
- Configure multimedia communication network

NAME OF THE COURSE: **WIRELESS NETWORKS** **COURSE CODE: 17152E66F**

COURSE OBJECTIVES:
The student should be made:

- To understand the concept about Wireless networks, protocol stack and standards
- To understand and analyse the network layer solutions for Wireless networks
- To study about fundamentals of 3G Services, its protocols and applications
- To have in depth knowledge on internetworking of WLAN and WWAN
- To learn about evolution of 4G Networks, its architecture and applications

Department:ECE

COURSE OUTCOMES:

Upon completion of the course, the student would be able to:

- Conversant with the latest 3G/4G networks and its architecture
- Design and implement wireless network environment for any application using latest wireless protocols and standards
- Ability to select the suitable network depending on the availability and requirement
- Implement different type of applications for smart phones and mobile devices with latest network strategies

ELECTIVE – III

NAME OF THE COURSE: ADVANCED WIRELESS COMMUNICATION
COURSE CODE: 17152E76A

COURSE OBJECTIVES:

- To expose the students to the importance of improving capacity of wireless channel using MIMO
- To enable understanding of channel impairment mitigation using space-time block and Trellis codes
- To teach advanced MIMO system like layered space time codes, MU-MIMO System and MIMO-OFDM systems

COURSE OUTCOMES:

The student should be able to:

- Comprehend and appreciate the significance and role of this course in the present contemporary world
- Apply the knowledge about the importance of MIMO in today's communication
- Appreciate the various methods for improving the data rate of wireless communication system

NAME OF THE COURSE: COGNITIVE RADIO COURSE CODE: 17152E76B

COURSE OBJECTIVES:

The student should be made:

- To understand the evolving software defined radio and cognitive radio techniques and their essential functionalities
- To study the basic architecture and standard for cognitive radio
- To understand the physical, MAC and Network layer design of cognitive radio
- To expose the student to evolving applications and advanced features of cognitive radio

COURSE OUTCOMES:

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

- Gain knowledge on the design principles on software defined radio and cognitive radio
- Develop the ability to design and implement algorithms for cognitive radio spectrum sensing and dynamic spectrum access
- Build experiments and projects with real time wireless applications
- Apply the knowledge of advanced features of cognitive radio for real world applications

Department:ECE

NAME OF THE COURSE: **MIXED SIGNAL IC DESIGN** **COURSE CODE:** **17152E76F**

COURSE OBJECTIVES:

The student should be made to:

- Study the mixed signal of submicron CMOS circuits
- Understand the various integrated based filters and topologies
- Learn the data converters architecture, modeling and signal to noise ratio
- Study the integrated circuit of oscillators and PLLs

COURSE OUTCOMES:

Upon completion of the course, student should be able to

- Apply the concepts for mixed signal MOS circuit.
- Analyze the characteristics of IC based CMOS filters.
- Design of various data converter architecture circuits.
- Analyze the signal to noise ratio and modeling of mixed signals.
- Design of oscillators and phase lock loop circuit.

SEMESTER – VIII

ELECTIVE – IV

NAME OF THE COURSE: **ELECTROMAGNETIC INTERFERENCE AND COMPATIBILITY**

COURSE CODE: **17152E81A**

COURSE OBJECTIVES:

- To introduce the basic concepts of Electromagnetic Interference
- To teach the importance of Electromagnetic Compatible designs
- To explain the existing standards for Electromagnetic Compatibility

COURSE OUTCOMES:

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

- Identify the various types and mechanisms of Electromagnetic Interference
- Propose a suitable EMI mitigation technique
- Describe the various EMC Standards and methods to measure them

NAME OF THE COURSE: **DIGITAL IMAGE PROCESSING** **COURSE CODE:** **17152E81D**

COURSE OBJECTIVES:

- To become familiar with digital image fundamentals
- To get exposed to simple image enhancement techniques in Spatial and Frequency domain.
- To learn concepts of degradation function and restoration techniques.
- To study the image segmentation and representation techniques.
- To become familiar with image compression and recognition methods

COURSE OUTCOMES:

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

- Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.
- Operate on images using the techniques of smoothing, sharpening and enhancement.

- Understand the restoration concepts and filtering techniques.
- Learn the basics of segmentation, features extraction, compression and recognition methods for color models.

NAME OF THE COURSE: PROFESSIONAL ETHICS IN ENGINEERING
COURSE CODE: 17152E81E

COURSE OBJECTIVES:

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

COURSE OUTCOMES:

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

ELECTIVE – V

NAME OF THE COURSE: DSP PROCESSOR ARCHITECTURE AND PROGRAMMING
COURSE CODE: 17152E82B

COURSE OBJECTIVES:
The objective of this course is to provide knowledge on:

- Basics on Digital Signal Processors
- Programmable DSP‘s Architecture, On-chip Peripherals and Instruction set
- Programming for signal processing applications
- Advanced Programmable DSP Processors

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

- Analyze the concepts of Digital Signal Processors
- Demonstrate their ability to program the DSP processor for signal processing applications
- Discuss, compare and select the suitable Advanced DSP Processors for real-time signal processing applications

NAME OF THE COURSE: SATELLITE COMMUNICATION COURSE CODE: 17152E82C

COURSE OBJECTIVES:
The student should be made to:

- Understand the basics of satellite orbits
- Understand the satellite segment and earth segment
- Analyze the various methods of satellite access
- Understand the applications of satellites
- Understand the basics of satellite Networks

COURSE OUTCOMES:
At the end of the course, the student would be able to:

- Analyze the satellite orbits
- Analyze the earth segment and space segment
- Analyze the satellite Link design
- Design various satellite applications

Department:ECE

NAME OF THE COURSE: **FUNDAMENTALS OF NANOSCIENCE**

COURSE CODE: 17152E82F

COURSE OBJECTIVES:

- To learn about basis of nanomaterial science, preparation method, types and application

COURSE OUTCOMES:

- Will familiarize about the science of nanomaterials
- Will demonstrate the preparation of nanomaterials
- Will develop knowledge in characteristic nanomaterial

B.TECH-EEE

PROGRAM EDUCATIONAL OBJECTIVES

a) To produce graduates who have developed the skills required to design Electrical and Electronics Engineering systems and facilities, including the graduate's abilities to formulate problems, to think creatively, to synthesize information, and to work collaboratively in teams.

b) To produce graduates who are trained thoroughly in methods of analysis, including the mathematical and computational skills appropriate for Electrical and Electronics Engineers to use when problem solving.

c) To produce graduates who are prepared for life-long learning and successful careers as Electrical and Electronics Engineers.

d) To produce graduates who are taught to use current, experimental and data analysis techniques for Electrical and Electronics Engineering applications.

e) To produce graduates who have developed oral and written communication skills that allows students to present information effectively.

f) To produce graduates with understanding of their professional and ethical responsibilities.

g) To provide professional development on contemporary issues by extending their professional knowledge through independent learning, continuing educational courses, conferences, workshops, short courses, and/or graduate study.

PROGRAM OUTCOMES

I) An ability to apply knowledge of Mathematics and Science to solve Engineering problems.

II) An ability to practice Electrical and Electronics Engineering using up-to-date –current- techniques and experiments, skills and tools as a result of life-long learning.

III) An ability to formulate and conduct experiments, as well as to analyze and interpret data and to design a system or device to satisfy stated requirements.

IV) An ability to lead teams to identify, formulates, and solves Engineering problems.

V) An ability to obtain positions and involving in Electrical and Electronics Engineering projects.

VI) An understanding of professional and ethical responsibility.

VII) An ability to communicate effectively.

VIII) An ability to develop the professional status using the broad education to understand the potential impact of Engineering solutions in various geographical settings including societal and environmental contexts.

PROGRAM SPECIFIC OUTCOMES

On completion of the B.Tech (Electrical and Electronics Engineering) degree the graduates will be able to

- Apply the fundamental knowledge of mathematics, science, electrical and electronics engineering to analyse and solve the complex problems in electrical, electronics and allied interdisciplinary areas.

- Design, develop and implement electrical and electronics and allied interdisciplinary projects to meet the demands of industry and to provide solutions to the current real time problems.

Course Outcomes

17148S12 ENGINEERING MATHEMATICS – I

- Use both the limit definition and rules of differentiation to differentiate functions. Apply differentiation to solve maxima and minima problems.
- Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
- Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
- Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
- Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
- Apply various techniques in solving differential equations.

17149S13 ENGINEERING PHYSICS

the students will gain knowledge on the basics of properties of matter and its applications,
the students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
the students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,
the students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and
the students will understand the basics of crystals, their structures and different crystal growth techniques.

17149S14 ENGINEERING CHEMISTRY

The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

17154S15 ENGINEERING GRAPHICS

familiarize with the fundamentals and standards of Engineering graphics
perform freehand sketching of basic geometrical constructions and multiple views of
objects. project orthographic projections of lines and plane surfaces.
draw projections and solids and development of surfaces.
visualize and to project isometric and perspective sections of simple solids

17150S16 PROBLEM SOLVING AND PYTHON PROGRAMMING

- Develop algorithmic solutions to simple computational problems
- Read, write, execute by hand simple Python
- programs. Structure simple Python programs for
- solving problems. Decompose a Python program into
- functions.
- Represent compound data using Python lists, tuples, dictionaries.
  Read and write data from/to files in Python Programs.

17150L17 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY

- Write, test, and debug simple Python programs.
- Implement Python programs with conditionals and loops.
- Develop Python programs step-wise by defining functions and calling
- them. Use Python lists, tuples, dictionaries for representing compound
- data.
  Read and write data from/to files in Python.

17149L18 PHYSICS AND CHEMISTRY LABORATORY

To apply principles of elasticity, optics and thermal properties for engineering applications.

17147S21 TECHNICAL ENGLISH

- Read technical texts and write area- specific texts effortlessly.
- Listen and comprehend lectures and talks in their area of specialisation successfully.
- Speak appropriately and effectively in varied formal and informal contexts.
- Write reports and winning job applications.

17148S22A ENGINEERING MATHEMATICS – II

Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.

- Gradient, divergence and curl of a vector point function and related identities.
- Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.
- Analytic functions, conformal mapping and complex integration.
- Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

17149S23B PHYSICS FOR ELECTRONICS ENGINEERING

- gain knowledge on classical and quantum electron theories, and energy band structuues, acquire
- knowledge on basics of semiconductor physics and its applications in various devices, get
- knowledge on magnetic and dielectric properties of materials,
- have the necessary understanding on the functioning of optical materials for optoelectronics,
- understand the basics of quantum structures and their applications in spintronics and carbon electronics.

17149S24A ENVIRONMENTAL SCIENCE AND ENGINEERING

Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the

following after completing the course.
Public awareness of environmental is at infant stage.
Ignorance and incomplete knowledge has lead to misconceptions
Development and improvement in std. of living has lead to serious environmental disasters

17153S25C - CIRCUIT THEORY:
Ability to analyse electrical circuits
Ability to apply circuit theorems
Ability to analyse transients

17153L28C -ELECTRIC CIRCUITS LABORATORY
Understand and apply circuit theorems and concepts in engineering applications. Simulate electric circuits.

17149S31C TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS
Upon successful completion of the course, students should be able to:
Understand how to solve the given standard partial differential equations.
Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

17153C32 - DIGITAL LOGIC CIRCUITS
Ability to design combinational and sequential Circuits.
Ability to simulate using software package.
Ability to study various number systems and simplify the logical expressions using Boolean functions
Ability to design various synchronous and asynchronous circuits.
Ability to introduce asynchronous sequential circuits and PLDs
Ability to introduce digital simulation for development of application oriented logic circuits.

17153C33 ELECTROMAGNETIC THEORY
Ability to understand the basic mathematical concepts related to electromagnetic vector fields. Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications.
Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications.
Ability to understand the different methods of emf generation and Maxwell's equations
Ability to understand the basic concepts electromagnetic waves and characterizing parameters Ability to understand and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems

17153C34 ELECTRICAL MACHINES – I

Ability to analyze the magnetic-circuits.

Ability to acquire the knowledge in constructional details of transformers. Ability to understand the concepts of electromechanical energy conversion. Ability to acquire the knowledge in working principles of DC Generator.
Ability to acquire the knowledge in working principles of DC Motor
Ability to acquire the knowledge in various losses taking place in D.C. Machines

17153C35 ELECTRON DEVICES AND CIRCUITS
Upon Completion of the course, the students will be ability to:
Explain the structure and working operation of basic electronic devices.

Able to identify and differentiate both active and passive elements
Analyze the characteristics of different electronic devices such as diodes and transistors
Choose and adapt the required components to construct an amplifier circuit. Employ the acquired knowledge in design and analysis of oscillators

17153C36-POWER PLANT ENGINEERING

Upon the completion of this course the students will be able to
CO1 Explain the layout, construction and working of the components inside a thermal power plant.
CO2 Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.
CO3 Explain the layout, construction and working of the components inside nuclear power plants. CO4 Explain the layout, construction and working of the components inside Renewable energy power plants.
CO5 Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

17153L37 ELECTRONICS LABORATORY

Ability to understand and analyse electronic circuits.

17153L38 ELECTRICAL MACHINES LABORATORY-I

Ability to understand and analyze DC Generator
Ability to understand and analyze DC Motor
Ability to understand and analyse Transformers.

17149S41C NUMERICAL METHODS

Understand the basic concepts and techniques of solving algebraic and transcendental equations.
- Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.
- Apply the numerical techniques of differentiation and integration for engineering problems.
- Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
- Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

17153C42 ELECTRICAL MACHINES – II

Ability to understand the construction and working principle of Synchronous Generator
- Ability to understand MMF curves and armature windings.
- Ability to acquire knowledge on Synchronous motor.
- Ability to understand the construction and working principle of Three phase Induction Motor
- Ability to understand the construction and working principle of Special Machines
- Ability to predetermine the performance characteristics of Synchronous Machines.

17153C43 TRANSMISSION AND DISTRIBUTION

To understand the importance and the functioning of transmission line parameters.
- To understand the concepts of Lines and Insulators.
- To acquire knowledge on the performance of Transmission lines.
- To acquire knowledge on Underground Cabilitys
- To become familiar with the function of different components used in Transmission and Distribution levels of power system and modelling of these components.

17153C44 MEASUREMENTS AND INSTRUMENTATION

To acquire knowledge on Basic functional elements of instrumentation

- To understand the concepts of Fundamentals of electrical and electronic instruments
- Ability to compare between various measurement techniques
- To acquire knowledge on Various storage and display devices
- To understand the concepts Various transducers and the data acquisition systems
- Ability to model and analyze electrical and electronic Instruments and understand the operational features of display Devices and Data Acquisition System.

17153C45 LINEAR INTEGRATED CIRCUITS AND APPLICATIONS

Ability to acquire knowledge in IC fabrication procedure

- Ability to analyze the characteristics of Op-Amp
- To understand the importance of Signal analysis using Op-amp based circuits.
- Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits.
- To understand and acquire knowledge on the Applications of Op-amp
- Ability to understand and analyse, linear integrated circuits their Fabrication and Application.

17153C46 CONTROL SYSTEMS

At the end of the course, the student should have the :

- Ability to develop various representations of system based on the knowledge of
- Mathematics, Science and Engineering fundamentals.
- Ability to do time domain and frequency domain analysis of various models of linear system.
- Ability to interpret characteristics of the system to develop mathematical model.
- Ability to design appropriate compensator for the given specifications.
- Ability to come out with solution for complex control problem.
- Ability to understand use of PID controller in closed loop system.

17153L47 ELECTRICAL MACHINES LABORATORY – II

At the end of the course, the student should have the :

- Ability to understand and analyze EMF and MMF methods
- Ability to analyze the characteristics of V and Inverted V curves
- Ability to understand the importance of Synchronous machines
- Ability to understand the importance of Induction Machines
- Ability to acquire knowledge on separation of losses

17153L48 LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY

At the end of the course, the student should have the :

- Ability to understand and implement Boolean Functions.
- Ability to understand the importance of code conversion
- Ability to Design and implement 4-bit shift registers
- Ability to acquire knowledge on Application of Op-Amp
- Ability to Design and implement counters using specific counter IC.

17153C51 POWER SYSTEM ANALYSIS

Ability to model the power system under steady state operating condition Ability to understand and apply iterative techniques for power flow analysis Ability to model and carry out short circuit studies on power system
Ability to model and analyze stability problems in power system
Ability to acquire knowledge on Fault analysis.
Ability to model and understand various power system components and carry out power flow, short circuit and stability studies

17153C52 MICROPROCESSORS AND MICROCONTROLLERS

Ability to acquire knowledge in Addressing modes & instruction set of 8085 & 8051.
Ability to need & use of Interrupt structure 8085 & 8051. Ability to understand the importance of Interfacing
Ability to explain the architecture of Microprocessor and Microcontroller.
Ability to write the assembly language programme.
Ability to develop the Microprocessor and Microcontroller based applications

17153C53 POWER ELECTRONICS

Ability to analyse AC-AC and DC-DC and DC-AC converters.
Ability to choose the converters for real time applications.

17153C55 DIGITAL SIGNAL PROCESSING

Ability to understand the importance of Fourier transform, digital filters and DS Processors.
Ability to acquire knowledge on Signals and systems & their mathematical representation.
Ability to understand and analyze the discrete time systems.
Ability to analyze the transformation techniques & their computation.
Ability to understand the types of filters and their design for digital implementation.
Ability to acquire knowledge on programmability digital signal processor & quantization effects.

17153C56 OBJECT ORIENTED PROGRAMMING

Develop Java programs using OOP principles
Develop Java programs with the concepts inheritance and interfaces
Build Java applications using exceptions and I/O streams
Develop Java applications with threads and generics classes Develop interactive Java programs using swings

17153L57 CONTROL AND INSTRUMENTATION LABORATORY

Ability to understand control theory and apply them to electrical engineering problems. Ability to analyze the various types of converters.
Ability to design compensators
Ability to understand the basic concepts of bridge networks.
Ability to the basics of signal conditioning circuits.
Ability to study the simulation packages.

17153L58 OBJECT ORIENTED PROGRAMMING LABORATORY

- Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
- Develop and implement Java programs with arraylist, exception handling and multithreading .
- Design applications using file processing, generic programming and event handling.

17153L59 PROFESSIONAL COMMUNICATION

Make effective presentations

- Participate confidently in Group Discussions.
- Attend job interviews and be successful in them.
- Develop adequate Soft Skills required for the workplace

17153C61 SOLID STATE DRIVES

- Ability to understand and suggest a converter for solid state drive.
- Ability to select suitability drive for the given application.
- Ability to study about the steady state operation and transient dynamics of a motor load system.
- Ability to analyze the operation of the converter/chopper fed dc drive.
- Ability to analyze the operation and performance of AC motor drives.
- Ability to analyze and design the current and speed controllers for a closed loop solid state DC motor drive.

17153C62 PROTECTION AND SWITCHGEAR

- Ability to understand and analyze Electromagnetic and Static Relays.
- Ability to suggest suitability circuit breaker.
- Ability to find the causes of abnormal operating conditions of the apparatus and system.
- Ability to analyze the characteristics and functions of relays and protection schemes.
- Ability to study about the apparatus protection, static and numerical relays.
- Ability to acquire knowledge on functioning of circuit breaker.

17153C63 EMBEDDED SYSTEMS

- Ability to understand and analyze Embedded systems.
- Ability to suggest an embedded system for a given application.
- Ability to operate various Embedded Development Strategies
- Ability to study about the bus Communication in processors.

17153E64C DESIGN OF ELECTRICAL APPARATUS

Ability to understand basics of design considerations for rotating and static electrical machines
Ability to design of field system for its application.
Ability to design sing and three phase transformer.
Ability to design armature and field of DC machines.
Ability to design stator and rotor of induction motor.

17153E65B SPECIAL ELECTRICAL MACHINES

Ability to analyze and design controllers for special Electrical Machines.

- Ability to acquire the knowledge on construction and operation of stepper motor.
- Ability to acquire the knowledge on construction and operation of stepper switched reluctance motors.
- Ability to construction, principle of operation, switched reluctance motors.
- Ability to acquire the knowledge on construction and operation of permanent magnet brushless D.C. motors.
- Ability to acquire the knowledge on construction and operation of permanent magnet synchronous motors.
- Ability to select a special Machine for a particular application.

Ability to acquire knowledge on various processor scheduling algorithms. Ability to understand basics of Real time operating system

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17153L66 POWER ELECTRONICS AND DRIVES LABORATORY

- Ability to practice and understand converter and inverter circuits and apply software for engineering problems.
- Ability to experiment about switching characteristics various switches.
- Ability to analyze about AC to DC converter circuits.
- Ability to analyze about DC to AC circuits.
- Ability to acquire knowledge on AC to AC converters
- Ability to acquire knowledge on simulation software.

17153L67 MICROPROCESSORS AND MICROCONTROLLERS LABORATORY

Ability to understand and apply computing platform and software for engineering problems.

- Ability to programming logics for code conversion. Ability to acquire knowledge on A/D and D/A. Ability to understand basics of serial communication.
- Ability to understand and impart knowledge in DC and AC motor interfacing.
- Ability to understand basics of software simulators.

17153MP68 MINI PROJECT

On Completion of the mini project work students will be in a position to take up their final year project work and find solution by formulating proper methodology.

17153C71 HIGH VOLTAGE ENGINEERING

- Ability to understand Transients in power system.
- Ability to understand Generation and measurement of high voltage.
- Ability to understand High voltage testing.
- Ability to understand various types of over voltages in power system. Ability to measure over voltages.
- Ability to test power apparatus and insulation coordination

17153C72 POWER SYSTEM OPERATION AND CONTROL

- Ability to understand the day-to-day operation of electric power system.
- Ability to analyze the control actions to be implemented on the system to meet the minute- to-minute variation of system demand.
- Ability to understand the significance of power system operation and control. Ability to acquire knowledge on real power-frequency interaction.
- Ability to understand the reactive power-voltage interaction. Ability to design SCADA and its application for real time operation

17153C73 RENEWABLE ENERGY SYSTEMS

Ability to create awareness about renewable Energy Sources and technologies.
Ability to get adequate inputs on a variety of issues in harnessing renewable Energy.
Ability to recognize current and possible future role of renewable energy sources.

17153L77 POWER SYSTEM SIMULATION LABORATORY

Ability to understand power system planning and operational studies.

Ability to acquire knowledge on Formation of Bus Admittance and Impedance Matrices and Solution of Networks.

Ability to analyze the power flow using GS and NR method

Ability to find Symmetric and Unsymmetrical fault Ability to understand the economic dispatch. Ability to analyze the electromagnetic transients.

17153L78 RENEWABLE ENERGY SYSTEMS LABORATORY

Ability to understand and analyze Renewable energy systems.

17153E81E ELECTRIC ENERGY GENERATION, UTILIZATION CONSERVATION

T o understand the main aspects of generation, utilization and conservation.

- To identify an appropriate method of heating for any particular industrial application.
- To evaluate domestic wiring connection and debug any faults occurred.
- To construct an electric connection for any domestic appliance like refrigerator as well as to design a battery charging circuit for a specific household application.

17153E81G PRINCIPLES OF MANAGEMENT

Upon completion of the course, students will be ability to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

17153P83PW PROJECT WORK

On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

PONNAIAH RAMAJAYAM INSTITUTE OF SCIENCE AND TECHNOLOGY (PRIST)

(Institution Deemed to be University U/S 3 of UGC Act 1956)

MBA PROGRAM OUTCOMES

CURRICULUM (2017 ONWARDS)

- The program provides recent graduates with the opportunity to acquire contemporary business knowledge and skills that enable them to take up management positioning with private, public and nonprofit organizations.
- Toe program facilitates the graduates to acquire the capabilities required to become a leader who is transformational, global and socially responsible.
- The program enables the graduates to become lifelong learners skills and competencies necessary to adopt and manage global business challenges.
- To program promises entrepreneurial ability than to seek employment
- The program gives flexibility to the students to be equipped with cross functional management skills and expand his professional wings
- Graduates are able to use business design thinking to provide innovative solutions to contemporary business problems
- The program provides avenues to the graduates to acquire research attitude and pragmatic approach to analyze business situation

PROGRAM SPECIFIC OUTCOMES

- To enable the students to apply the knowledge of Accounting standards, financial analytical tools, costing techniques etc.
- Analyzing the financial performance of an organization applying various tools that aid in decision making.
- The students will be able to identify the relevance of Financing, Investing & Dividend decisions that impact the growth of the firm
- The students are enabled to enhance their knowledge on various financial markets and services provided by the different Financial Institutions
- The students are able to accumulate knowledge of the various services offered by the Banking

- The students will be able to identify the importance of various Insurance products.
- To analyze and understand the financial perspective of risk management in a broader context
- To identify the various avenues of Investment in the per view of risk and return.

PONNAIAH RAMAJAYAM INSTITUTE OF SCIENCE AND TECHNOLOGY (PRIST)

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COURSE OUTCOMES (MBA)

Course code	Course Name	Course Outcomes
17260SEC11	Management Concepts	Gives exposure to the practice of management in contemporary organizations from a conceptual, analytical perspective. Create ability to analyze and understand management as well as exploring and developing their own personal philosophy of management.
17260SEC12	Organizational Behaviour	Students will have a better understanding of human behavior in organization. They will know the framework for managing individual and group performance
17260SEC21	Financial Management	Learners can recall and understand Indian financial systems. Evaluate the investments projects and companies. Prepare capital budget and appropriations. Decide upon the capital structure and working capital budgeting decisions. Take decision on higher dividend payout or lower dividend payout.
17260SEC22	Human Resource Management	Understanding of importance of Human Resource Management Understanding of concepts and practices of Human Resource Management Designing strategies in Human Resource Management Ability to take up activities in Human Resource Management. Basic knowledge about prevailing legislations related to
17260SEC23	Marketing Management	knowledge of analytical skills in solving marketing related problems, awareness of marketing management process Explain Wholesaling, Retailing, Franchising, Direct marketing , e- Commerce Marketing Practices
17260SEC26	Strategic Management	Create knowledge and understanding of management policies and strategies within a changing context to meet stakeholder interests information systems to learn from failure key tools and techniques for the analysis and design of information systems, including their human and organizational as well as technical aspects
17260SEC41	Entrepreneurial Development	Students will gain knowledge and skills needed to run a business. Gives required competencies to run the successful enterprise. Prepared to become an entrepreneur

PONNAIAH RAMAJAYAM INSTITUTE OF SCIENCE AND TECHNOLOGY (PRIST)

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BBA PROGRAM OUTCOMES

CURRICULUM (2017 ONWARDS)

- To understand of broad business concepts and principles.
- To identify and define problems and opportunities.
- Demonstrate use of appropriate techniques to effectively manage business challenges.
- Capable of recognizing and resolving ethical issues.
- Effectively communicate business issues, management concepts, plans and decisions both in oral and written form using appropriate supportive technologies.
- Develop various real time applications using latest technologies and programming languages.
- Possess strong foundation for their higher studies.
- Blend analytical, logical and managerial skills with the technical aspects to resolve real world issues.
- Become employable in various IT companies and government jobs.

BBA PROGRAM SPECIFIC OUTCOMES

CURRICULUM (2017 ONWARDS)

- The ability to understand, analyze and apply management concepts in the areas related to marketing, human resources and finance for efficient running of the business organisation of varying complexity in competitive era.
- Students will develop as effective management professionals and take on more responsibilities in future and to give outstanding results in the area of their interest

PONNAIAH RAMAJAYAM INSTITUTE OF SCIENCE AND TECHNOLOGY (PRIST)

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COURSE OUTCOMES (BBA)

Course code	Course Name	Course Outcomes
17160SEC13	Principles of Management	To familiarize the students to the basic concepts of management in order to aid in understanding how an organization functions, and in understanding the complexity and wide variety of issues managers face in today's business firms
17160SEC14	Managerial Economics	To educate the students to understand the fundamentals of economics To understand the application of economics in business decisions To familiarize the Students with economic tools for business analysis.
17160AEC15	Business Communication	Understand communication process and barriers to communication. Develop skills for Verbal and Non-verbal communication. Have ability to give Effective Presentations.
17160AEC25	Business Environment	Identify and evaluate the complexities of business environment and their impact on the business. Analyze the relationships between Government and business and understand the political, economic, legal and social policies of the country
17160AEC45	Retail Management	Apply a broad theoretical and technical knowledge of retail management to understand opportunities and challenges for creating excellent retailing experience. Critically analyze and summarize market information to assess the retailing environment and formulate effective retail strategies
17160SEC51	Financial Management	Maximization of value of the firm. Determination of patterns of determining capital structure
17160SEC52	Services Marketing	Understand the fundamental concepts of service marketing and its functions. Identify the role and significance of various elements of service marketing mix.
17160SEC62	Entrepreneurial Development	Become aware of entrepreneurship opportunities available in the society for the entrepreneur. Acquaint them with the challenges faced by the entrepreneur. Develop the motivation to enhance entrepreneurial competency.
17160SEC63	Logistics and Supply Chain Management	Understand ever growing importance of Production and Operations management in uncertain business environment. Gain an in-depth understanding resource utilization of an organization.

PRIST
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UNIVERSITY
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THANJAVUR – 613 403 - TAMIL NADU

SCHOOL OF COMMERCE AND MANAGEMENT

DEPARTMENT OF COMMERCE

B.COM -17UGCOMGE

B.COM PROGRAMME EDUCATIONAL OBJECTIVES – PEO

- PEO1- To be capable of making a positive contribution to the accountancy in public practices, Govt commerce and industry.
- PEO2- To be able to pursue research in their chosen field of marketing, finance and HR.
- PEO3 –To be able to demonstrate team spirits, skills and values continue to learn and adapt to change throughout their professional career .
- PEO4-Possess wide spectrum of managerial skills along with competency building qualities in specific areas of business studies.
- PEO5 -Excel in contemporary knowledge of business and developing inclination towards lifelong learning

B.COM PROGRAMME SPECIFIC OUTCOME-PSO

- PSO1-To build a strong foundation of knowledge in different areas of Commerce.
- PSO2-To develop the skill of applying concepts and techniques used in Commerce.
- PSO3- To develop an attitude for working effectively and efficiently in a business environment.
- PSO4-. To integrate knowledge, skill and attitude that will sustain an environment of learning and creativity among the students.
- PSO5- To expose students about entrepreneurship.
- PSO6-To enable a student to be capable of making decisions at personal and professional level.

B.COM PROGRAMME OUTCOME-PO

- PO1-Be critical of creative scholars.
- PO2-Understanding across a broad range of business and commerce disciplines.
- PO3-Have knowledge of applications commerce concepts principles.
- PO4-Ethical, social and professional understanding.
- PO5-Effective communication.

B.COM COURSES OUTCOME – CO

CO1- Basic Accounting

- Students are now familiarized with the basic accounting principles and practices and the ascertainment of profit and the financial statement of the business.

CO2-Business Environment

- The course helped the students to understand the different types of environments which influence a business.

CO3-Marketing

- The course helped the students to know the principles and Practices of Marketing Mix and Marketing Research.

CO4-Business Economics

- The student learned the basic principles of Economics which help them in making logical business decisions.

CO5- Packages Lab-I

- Understand document creation.(MS-WORD)

CO6-Communicative English Lab-I

- Understand grammar
- Develop listening skill

CO7- Indian Constitution

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

CO8-Business Accounting

- The students gained knowledge on accounting mechanism which is necessary for the preparation of the business accounting.

CO9-Ethics in Business

- The course helped the students to know the importance of ethical principles in day to day business activities.

CO10-Business Statistics

- The course sharpened the analytical skills of the students to the business data effectively.

CO11-Business Organization and Management

- The course guided the students to know the fundamentals and the special characteristics of various business organization and Management.

CO12- Packages Lab-II

- Understand calculation and statement preparation (MS- EXCEL)

CO13- Communicative English Lab-II

- Understand grammar
- Develop reading skills

CO14-Research Led Seminar

- Student-led seminars (SLS) are being used as a teaching-learning method

CO15- Cost Accounting

- The students gained knowledge on cost ascertainment and cost control.

CO16 -Banking Theory Law and Practice

- The course helped the students to understand the basic important functions and principles and practices of Banking Theory Law in day to day business.

CO17-Business Law for Managers

- The course helped in gaining knowledge of basis laws and rules governing the business.

CO18-Essentials of Business Communication

- The course helped the students in developing and improving their communicative Skills to sustain in the competitive Business World.

CO19-Research Methodology

- Ability to carry out independent literature survey corresponding to the specific publication type and assess basic computational frameworks used in mathematical researches.

CO20- Packages Lab-III

- Understand power point presentation (Slide Presentation)

CO21- Communicative English Lab-III

- Understand grammar
- Develop speaking and writing skills

CO22-Corporate Accounting

- The course helped the students to familiarize with the basis accounting practices of corporate businesses.

CO23-Advertising and sales promotion

- The course helped the students to understand the importance of Advertising and Salesmanship in a highly competitive business world.

CO24-Company Law and Secretarial practice

- To course helped the students to learn the different terminologies in company law and secretarial practice.

CO25-Office management

- The course helped the students to know the importance of Office Management in the present competitive world.

C026- Packages Lab-IV

- Understand database creation.(MS-ACCESS)

CO27- Communicative English Lab-IV

- Understand grammar
- Develop language and presentation skills

CO28- Environmental studies

- Students will be aware of and able to analyze the potential of literature and fine arts to communicate assumptions of value about human relations with the biosphere.

CO29-Advanced Corporate Accounting

- The course helped the students to gain expert knowledge on advanced corporate accounting.

CO30-Financial Management

- The students gained rich knowledge on financial decisions making and compositions of different securities in the total capital structure.

CO31-Financial Services

- This course helped the students to compare and analyze the performance of various financial services available in the financial marketing

CO32-Computer Application in Business

- The course helped the students to gain knowledge on Computer Application for various business activities.

CO33-Income Tax Law and Practice (or) Co-operation Theory

- understand the basic elements of Income Tax theory, Law and Practice.

(OR)

- Understand the basic principles of co-operation and their applications to the various co-operative organization.

C034- Packages Lab-V

- Understand Animation

CO35- Communicative English Lab-V

- Develop communicative skills
- To get a job

CO36-Participation in Bounded Research

- Understanding a bounded phenomenon are drawn and when a range of behaviors/profiles, experiences

CO37-Management Accounting

- The course helped the students to learn the analyzes and interpretation of financial statements and applications of Marginal costing and Standard costing techniques.

CO38-Entrepreneurship and Small Business Management

- The course helped the students to learn the role of entrepreneurs and small businesses in the economic development of the country.

CO39-Auditing

- The course helped the students to learn the principles and practices of auditing of various business organizations.

CO40-Principles of Insurance (or) Cooperative Law and practice

- The students gained knowledge in insurance principles and practices on life and general insurance.

(OR)

- understand all the important legal aspects of co-operative management from the incorporation stage to the winding up stage.

CO41- Project Work

- Students will acquire the ability to make links across different areas of knowledge and to generate, develop and evaluate ideas and information so as to apply these skills to the project task.

CO42-Packages Lab-VI

- Create a simple animations techniques movie clip and graphic symbols.

CO43- Communicative English Lab-VI

- Develop communicative skills
- To be a good team worker

B.COM – CURRICULUM MAPPING

Programme Educational Objectives VS Programme Outcome

Programme Outcome-PO Programme Educational Outcome-PEO	PO1	PO2	PO3	PO4	P05
PEO1	*				
PEO2		*			
PEO3			*		
PEO4				*	
PEO5					*

PRIST
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THANJAVUR – 613 403 - TAMIL NADU

SCHOOL OF COMMERCE AND MANAGEMENT

DEPARTMENT OF COMMERCE

M.COM -17PGCOMGE

M.COM PROGRAMME EDUCATIONAL OBJECTIVES – PEO

- PEO1-To Make plan for the promotion and development of Industry
- PEO2-To produce professional Mangers, Accountants and innovative Businessman
- PEO3-To act as good manager and have a creative and helpful in problem solving.
- PEO4-To develop new ideas and applications to latest information technology and in the business and are able to implement these ideas in practice.

M.COM PROGRAMME SPECIFIC OUTCOME-PSO

- PSO1-To inculcate the knowledge of business and the techniques of managing the business with special focus on marketing, Insurance and banking theory law and practices.
- PSO2-To impart the knowledge basic accounting principles and the latest¬ application oriented corporate accounting methods.
- PSO3-To develop the decision making skill through costing methods and practical¬ application of management accounting principles.
- PSO4-To enhance the horizon of knowledge in various field of commerce through¬ advertising and sales promotion, auditing and entrepreneurial development.
- PSO5-To enhance the computer literacy and its applicability in business through¬ latest version on tally and e-commerce principles.

- PSO6-To create awareness in application oriented research through research for¬ business decisions.

M.COM PROGRAMME OUTCOME-PO

- PO1-To acquaint a student with conventional as well as contemporary areas in the discipline of Commerce.
- PO2- To enable a student well versed in national as well as international trends.
- PO3-To enable the students for conducting business, accounting and auditing practices, role of regulatory bodies in corporate and financial sectors nature of various financial instruments.
- PO4-To provide in-depth understanding of all core areas specifically Advanced Accounting, International Accounting, Management, Security Market Operations and Business Environment, Research Methodology and Tax planning.

M.COM COURSES OUTCOME – CO

CO1- Marketing Research and Consumer Behaviour

- The course helped the students to understand Marketing Research and Consumer Behaviour**.**

CO2-Human Resource Management

- The students provided basic knowledge of human resource management and its importance in the working of Organization.

CO3-Services Marketing

- The course helped the students to identify the different types of services and their marketability.

CO4-Advanced Cost Management

- The course helped the students to gain expert knowledge in Cost Management.

CO5- Strategic Management (OR) Organizational Behaviour

- The course helped the students to gain knowledge in corporate strategy formulation and SWOT analysis.

(OR)

- The course helped the students to learn about the Organizational Behaviour in depth.

CO6-Research Led Seminar

- Student-led seminars (SLS) are being used as a teaching-learning method

CO7-Quantitative techniques for Business Decision Making

- The course helped the students to understand important quantitative techniques and their applications in solving business problems.

CO8-Entrepreneurship Development in India

- The course helped the students to identify the current trends in Entrepreneurial Development and the innovation of new products and services through different project appraisal.

CO9-Advanced Management Accounting

- The courses guided the students in taking vital managerial decisions by using the available tools to the maximum efficiency of the business.

C010- Corporate Legal Frame Work (OR) Industrial Relations and Labour law

- The students are now familiarized with the principles of legal and regulatory frame work of corporate business.

(OR)

- The course helped the students to understand the provisions of labour and Industrial Related laws.

CO11-Research Methodology

- Ability to develop research questions and the various research strategies, and compile research results in terms of journal manuscripts.

CO12-Participation in Bounded Research

- Participatory research comprises a range of methodological approaches and techniques, all with the objective of handing power from the researcher to research participants, who are often community members or community-based organizations.

CO13-Project Planning and Control

- The course helped the students to learn the issues relating to project management and control.

CO14-Advanced Corporate Accounting

- The course helped the students to gain expert knowledge in Advanced Corporate Accounting.

CO15-Investment Management

- Students are now aware of the scope of Investment Management and the role of SEBI in regulating securities market.

CO16- Indian Financial System (OR) International Marketing

- The Course helped the students to understand the overall functioning of Indian financial system.

(OR)

- The course helped the students to learn the importance of International Marketing and the role of exporting assisting Institutions.

CO17- Design Project/ Socio Technical Project

(Scaffold Research)

- **Practice research skills, including evaluation of sources, paraphrasing and summarizing relevant information, and citation of sources used**

CO18-Income Tax Law and Tax Planning

- The course helped the students to know how to compute Income of an individual under various heads and to reduce the tax burden through ideal tax planning schemes.

CO19-International Business

- The course helped the students to learn the importance of Global Business and the functioning of Multinational Corporation.

CO20-Cooperation in India and Abroad

- The course helped the students to learn the basic principles of co-operation and their applications in India and Abroad.

CO21-Information Technology and Computer Applications (OR) International Financial Management

- The course helped the students to understand the broad nature of application of Information Technology.

(OR)

- The course helped the students to learn the finance function in the international context.

CO22**-** Project Work

- The Master of commerce is comprised of exact coursework followed by a full year of research. Courses often include advanced level group projects and/or individual research project.

M.COM – CURRICULUM MAPPING

Programme Educational Objectives VS Programme Outcome

Programme Outcome-PO Programme Educational Outcome-PEO	PO1	PO2	PO3	PO4
PEO1	*			
PEO2		*		
PEO3			*	
PEO4				*

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SCHOOL OF COMMERCE AND MANAGEMENT

DEPARTMENT OF COMMERCE

B.COM CA -17UGCOMCA

B.COM CA PROGRAMME EDUCATIONAL OBJECTIVES – PEO

PEO1: To provide in depth knowledge in Commerce and Computer Application courses.

PEO2: To provide a strong foundation for higher education.

PEO3: To train the students in the application of computers in various business operations.

PEO4: To nurture the students with the intellectual, personal and societal skills for an holistic education.

PEO5: To inculcate initiative in students for better industry acceptance with necessary skills.

B.COM CA PROGRAMME SPECIFIC OUTCOME-PSO

PSO1: Graduates will gain a strong foundation of knowledge in different areas of Commerce and Computer Application courses.

PSO2: Graduates will be able to do pursue higher education and take-up jobs in the field of Commerce and Computer Applications.

PSO3: To develop an attitude for working effectively and efficiently in a business environment

B.COM CA PROGRAMME OUTCOME-PO

PO1: Graduates will be able to develop strong understanding of core Commerce and Computer Application courses.

PO2: Able to take up challenging career options in Commerce and IT sector.

PO3: Motivated to pursue higher education.

PO4: Gain updated knowledge to take up employment.

PO5: Become ethically and socially responsible commerce graduates with computer application knowledge.

B.COM CA COURSE OUTCOME –CO

CO1- Financial accounting

- The course helped the students the principles and objectives of basic Financial accounting.

CO2- Business Management

- This course should be helped the students taking better decision making process.

CO3-Information Technology

- This course will be guided to the student business technologies around the world

CO4- Operating System

- Students will be able to: Analyze the structure of OS and basic architectural components involved in OS design

CO5- Advertising and salesmanship

- The course helped the students to understand the importance of Advertising and Salesmanship in a highly competitive business world.

CO6- Business Law

- Students will demonstrate competent knowledge and understanding of substantive and, to the extent applicable, procedural law related to corporations

CO7- Programming in C

- After the completion of this course, the students will be able to develop applications.

CO8-Programming in C lab

- Understanding a functional hierarchical code organization. Ability to define and manage data structures based on problem subject domain.

CO9- Research Led Seminar

- Students will be able to new technologies and research skill development.

CO10-Cost Accounting

- The students gained knowledge on cost ascertainment and cost control.

CO 11- Banking Theory Law and Practice

- The course helped the students to understand the basic important functions and principles and practices of Banking Theory Law in day to day business.

CO12-Programming in C++

- Apply C++ features to program design and implementation.

CO1 3- Programming in C++ Lab

- The course is to build students' conceptual and practical skills in building software projects in the C++ programming language to reasonably advanced level.

CO14-Research methodology

- Ability to carry out independent literature survey corresponding to the specific publication type and assess basic computational frameworks used in mathematical researches.

CO15-Auditing

- This course helped the students that who to calculated financial activities

CO16-Business Statistics

- The ability to apply fundamental concepts in exploratory data analysis. Distinguish between different types of data

CO17- Visual Basic Programming

- This course will be helped the students understanding on database operations

CO18- Visual Basic Programming in Lab

- Visual Basic provides a huge number of graphics tools that students can be used to solve all sorts of problems.

CO 19-Business Economics

- Students learned through this course about economics structure, police and application

CO20-Financial management

- This course guided the students various relationship among the financial movements

CO21-Software Engineering

- The student would understand the problem; plans; top-down design / stepwise refinement; recognition of similarities between problems leading to adaptation and reuse.

CO22-Mnagement Information System

- Describe managing the digital firm evaluate the role of information system in todays competitive business environment.

CO23- Investment Management

- Understand the leadership role of management information systems in achieving business competitive advantage through informed decision making.

CO24-Management Accounting

- The course helped the students to learn the analyzes and interpretation of financial statements and applications of Marginal costing and Standard costing techniques

CO25- Income Tax Law and Practice

- This study material has been published to aid the students in preparing for the tax laws and practice paper of the CS Executive programme.

CO26-Database Management System

- Understand database concept and structures and query language.

CO27-E- Commerce

- Understand and be able to use Assembly Language.
- Understand number systems and the ASCII character set as to how they relate to developing and writing Assembly Language programs.
- Understand the basic architectural structure, and the various hardware components including Input/output, Memory, and Control Systems.
- Understand the purpose of each of the architecture registers..
- Recognize the relationship of high-level programming language constructs to the equivalent Assembly Language instructions.

CO28-Web Designing

- Acquire knowledge about functionalities of world wide web

Explore markup languages features and create interactive web pages using them
Learn and design Client side validation using scripting languages
Acquire knowledge about Open source JavaScript libraries
Able to design front end web page and connect to the back end databases.

B.COM CA – CURRICULUM MAPPING
Programme Educational Objectives VS Programme Outcome

Programme Outcome-PO Programme Educational Outcome-PEO	PO1	PO2	PO3	PO4	P05
PEO1	*				
PEO2		*			
PEO3			*		
PEO4				*	
PEO5					*

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