REGULATION
2020

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

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REGULATION – 2020

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1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global development needs which is reflected in programme outcomes (POs) and course outcomes (Cos) of the programme by the university 20MPHILEDUGE

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATION

2020 REGULATION

Local need	
Regional need	
National need	
Global need	

SCHOOL OF EDUCATION
2020 REGULATION M.Phil.,
1.1.1 CO-PO-PSO Mapping of Curriculum

Sem	Course code	Course title	CO's	PO's						
				PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	**203RMG11**	**Research Methodology**	Familiarized with various types of research.		*			*		*
			Awareness developed in the research process.	*			*			
			Acquired skills to construct suitable tests and tools.	*	*				*	
			The context of elementary education knowledge acquired.	*	*				*	
	203EDC12	**Advanced Educational Philosophy and Psychology**	They understood the various schools of psychology.		*		*			*
			Adolescent's growth, development and their problems have been realized.	*	*			*		
			Various theories of motivation have been understood	*			*			*

	203E D13	**Curriculum Design and Development**	The contribution of psychologists to the field of curriculum achieved.	*	*			*		
			Made acquaintance to the students for the need and urgency to change the curriculum.		*		*		*	
			Implementation and evaluation of curriculum achieved.		*		*		*	
				*		*			*	*
	203R PE14	**Research and Publications Ethics**	The context of elementary education knowledge acquired.	*		*		*	*	
			The objectives, rationale, challenges and extent of success of Universal Elementary Education (UEE) realized.	*		*		*		*
			Knowledge acquired about elementary education in India since independence	*			*		*	

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20147S11	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.
20148S12	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.
20149S13	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.
20149S14	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
20150S16	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.

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20154S15	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.
20150L20	PROBLEM SOLVING ANDPYTHON PROGRAMMING LAB	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.
20149L18	PHYSICS AND CHEMISTRY LAB	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.
201VEA19	VALUE EDUCATION	To learn about philosophy of Life and Individual qualities To learn and practice social values and responsibilities To learn and practice mind culture, forces acting on the body To learn more of Responsibilities and Rights as Professional and facing Global Challenges Emerge as responsible citizen with clear conviction to be a role-model in the society.
20147S21	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.
20148S22A	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.
20149S23B	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.
20152S25B	CIRCUIT ANALYSIS	Develop the capacity to analyze electrical circuits, apply the circuit theorems in real time Design and understand and evaluate the AC and DC circuits.
20153S24B	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 calculate dynamic forces exerted in rigid body determine the friction and the effects by the laws of friction
20152S26B	ELECTRONIC DEVICES	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
20154L27	ENGINEERING PRACTICES LAB	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
20152L28B	CIRCUITS AND DEVICES LAB	Analyze the characteristics of basic electronic devices Design RL and RC circuits Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems
201ICA29	FUNDAMENTALS OF INDIAN CONSTITUTION AND ECONOMY	Understand the emergence and evolution of Indian Constitution. Understand the structure and composition of Indian Constitution Understand and analyse federalism in the Indian context. Understand and analyse the three organs of the state in the contemporary scenario. Understand and Evaluate the Indian Political scenario amidst the emerging challenges.
20148S31B	LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS	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.
20152C32	CONTROL SYSTEMS ENGINEERING	Identify the various control system components and their representations. Analyze the various time domain parameters. Analysis the various frequency response plots and its system.

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		Apply the concepts of various system stability criterions. Design various transfer functions of digital control system using state variable models.
20152C33	FUNDAMENTALS OF DATA STRUCTURES IN C	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.
20152C34	DIGITAL ELECTRONICS	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
20152C35	SIGNALS AND SYSTEMS	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
20152C36	ELECTRONIC CIRCUITS I	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
20152L37	FUNDAMENTALS OF DATA STRUCTURES IN C LAB	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.
20152L38	ANALOG AND DIGITAL CIRCUITS LAB	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.
20152L39	INTERPERSONAL SKILLS / LISTENING & SPEAKING	Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills Make effective presentations.
	PROBABILITY AND RANDOM PROCESSES	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

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		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.
20152C42	ELECTRONIC CIRCUITS II	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
20152C43	COMMUNICATION THEORY	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
20152C44	ELECTROMAGNETIC FIELDS	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
20152C45	LINEAR INTEGRATED CIRCUITS	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
20149S46	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 standard of living has lead to serious environmental disasters
20152L47	CIRCUITS DESIGN AND SIMULATION LAB	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.

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20152L48	LINEAR INTEGRATED CIRCUITS LAB	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.

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20152CRS	RESEARCH LED SEMINAR	Exposure to various research domains Acquaintance with languages of research Development for research aptitude
20152C51	DIGITAL COMMUNICATION	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
20152C52	DISCRETE-TIME SIGNAL PROCESSING	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
20152C53	COMPUTER ARCHITECTURE AND ORGANIZATION	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
20152C55	COMMUNICATION NETWORKS	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
20152L57	DISCRETE TIME SIGNAL PROCESSING LAB	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.
20152L58	COMMUNICATION SYSTEMS LAB	Communicate between two desktop computers Implement the different protocols Program using sockets. Implement and compare the various routing algorithms Use the simulation tool.
20152CRM	RESEARCH METHODOLOGY	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
20152C61	MICROPROCESSORS AND MICROCONTROLLERS	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.
20152C62	VLSI DESIGN	Realize the concepts of digital building blocks using MOS

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		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.
20152C63	WIRELESS COMMUNICATION	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
20152S64	PRINCIPLES OF MANAGEMENT	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
20152C65	TRANSMISSION LINES AND RF SYSTEMS	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
LAB 20152L61	MICROPROCESSORS AND MICROCONTROLLERS LAB	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
LAB 20152L62	VLSI DESIGN LAB	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
20152L63	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
20152L64	TECHNICAL SEMINAR	To study research papers for understanding of a new field, in the absence of a textbook, tosummarise and review them To identify promising new directions of various cutting edge technologies To impart skills in preparing detailed report describing the project and results To effectively communicate by making an oral presentation before an evaluation committee
20152CBR	PARTICIPATION IN BOUNDED RESEARCH	Hands on exposure to problem solving tools in contemporary research Evolve research intuitiveness and orientation Familiarize with cutting edge research trends
20152C71	ANTENNAS AND	Apply the basic principles and evaluate antenna parameters and

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	MICROWAVE ENGINEERING	link power budgets Design and assess the performance of various antennas Design a microwave system given the application specifications
20152C72	OPTICAL COMMUNICATION	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.
20152C73	EMBEDDED AND REAL TIME SYSTEMS	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
20152C75	AD HOC AND WIRELESS SENSOR NETWORKS	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
20152L77	EMBEDDED LAB	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
20152L78	ADVANCED COMMUNICATION LAB	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
20152CSR	DESIGN/SOCIO TECHNICAL PROJECT	Sensitiveto social needs for innovation Develop teams and work towards interdisciplinary synchronous research strategy Develop critical thinking and synergistic research approach.
20152P83	PROJECT WORK	apply fundamental and disciplinary concepts and methods in ways appropriate to their principal area of study. demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study. use effectively oral, written and visual communication. identify, analyze, and solve problems creatively through sustained critical investigation. integrate information from multiple sources. demonstrate an awareness and application of appropriate personal, societal, and professional ethical standards.

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		practice the skills, diligence, and commitment to excellence needed to engage in lifelong learning.
20152COMS	COMPS	The students will be confident in discussing the fundamental aspects of any engineering problem/situation and give answers in dealing with them.
20152E56A	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
20152E56B	MEDICAL ELECTRONICS	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
20152E56C	OPERATING SYSTEMS	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 and compare iOS and Android Operating Systems.
20152E56D	ROBOTICS AND AUTOMATION	Explain the concepts of industrial robots in terms of classification, specifications and coordinate systems, along with the need and application of robots & automation Examine different sensors and actuators for applications like maze solving and self driving cars. Design a 2R robot & an end-effector and solve the kinematics and dynamics of motion for robots. Explain navigation and path planning techniques along with the control architectures adopted for robot motion planning. Describe the impact and progress in AI and other research trends in the field of robotics
20152E56E	NANOTECHNOLOGY AND APPLICATIONS	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.
20152E56F	HUMAN RIGHTS	Engineering students will acquire the basic knowledge of human rights
20152E56G	TOTAL QUALITY MANAGEMENT	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes
20152E66A	CRYPTOGRAPHY AND NETWORK SECURITY	Upon completion of this course, the students can able to use the optimization techniques for use engineering and Business problems
20152E66B	ADVANCED DIGITAL	Articulate and apply the concepts of special random processes in

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	SIGNAL PROCESSINGS	practical applications Choose appropriate spectrum estimation techniques for a given random process Apply optimum filters appropriately for a given communication application Apply appropriate adaptive algorithm for processing non-stationary signals Apply and analyse wavelet transforms for signal and image processing based applications
20152E66C	MEMS AND NEMS	Interpret the basics of micro/nano electromechanical systems including their applications and advantages Recognize the use of materials in micro fabrication and describe the fabrication processes including surface micromachining, bulk micromachining and LIGA. Analyze the key performance aspects of electromechanical transducers including sensors and actuators Comprehend the theoretical foundations of quantum mechanics and Nano systems
20152E66D	MULTIMEDIA COMPRESSION AND COMMUNICATION	Design audio compression techniques Configure Text, image and video compression techniques Select suitable service model for specific application Configure multimedia communication network
20152E66E	CMOS ANALOG IC DESIGN	Realize the concepts of Analog MOS devices and current mirror circuits. Design different configuration of Amplifiers and feedback circuits. Analyze the characteristics of frequency response of the amplifier and its noise. Analyze the performance of the stability and frequency compensation techniques of Op-Amp Circuits. Construct switched capacitor circuits and PLLs
20152E66F	WIRELESS NETWORKS	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
20152E66G	INTELLECTUAL PROPERTY RIGHTS	Ability to manage Intellectual Property portfolio to enhance the value of the firm.
20152E76A	ADVANCED WIRELESS COMMUNICATION	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
20152E76B	COGNITIVE RADIO	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
20152E76C	FOUNDATION SKILLS	Define, formulate and analyze a problem

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	IN INTEGRATED PRODUCT EVELOPMENT	Solve specific problems independently or as part of a team Gain knowledge of the Innovation & Product Development process in the Business Context Work independently as well as in teams Manage a project from start to finish
20152E76D	MACHINE LEARNING TECHNIQUES	Differentiate between supervised, unsupervised, semi-supervised machine learning approaches Apply specific supervised or unsupervised machine learning algorithm for a particular problem Analyse and suggest the appropriate machine learning approach for the various types of problem Design and make modifications to existing machine learning algorithms to suit an individual application Provide useful case studies on the advanced machine learning algorithms .
20152E76E	ELECTRONIC PACKAGING AND TESTING	Give a comprehensive introduction to the various packaging types used along with the associated thermal, speed, signal and integrity power issues Enable design of packages which can withstand higher temperature, vibrations and shock Design of PCBs which minimize the EMI and operate at higher frequency Analyze the concepts of Testing and testing methods
20152E76F	MIXED SIGNAL IC DESIGN	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.
20152E76G	DISASTER MANAGEMENT	Differentiate the types of disasters, causes and their impact on environment and society Assess vulnerability and various methods of risk reduction measures as well as mitigation. Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.
20152E81A	Electromagnetic Interference and Compatibility	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
20152E81B	LOW POWER SoC DESIGN	Analyze and design low-power VLSI circuits using different circuit technologies for system on chip design
20152E81C	PHOTONIC NETWORKS	Use the backbone infrastructure for our present and future communication needs Analyze the architectures and the protocol stack Compare the differences in the design of data plane, control plane, routing, switching, resource allocation methods, network management and protection methods in vogue
20152E81D	COMPRESSIVE SENSING	Appreciate the motivation and the necessity for compressed sensing technology. Design a new algorithm or modify an existing algorithm for different application areas in wireless sensor network.
20152E81E	DIGITAL IMAGE PROCESSING	To possess knowledge on nanotechnology based applications in each industry To provide details of contemporary industrial applications of nanotechnology To provide an overview of future technological advancements and increasing role of nanotechnology in each industry

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		Ability to select control equipments. Ability to ensure quality, control and preventive measures.
20152E81F	PROFESSIONAL ETHICS IN ENGINEERING	to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.
20152E82A	VIDEO ANALYTICS	Design video analytic algorithms for security applications Design video analytic algorithms for business intelligence Design custom made video analytics system for the given target application
20152E82B	DSP PROCESSOR ARCHITECTURE AND PROGRAMMING	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
20152E82C	SATELLITE COMMUNICATION	Analyze the satellite orbits Analyze the earth segment and space segment Analyze the satellite Link design Design various satellite applications
20152E82D	SOFT COMPUTING	Apply suitable soft computing techniques for various applications. Integrate various soft computing techniques for complex problems.
20152E82E	PRINCIPLES OF SPEECH PROCESSING	Design speech compression techniques Configure speech recognition techniques Design speaker recognition systems Design text to speech synthesis systems
20152E82F	FUNDAMENTALS OF NANOSCIENCE	Will familiarize about the science of nanomaterials Will demonstrate the preparation of nanomaterials Will develop knowledge in characteristic nanomaterial
20150FE54A	DATABASE MANAGEMENT SYSTEMS	Understand relational data model, evolve conceptual model of a given problem, its mapping to relational model and Normalization Query the relational database and write programs with database connectivity Understand the concepts of database security and information retrieval systems
20150FE54B	CLOUD COMPUTING	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. Choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.
20153FE54A	INDUSTRIAL NANOTECHNOLOGY	To possess knowledge on nanotechnology based applications in each industry To provide details of contemporary industrial applications of nanotechnology To provide an overview of future technological advancements and increasing role of nanotechnology in each industry .
20153FE54B	ENERGY CONSERVATION AND MANAGEMENT	Can carryout energy accounting and balancing Can suggest methodologies for energy savings

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20154FE54A	RENEWABLE ENERGY SOURCES	Understanding the physics of solar radiation. Ability to classify the solar energy collectors and methodologies of storing solar energy. Knowledge in applying solar energy in a useful way. Knowledge in wind energy and biomass with its economic aspects. Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.
20154FE54B	AUTOMOTIVE SYSTEMS	Identify the different components in automobile engineering. Have clear understanding on different auxiliary and transmission systems usual.
20155FE54A	AIR POLLUTION AND CONTROL ENGINEERING	An understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management Ability to identify, formulate and solve air and noise pollution problems Ability to design stacks and particulate air pollution control devices to meet applicable standards. Ability to select control equipments. Ability to ensure quality, control and preventive measures.
20155FE54B	GEOGRAPHIC INFORMATION SYSTEM	Have basic idea about the fundamentals of GIS. Understand the types of data models. Get knowledge about data input and topology. Gain knowledge on data quality and standards. Understand data management functions and data output
20150FE74A	INTRODUCTION TO C PROGRAMMING	Develop simple applications using basic constructs Develop applications using arrays and strings Develop applications using functions and structures
20150FE74B	DATA STRUCTURES AND ALGORITHMS	Implement linear data structures and solve problems using them. Implement and apply trees and graphs to solve problems. Implement the various searching and sorting algorithms.
20153FE74A	BASIC CIRCUIT THEORY	Ability to introduce electric circuits and its analysis Ability to impart knowledge on solving circuit equations using network theorems Ability to introduce the phenomenon of resonance in coupled circuits. Ability to introduce Phasor diagrams and analysis of three phase circuits
20153FE74B	INTRODUCTION TO RENEWABLE ENERGY SYSTEMS	Ability to understand and analyze power system operation, stability, control and protection. Ability to handle the engineering aspects of electrical energy generation and utilization. Ability to understand the stand alone and grid connected renewable energy systems. Ability to design of power converters for renewable energy applications. Ability to acquire knowledge on wind electrical generators and solar energy systems. Ability to design power converters used for hybrid renewable energy systems

LOCAL NEEDS REGIONAL NEEDS NATIONAL NEEDS GLOBAL NEEDS

DEPARTMENT OF ELECTRONICS AND COMMUNICATION-Regulation-2020

20154FE74A	INDUSTRIAL SAFETY	identify and prevent chemical, environmental mechanical, fire hazard through analysis and apply proper safety techniques on safety engineering and management

COURSECODE	Course name	Course outcomes
20152E56H	Digital Audio Engineering	• Analyze the type of dither. • Analyze the recording and transmission principles in digital audio. • Analyze the various compression techniques. • Design and analyze the digital audio editing. • Analyze the various applications of digitalaudio.
20152E56I	Logic and Distributed Control Systems	• Ability to understand and analyze Instrumentation systems and their applications to variousindustries. • Ability to understand and analyse, linear and digital electronic circuits.
20152E66H	SCADA System and Applications Management	This course gives knowledge about various system components and communication protocols of SCADA system and its applications
20152E76H	Space Time Wireless Communication	• Design and analyze the channel characterization. • Analyze the capacity of random MIMOchannel.
20154FE74B	TESTING OF MATERIALS	Identify suitable testing technique to inspect industrial component Ability to use the different technique and know its applications andlimitations
20155FE74A	GREEN BUILDING DESIGN	Identify existing energy codes, green building codes and greenrating systems. Identify and compare cost and performance of building materials with recycled components, non-petroleum based materials, materials with low volatile organic compounds, materials with lowembodied energy and salvaged materials and incorporate them intodesign. Identify and use construction materials and methods that moreeasily allow for salvage and re-use of building materials. Understand the techniques and benefits of building performancetesting, monitoring and metering. Identify and make use of techniques for weatherization andsustainable remodeling of existing structures
20155FE74B	WASTE WATER TREATMENT	Will have knowledge about adsorption and oxidation process. Will gain idea about various methods available for water treatment.Will appreciate the necessity of water and acquire knowledge of preliminary treatment.

		• Design and analyze the order diversity and channel variability. • Analyze the multiple antenna coding and receivers. Analyze the MIMO multi user detection
20152E76I	Telecommunication Network Management	• Design and analyze of fault management. • Analyze the common management information protocol specifications. • Design and analyze of management information model. • Design the simple network management protocol. • Design the various types of network management tools.
20152E81G	Telecommunication System Modeling and Simulation	• Apply the constituents of a telecommunication systems. • Analyze various modeling methodologies and simulation techniques. • Estimate the performance measures of telecommunication systems. • Apply system modeling in telecommunication. • Demonstrate light wave communication and satellite communication systems.
20152E81H	Transducer Engineering	• Ability to apply the mathematical knowledge and science & engineering fundamentals gained to solve problems pertaining to measurement applications. • Ability to analyze the problems related to sensors & transducers. • Ability to select the right sensor/transducer for a given application. • Ability to determine the static and dynamic characteristics of transducers using software packages. • Ability to understand fiber optic sensors and applications. • Ability to understand smart transducers and its standard.

LOCAL NEEDS REGIONAL NEEDS NATIONAL NEEDS GLOBAL NEEDS

20152E82G	Environmental and Social Impact Assessment	• carry out scoping and screening of developmental projects for environmental and social assessments. • explain different methodologies for environmental impact prediction and assessment. • plan environmental impact assessments and environmental management plans. • evaluate environmental impact assessment reports.
20152E82H	Telehealth Technology	• Apply multimedia technologies in telemedicine. • Explain Protocols behind encryption techniques for secure transmission of data. • Apply telehealth in healthcare.
20152PEE	Programme Exit Examination	apply fundamental and disciplinary concepts and methods in ways appropriate to their principal area of study. demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study. use effectively oral, written and visual communication. identify, analyze, and solve problems creatively through sustained critical investigation. integrate information from multiple sources. demonstrate an awareness and application of appropriate personal, societal, and professional ethical standards.

School: ENGINEERINGAND TECHNOLOGY

Dept: ECE- BTech (FT)

Mapping of COs and Pos

2020 regulation- UG (FT)

Sem	Course Code	Title of the Course	COs	POS										
				PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12
I	20147S11	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Mapping of COs and Pos

	20148S12	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.	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			• Determine convergence/divergence of improper integrals and evaluate convergent improper integrals. • Apply various techniques in solving differential equations.											
	20149S13	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	✓	✓	✓	✓		✓		✓		✓		

Mapping of COs and Pos

			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.												
	20149S14	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.	✓	✓	✓	✓			✓					✓

Mapping of COs and Pos

	20154S15	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	20150S16	Problem Solving and Basics of Python Programming	• Develop algorithmic solutions to simple computational problems • Read, write, execute	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			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.												
	20150L17	Problem Solving and Basics of Python Programming Lab	• 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,	✓	✓	✓	✓		✓		✓		✓		

Mapping of COs and Pos

			tuples, dictionaries for representing compound data. • Read and write data from/to files in Python.												
	20149L18	Physics and Chemistry Laboratory	Upon completion of the course, the students will be able to apply principles of elasticity, optics and thermal properties for engineering applications. • 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	✓	✓	✓	✓			✓					✓

Mapping of COs and Pos

			polymer by viscometery.												
	201AGIT	Induction Training Programme	• To learn about philosophy of Life and Individual qualities • To learn and practice social values and responsibilities • To learn and practice mind culture, forces acting on the body • To learn more of Responsibilities and Rights as Professional and facing Global Challenges • Emerge as responsible citizen with clear conviction to be a role-model in the society.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
II	20147S21	Technical English	• Read technical texts and write area- specific texts effortlessly. • Listen and	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			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.												
	20148S22	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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Mapping of COs and Pos

			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.												
	20149S23B	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	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			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.											
	20153S24B	Circuit Analysis	• Understand the concept of three phase power circuits and measurement. • Comprehend the concepts in electrical generators, motors and transformers • Choose appropriate measuring instruments	✓	✓	✓	✓		✓		✓		✓		

Mapping of COs and Pos

			for given application												
	20153S25B	Basic Electrical And Instrumentation Engineering	• Develop the capacity to analyze electrical circuits, apply the circuit theorems in real time • Design and understand and evaluate the AC and DC circuits.	✓	✓	✓	✓			✓					✓
	20152S26B	Electronic Devices	• 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Mapping of COs and Pos

	20154L27	Engineering Practices Laboratory	• 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.	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

	20152L28B	Circuits and Devices Laboratory	• Analyze the characteristics of basic electronic devices • Design RL and RC circuits • Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems	✓	✓	✓	✓		✓		✓		✓			
	201AGIC	Indian Constitution	• Understand the emergence and evolution of Indian Constitution. • Understand the structure and composition of Indian Constitution • Understand and analyse federalism in the Indian context. • Understand and analyse the three organs of the state in the contemporary scenario.	✓	✓	✓	✓			✓						✓

Mapping of COs and Pos

			• Understand and Evaluate the Indian Political scenario amidst the emerging challenges.														
	201ASBE	Basic Behavioral Etiquette	• 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

Mapping of COs and Pos

			types of partial differential equations. Able to solve engineering problems using Fourier series.												
III	20148S31B	Linear Algebra and Partial Differential Equations	• 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.	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

	20152S32	Control Systems Engineering	• 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	✓	✓	✓	✓		✓		✓		✓		
	20152S33	Fundamentals of Data Structures In C	• Use digital electronics in the present contemporary world • Design various combinational digital circuits using logic gates • Do the analysis and	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Mapping of COs and Pos

			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												
	20152C34	Digital Electronics	• 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	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			domain • To be able to compute the output of an LTI system in the time and frequency domains												
	20152C35	Signals and Systems	• Acquire knowledge of o Working principles, characteristics and applications of BJT and FET o 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	✓	✓	✓	✓		✓		✓		✓		
	20152C36	Electronic Circuits- I	• To understand and	✓	✓	✓	✓			✓					✓

Mapping of COs and Pos

			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												
	20152L37	Fundamentals of Data Structures In C Laboratory	• 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Mapping of COs and Pos

			amplifier • Measure CMRR in differential amplifier • Simulate and analyze amplifier circuits using PSpice. • Design and Test the digital logic circuits.												
	20152L38	Analog and Digital Circuits Laboratory	• 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	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			academic listening skills • Make effective presentations.											
	20152L39	Interpersonal Skills / Listening & Speaking	• 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.	✓	✓	✓	✓		✓		✓		✓		

Mapping of COs and Pos

			• 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.												
	201AGGS	Introduction to Gender Studies	• 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	✓	✓	✓	✓			✓					✓

Mapping of COs and Pos

			amplifiers, wave shaping circuits, multivibrators, power amplifier and DC convertors.												
IV	20148S41B	Probability and Random Processes	• 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	20152C42	Electronic Circuits II	• Display an understanding of fundamental electromagnetic laws	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			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											
	20152C43	Communication Theory	• 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	✓	✓	✓	✓		✓		✓		✓		

Mapping of COs and Pos

			using OP – AMP Circuits • Analyze special function Ics												
	20152C44	Electromagnetic Fields	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 standard of living has lead to serious environmental disasters	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	20152C45	Linear Integrated Circuits	• Analyze various types of feedback amplifiers • Design oscillators, tuned amplifiers, wave-	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			shaping circuits and multivibrators • Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.											
	20149S46	Environmental Science and Engineering	• 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	✓	✓	✓	✓		✓		✓		✓		

Mapping of COs and Pos

			performance of filters, multivibrators, A/D converter and analog multiplier using SPICE.											
	20152L47	Circuits Design and Simulation Laboratory	• Exposure to various research domains • Acquaintance with languages of research • Development for research aptitude	✓	✓	✓	✓			✓				✓
	20152L48	Linear Integrated Circuits Laboratory	• 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Mapping of COs and Pos

			coding schemes												
	201AGCE	Community Engagement	• 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	✓	✓	✓	✓	✓		✓					✓
	201ASGS	Technical, General Aptitude and Skill set Development	• Describe data representation, instruction formats and the operation of a digital computer • Illustrate the fixed point and floating-point arithmetic for ALU operation	✓	✓	✓	✓		✓		✓		✓		

Mapping of COs and Pos

			• 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												
V	20152C51	Digital Communication	**Free Elective - I**	✓	✓	✓	✓			✓					✓
	20152C52	Discrete-Time Signal Processing	• Understand relational data model, evolve conceptual model of a given problem, its mapping to relational model and Normalization • Query the relational	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

Mapping of COs and Pos

			database and write programs with database connectivity • Understand the concepts of database security and information retrieval systems												
	20152S53	Computer Architecture and Organization	• 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	✓	✓	✓	✓	✓		✓					✓

Mapping of COs and Pos

			as resource management and security. • Be able to install and use current cloud technologies. • Choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.												
	201_ _OE54_	**Open Elective – I**													
	20152C55	Communication Networks	• To possess knowledge on nanotechnology based applications in each industry • To provide details of contemporary industrial applications of nanotechnology • To provide an overview of future			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			technological advancements and increasing role of nanotechnology in each industry												
	20152L57	Digital Signal Processing Laboratory	• Can carry out energy accounting and balancing • Can suggest methodologies for energy savings			✓	✓	✓	✓	✓		✓			
	20152L58	Communication Systems Laboratory	• Understanding the physics of solar radiation. • Ability to classify the solar energy collectors and methodologies of storing solar energy. • Knowledge in applying solar energy in a useful way. • Knowledge in wind energy and biomass with its economic			✓	✓	✓	✓		✓		✓		✓

Mapping of COs and Pos

			aspects. • Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.												
	20152L59	Communication Networks Laboratory	• Identify the different components in automobile engineering. • Have clear understanding on different auxiliary and transmission systems usual.			✓	✓	✓	✓			✓			
	20152E56A	Object Oriented Programming	• An understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management • Ability to identify,			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			formulate and solve air and noise pollution problems • Ability to design stacks and particulate air pollution control devices to meet applicable standards. • Ability to select control equipments. • Ability to ensure quality, control and preventive measures.												
	20152E56B	Medical Electronics	• Have basic idea about the fundamentals of GIS. • Understand the types of data models. • Get knowledge about data input and topology. • Gain knowledge on data quality and standards. • Understand data			✓	✓	✓	✓	✓		✓			

Mapping of COs and Pos

			management functions and data output												
	20152E56C	Operating Systems	• 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			✓	✓	✓	✓		✓		✓		✓
	20152E56D	Robotics and Automation	**Elective - I**			✓	✓	✓	✓			✓			
	20152E56E	Nano Technology and Applications	• Know the human body electro- physiological parameters and recording of bio-			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			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												

Mapping of COs and Pos

			instrumentation												
	20152E56G	Total Quality Management	• 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.			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	20152E56F	Human Rights	• The student would be able to apply the tools and techniques of quality management to manufacturing and			✓	✓	✓	✓	✓		✓			

Mapping of COs and Pos

			services processes.												
VI	20152C61	Microprocessors and Microcontrollers	• Analyze the type of dither. • Analyze the recording and transmission principles in digital audio. • Analyze the various compression techniques. • Design and analyze the digital audio editing. • Analyze the various application of digital audio.			✓	✓	✓	✓		✓		✓		✓
	20152C62	VLSI Design	• Ability to understand and analyze Instrumentation systems and their applications to various industries. • Ability to understand and analyse, linear and			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			digital electronic circuits.												
	20152C63	Wireless Communication				✓	✓	✓	✓	✓		✓			
	20152S64	Principles of Management				✓	✓	✓	✓		✓		✓		✓
	20152C65	Transmission Lines and RF Systems				✓	✓	✓	✓			✓			
	20152E66_	**Elective – II**													
	20152L61	Microprocessors and Microcontrollers Laboratory	• 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			✓	✓	✓	✓	✓	✓	✓	✓		✓

Mapping of COs and Pos

			operation over real-time signals • Design a DSP system for various applications of DSP												
	20152L62	VLSI Design Laboratory	• 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			✓	✓	✓	✓	✓		✓		✓	✓

Mapping of COs and Pos

			communication Link												
	20152L63	Professional Communication	• Communicate between two desktop computers • Implement the different protocols • Program using sockets. • Implement and compare the various routing algorithms • Use the simulation tool.			✓	✓	✓	✓		✓		✓	✓	✓
	20152L64	Technical Seminar	• Understand the approaches towards and constraints in good research.Use the statistical tools used in research methodology • Compose the manuscript for publication • Obtain computational			✓	✓	✓	✓			✓		✓	✓

Mapping of COs and Pos

			and excel- skills for research in engineering												
	20152E66A	Cryptography and Network Security	• 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.			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	20152E66B	Advanced Digital Signal Processing	• 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			✓	✓	✓	✓	✓		✓		✓	✓

Mapping of COs and Pos

			building blocks and memory subsystems. • Apply and implement FPGA design flow and testing.												
	20152E66C	MEMS and NEMS	• 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.			✓	✓	✓	✓		✓		✓	✓	✓
	20152E66D	Multimedia Compression and Communication	• Upon completion of the course, students will be able to have clear understanding			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			• Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management												
	20152E66E	CMOS Analog IC Design	• 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			✓	✓	✓	✓	✓		✓			

Mapping of COs and Pos

			transceiver system for wireless communication												
	20152E66F	Wireless Networks	• 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			✓	✓	✓	✓		✓		✓		✓
VII	20152C71	Antennas and Microwave Engineering	• Simulate & validate the various functional			✓	✓	✓	✓			✓			

Mapping of COs and Pos

			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												
	20152C72	Optical Communication	• Communicate between two desktop computers • Implement the different protocols • Program using sockets.			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			• Implement and compare the various routing algorithms • Use the simulation tool.													
	20152C73	Embedded and Real Time Systems	• 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			✓	✓	✓	✓	✓		✓				
	201_ _OE74_	**Open Elective – II**														

Mapping of COs and Pos

	20152C75	Adhoc and Wireless Sensor Networks	• 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			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			testing.												
	20152L77	Embedded Laboratory	• 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.			✓	✓	✓	✓	✓		✓			
	20152L78	Advanced Communication Laboratory	• Upon completion of the course, students will be able to have clear understanding • Managerial functions like planning, organizing,			✓	✓	✓	✓		✓		✓		✓

Mapping of COs and Pos

			staffing, leading & controlling and have same basic knowledge on international aspect of management												
	20152E76A	Advanced Wireless Communication	• 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			✓	✓	✓	✓			✓			

Mapping of COs and Pos

		communication													
20152E76B	Cognitive Radio		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20152E76C	Foundation Skills in Integrated Product Development		✓	✓	✓	✓	✓		✓						✓
20152E76D	Machine Learning Techniques		✓	✓	✓	✓		✓		✓		✓			✓
20152E76E	Electronics Packaging and Testing		✓	✓	✓	✓			✓						✓
20152E76F	Mixed Signal IC Design		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20152E76G	Disaster Management														
20152E81A	Electro Magnetic Interference and Compatibility		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20152E81B	Low Power SoC Design		✓	✓	✓	✓	✓		✓						✓
20152E81C	Photonic Networks		✓	✓	✓	✓		✓		✓		✓			✓
20152E81D	Compressive Sensing		✓	✓	✓	✓			✓						✓

Mapping of COs and Pos

	20152E81E	Digital Image Processing		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VIII	**20152E81_**	**Elective – IV**													
	20152P83	Project Work		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	20152PEE	Programme Exit Examination		✓	✓	✓	✓	✓		✓					✓
	20152E82_	**Elective – V**													
	20152E82A	Video Analytics	• 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			performing filtering operation over real-time signals • Design a DSP system for various applications of DSP											
	20152E82B	DSP Architecture and Programming	• 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			the noise performance of communication system • Simulate end-to-end communication Link											
	20152E82C	Satellite Communication	• Communicate between two desktop computers • Implement the different protocols • Program using sockets. • Implement and compare the various routing algorithms • Use the simulation tool.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	20152E82D	Soft Computing	• Understand the approaches towards and constraints in good research.Use the statistical tools used in	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			research methodology • Compose the manuscript for publication • Obtain computational and excel- skills for research in engineering											
	20152E82E	Principles of Speech Processing	• 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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	20152E82F	Fundamentals of Nano Science	• Realize the concepts of digital building	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of COs and Pos

			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 OF MECHANICAL ENGINEERING

COURSE OBJECTIVE B.TECH(F.T)(R-2020)

Course Code	Course Name	Course Outcomes
20147S11	Communicative English	• Read articles of a general kind in magazines and newspapers. • Participate effectively in informal conversations; introduce themselves. • 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.
20148S12	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.
20149S13	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.
20149S14	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

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		• 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.
20150S16	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..
20154S15	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.
20150L17	Problem Solving Andpython Programming Lab	• 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.
20149L18	Physics And Chemistry Lab	• 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.
20147S21	Technical English	• Read technical texts and write area- specific texts

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		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. • the students will understand the basics of ceramics, composites and nanomaterials
20148S22A	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.
20149S23C	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.
20149S24A	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

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20153S25D	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 ▪ calculate dynamic forces exerted in rigid body ▪ determine the friction and the effects by the laws of friction
20154S26D	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
20154L27	Engineering Practices Lab	• 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
20153L28D	Basic Electrical, Electronics And Instrumentation Engineering Laboratory	• Ability to determine the speed characteristic of different electrical machines • Ability to design simple circuits involving diodes and transistors • Ability to use operational amplifiers • Measure the electrical quantities • Elaborate on the components, gates, soldering practices.
20148S31C	Transforms And Partial Differential Equations	○ 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.

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20154C32	Engineering Thermodynamics	▪ Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions. ▪ Apply second law of thermodynamics to open and closed systems and calculate entropy and availability. ▪ Apply Rankine cycle to steam power plant and compare few cycle improvement methods o Use sheet metal fabrication tools and make simple tray and funnel ▪ Use different moulding tools, patterns and prepare sand moulds.
20152C33	Fluid Mechanics And Machinery	o Apply mathematical knowledge to predict the properties and characteristics of a fluid. o Can analyse and calculate major and minor losses associated with pipe flow in piping networks. o Can mathematically predict the nature of physical quantities o Can critically analyse the performance of pumps o Can critically analyse the performance of turbines.
20152C34	Production Technology – I	o Explain different metal casting processes, associated defects, merits and demerits o Compare different metal joining processes. o Summarize various hot working and cold working methods of metals. o Distinguish various methods of manufacturing plastic components • manufacturing processes.
20152C35	Electrical Drives And Controls	o Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance • sawing and broaching machines. • Explain the types of grinding and other super finishing processes apart from gear • Electrical machining processes. o Summarize numerical control of machine tools and write a part program.
20154L36	Production Technology Laboratory – I	o Demonstrate the safety precautions exercised in the mechanical workshop. o Make the workpiece as per given shape and size using Lathe. o Use sheet metal fabrication tools and make simple tray and funnel o Use different moulding tools, patterns and prepare sand moulds.
20154L37	Computer Aided Machine Drawing	• Ability to perform speed characteristic of different machine drawing o 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 shear.
20154L38	Electrical Engineering Laboratory	• Ability to perform speed characteristic of different electrical machine • sawing and broaching machines. • Explain the types of grinding and other super finishing processes apart from gear • Electrical machining processes.
20148C41D	Statistics And Numerical Methods	○ Apply the concept of testing of hypothesis for small and large samples in real life problems. ○ Apply the basic concepts of classifications of design of experiments in the field of agriculture. ○ Appreciate the numerical techniques of interpolation in various intervals and 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.
20152C42	Theory Of Machines-I	○ Discuss the basics of mechanism ○ Calculate velocity and acceleration in simple mechanisms ○ Develop CAM profiles ○ Examine friction in machine elements ○ Analyze and design thin and thick shells for the applied internal and external pressures.
20154C43	Production Technology – II	• Explain the mechanism of material removal processes. • Describe the constructional and operational features of centre lathe and other special • purpose lathes. • Describe the constructional and operational features of shaper, planner, milling, drilling, • sawing and broaching machines. • Explain the types of grinding and other super finishing processes apart from gear • Summarize numerical control of machine tools and write a part program.
20152C44	Engineering Metallurgy	○ Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification ○ Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes. ○ Clarify the effect of alloying elements on ferrous and non-ferrous metals ○ Summarize the properties and applications of non metallic materials. ○ Explain the testing of mechanical properties.
20152C45	Strength Of Materials	○ Understand the concepts of stress and strain

	For Mechanical Engineers	in simple and compound bars, the importance of principal stresses and principal planes. o Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment. o Apply basic equation of simple torsion in designing of shafts and helical spring o Calculate the slope and deflection in beams using different methods. o Analyze and design thin and thick shells for the applied internal and external pressures.
20149S46	Thermal Engineering - I	o Apply thermodynamic concepts to different air standard cycles and solve problems. o Solve problems in single stage and multistage air compressors o Explain the functioning and features of IC engines, components and auxiliaries. o Explain the flow in Gas turbines and solve problems o Analyze and design thin and thick shells for the applied internal and external pressures.
20152L47	Production Technology Laboratory – II	o use different machine tools to manufacturing gears o Ability to use different machine tools to manufacturing gears o Ability to use different machine tools for finishing operations o Ability to manufacture tools using cutter grinder o Develop CNC part programming
20152L48	Strength Of Materials And Fluid Mechanics And Machinery Laboratory	o Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials. Perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials. o Use the measurement equipments for flow measurement. • Perform test on different fluid machinery
20154L 49	Advanced Reading And Writing	• Write winning job applications. • Read and evaluate texts critically. • Display critical thinking in various professional contexts
20152C51	Thermal Engineering – II	o Solve problems in Steam Nozzle • Explain the functioning and features of different types of Boilers and auxiliaries and o calculate performance parameters. • Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems • Summarize the concept of Cogeneration, Working features of Heat pumps and HeatExchangers
20152C52	Design Of Machine	• Explain the influence of steady and variable stresses in machine component design.

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	Elements	• Apply the concepts of design to temporary and permanent joints. • Apply the concepts of design to energy absorbing members, connecting rod and crank shaft. • apply the concepts of design to worm and bevel gears. • apply the concepts of design to cams, brakes and clutches
20152C53	Metrology And Measurements	○ Describe the concepts of measurements to apply in various metrological instruments ○ Analyze and design thin and thick shells for the applied internal and external pressures. ○ Outline the principles of linear and angular measurement tools used for industrial Applications ○ Explain the procedure for conducting computer aided inspection ○ Discuss various measuring techniques of mechanical properties in industrial applications
20154C55	Theory Of Machines-II	○ Calculate static and dynamic forces of mechanisms ○ Analyze and design thin and thick shells for the applied internal and external pressures. ○ Calculate the balancing masses and their locations of reciprocating and rotating masses. ○ Compute the frequency of forced vibration and damping coefficient. ○ Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes
20154L56	Theory Of Machines Laboratory	• Explain gear parameters, kinematics of mechanisms, gyroscopic effect and working of lab equipments. • Determine mass moment of inertia of mechanical element, governor effort and range sensitivity, natural frequency and damping coefficient, torsional frequency, critical speeds • shafts, balancing mass of rotating and reciprocating masses, and transmissibility ratio. • conduct tests to evaluate the performance of parallel/counter flow heat exchanger • apparatus and reciprocating air compressor.
20152L57	Thermal Engineering Laboratory	• conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials. • conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient. • conduct tests to evaluate the performance of parallel/counter flow heat exchanger • apparatus and reciprocating air compressor. • conduct tests to evaluate the performance of refrigeration and airconditioning test rigs
20152L58	Metrology And Measurements	• Measure the gear tooth dimensions, angle using sine bar, straightness and flatness,thread

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	Laboratory	parameters, temperature using thermocouple, force, displacement, torque and vibration. • Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the • inspection.
20152C61	Design Of Transmission Systems	○ apply the concepts of design to belts, chains and rope drives. ○ apply the concepts of design to spur, helical gears. ○ apply the concepts of design to worm and bevel gears. ○ apply the concepts of design to cams, brakes and clutches • Apply the concepts of design to temporary and permanent joints.
20152C62	Computer Aided Design And Manufacturing	○ Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics ○ Explain the fundamentals of parametric curves, surfaces and Solids ○ Apply NC & CNC programming concepts to develop part programme for Lathe & Milling Machines ○ Summarize the different types of techniques used in Cellular Manufacturing and FMS ○ Demonstrate manual part programming with G and M codes using CAM
20152C63	Heat And Mass Transfer	• Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems • 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 • Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications • Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve problems • Summarize the concept of Cogeneration, Working features of Heat pumps and HeatExchangers
20152S64	Finite Element Analysis	○ Summarize the basics of finite element formulation. ○ Apply finite element formulations to solve one dimensional Problems. ○ Apply finite element formulations to solve two dimensional scalar Problems. ○ Apply finite element method to solve two dimensional Vector problems. ○ Apply finite element method to solve problems on iso parametric element and dynamic Problems.
20152C65	Hydraulics And Pneumatics	○ Explain the Fluid power and operation of different types of pumps. ○ Summarize the features and functions of Hydraulic motors, actuators and Flow control

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		Valves ○ Explain the different types of Hydraulic circuits and systems ○ Explain the working of different pneumatic circuits and systems ○ Summarize the various trouble shooting methods and applications of hydraulic and pneumatic systems.
20152L67	Cad / Cam Laboratory	○ Draw 3D and Assembly drawing using CAD software ○ Demonstrate manual part programming with G and M codes using CAM
20154L68	Design And Fabrication Project	○ design and Fabricate the machine element or the mechanical product. ○ demonstrate the working model of the machine element or the mechanical product.
20154L69	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
20152C71	Power Plant Engineering	○ Explain the layout, construction and working of the components inside a thermal power plant. ○ Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants. ○ Explain the layout, construction and working of the components inside nuclear power plants. ○ Explain the layout, construction and working of the components inside Renewable energy power plants. ○ 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.
20152C72	Process Planning And Cost Estimation	○ select the process, equipment and tools for various industrial products. ○ prepare process planning activity chart. ○ explain the concept of cost estimation. ○ compute the job order cost for different type of shop floor. ○ calculate the machining time for various machining operations.
20152C73	Mechatronics	○ Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and ○ Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology. ○ Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing ○ Modes of Microprocessor and Microcontroller. ○ Discuss Programmable Peripheral Interface,

		Architecture of 8255 PPI, and various device Interfacing
20154L77	Simulation And Analysis Laboratory	○ simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using MATLAB. ○ analyze the stresses and strains induced in plates, brackets and beams and heat transfer ○ problems. ○ calculate the natural frequency and mode shape analysis of 2D components and beams. ○ Explain the architecture, programming and application of programmable logic controllers
20152L78	Mechatronics Laboratory	○ Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic ○ and electrical systems. ○ Demonstrate the functioning of control systems with the help of PLC and microcontrollers. ○ to problems and challenges in the areas of Mechatronic engineering. ○ Discuss various Actuators and Mechatronics system using the knowledge and skills
20152P83	Project Work	• apply fundamental and disciplinary concepts and methods in ways appropriate to their principal area of study. • demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study.
20152E66A	Automobile Engineering	○ recognize the various parts of the automobile and their functions and materials. ○ discuss the engine auxiliary systems and engine emission control. ○ distinguish the working of different types of transmission systems. ○ explain the Steering, Brakes and Suspension Systems. ○ predict possible alternate sources of energy for IC Engines.
20154E66B	Artificial and Neural Network	○ Understand the construction and working principles of gas and arc welding process. ○ Understand the construction and working principles of resistance welding process. ○ Understand the construction and working principles of various solid state welding process. ○ Understand the construction and working principles of various special welding processes. ○ Understand the concepts on weld joint design, weldability and testing of weldments.
20154E66C	Refrigeration and Air Conditioning	○ Apply the concept of compressible flows in constant area ducts. ○ examine the effect of compression and expansion

		waves in compressible flow. ○ use the concept of gas dynamics in Jet Propulsion. ○ apply the concept of gas dynamics in Space Propulsion. ○ acquired through the course and also from the given case studies
20154E66D	Machine Tool Design	○ Ability to manage Intellectual Property portfolio to enhance the value of the firm ○ Summarize the concept of Quality and Process control for variables ○ Apply the process control for attributes ○ Explain the concept of sampling and to solve problems ○ Explain the concept of Life testing
20154E66E	Plant Layout and Material handling	• Will familiarize about the science of nanomaterials • Will demonstrate the preparation of nanomaterials • Will develop knowledge in characteristic nanomaterial ○ Understand the construction and working principles of various special welding processes. • Understand the concepts on weld joint design, weldability and testing of weldments.
20154E75A	Computational Fluid Dynamics	○ Explain the basic concepts of Refrigeration ○ Explain the Vapor compression Refrigeration systems and to solve problems ○ Discuss the various types of Refrigeration systems ○ Calculate the Psychrometric properties and its use in psychrometric processes ○ Explain the concepts of Air conditioning and to solve problems
20154E75B	Jet propulsion and Rocket Engine	○ Discuss the importance and Economics of renewable Energy ○ Discuss the method of power generation from Solar Energy ○ Discuss the method of power generation from Wind Energy ○ Explain the method of power generation from Bio Energy ○ Explain the Tidal energy, Wave Energy, OTEC, Hydro energy, Geothermal Energy, Fuel Cells and Hybrid Systems.
20154E75C	Mechanical Vibration	○ Summarize the concept of Quality and Process control for variables ○ Apply the process control for attributes ○ Explain the concept of sampling and to solve problems ○ Explain the concept of Life testing ○ Explain the concept Reliability and techniques involved

		○ Explain the need for unconventional machining processes and its classification ○ Compare various thermal energy and electrical energy based unconventional machining processes. ○ Summarize various chemical and electro-chemical energy based unconventional machining processes. ○ Explain various nano abrasives based unconventional machining processes. ○ Distinguish various recent trends based unconventional machining processes.
20154E75D	Total Quality Management	
20154E75E	Solar Energy Technology	○ Upon completion of this course, the students can able to use the optimization techniques for use engineering and Business problems
20154E76A	Robotics	○ On completion of this course, students will learn about a working principle ○ construction of Additive Manufacturing technologies, their potential to support design and manufacturing, ○ modern development in additive manufacturing process and case studies relevant to mass customized manufacturing ○ Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots. ○ Analyze Flow field problems
20154E76B	Industrial Management	○ The student would be able to apply the tools and techniques of quality management to manufacturing and services processes ○ Apply the process control for attributes ○ Explain the concept of sampling and to solve problems ○ Explain the concept of Life testing ○ Explain the concept Reliability and techniques involved
20154E76C	Production and Operation Management	○ Explain the concepts of industrial robots, classification, specifications and coordinate systems. Also summarize the need and application of robots in different sectors. ○ Illustrate the different types of robot drive systems as well as robot end effectors. ○ Apply the different sensors and image processing techniques in robotics to improve the ○ ability of robots. ○ Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.
20154E76D	Tribology	○ Summarize the different methods of Locating Jigs and Fixtures and Clamping principles ○ Design and develop jigs and fixtures for given component

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		○ Discuss the press working terminologies and elements of cutting dies ○ Distinguish between Bending and Drawing dies. ○ Discuss the different types of forming techniques
20154E76E	Maintenance and Safety Engineering	○ Derive the governing equations and boundary conditions for Fluid dynamics ○ Analyze Finite difference and Finite volume methods for Diffusion ○ Analyze Finite volume method for Convective diffusion ○ Analyze Flow field problems ○ Explain and solve the Turbulence models and Mesh generation techniques
20154E82A	Production Planning and Control	○ Explain the fundamental concepts of NDT ○ Discuss the different methods of NDE ○ Explain the concept of Thermography and Eddy current testing ○ Explain the concept of Ultrasonic Testing and Acoustic Emission ○ Explain the concept of Radiography
20154E82B	Electric and Hybrid Vehicle	○ Summarize the various types of Fibers, Equations and manufacturing methods for Composite materials ○ Derive Flat plate Laminate equations ○ Analyze Lamina strength ○ Analyze the thermal behavior of Composite laminates ○ Analyze Laminate flat plates
20154E82C	Disaster Management	• Engineering students will acquire the basic knowledge of human rights ○ Explain the concept of sampling and to solve problems ○ Explain the concept of Life testing • Explain the concept Reliability and techniques involved ○ Discuss the press working terminologies and elements of cutting dies
20154E82D	Nano Technology	• Differentiate the types of disasters, causes and their impact on environment and society • Assess vulnerability and various methods of risk reduction measures as well as mitigation. • Draw the hazard and vulnerability profile of India, Scenarious in the Indian context, Disaster damage assessment and management.
20154E82E	IC Engine and Gas Turbines	▪ Upon completion of this course, the students can able to prepare production planning and control activities ▪ work study, product planning, production scheduling, Inventory Control. ▪ They can plan manufacturing requirements

LOCAL NEEDS REGIONAL NEEDS NATIONAL NEEDS GLOBAL NEEDS

		manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP). o Compare various thermal energy and electrical energy based unconventional machining processes. ▪ Summarize various chemical and electro-chemical energy based unconventional machining processes
20150OE54 A	Database Management Systems	• Understand relational data model, evolve conceptual model of a given problem, its mapping to relational model and Normalization • Query the relational database and write programs with database connectivity • Understand the concepts of database security and information retrieval systems • Be able to install and use current cloud technologies. • Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.
20150OE54B	Cloud Computing	• 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.
20153OE54 A	Industrial Nano Technology	• To possess knowledge on nanotechnology based applications in each industry • To provide details of contemporary industrial applications of nanotechnology • To provide an overview of future technological advancements and increasing role of nanotechnology in each industry • Ability to select control equipments. • Ability to ensure quality, control and preventive measures.
20153OE54B	Energy Conservation And Management	• Can carry out energy accounting and balancing • Can suggest methodologies for energy savings • Ability to understand the stand alone and grid connected renewable energy systems. • Ability to design of power converters for renewable energy applications. • Ability to acquire knowledge on wind electrical generators and solar energy systems.

LOCAL NEEDS REGIONAL NEEDS NATIONAL NEEDS GLOBAL NEEDS

		• Understanding the physics of solar radiation. • Ability to classify the solar energy collectors and methodologies of storing solar energy. • Knowledge in applying solar energy in a useful way. • Knowledge in wind energy and biomass with its economic aspects. • Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.
20154OE54 A	Renewable Energy Sources	
20154OE54B	Automotive Systems	• Identify the different components in automobile engineering. • Have clear understanding on different auxiliary and transmission systems usual. • distinguish the working of different types of transmission systems. • explain the Steering, Brakes and Suspension Systems. • discuss the engine auxiliary systems and engine emission control.
20155OE54	Air Pollution And Control Engineering	• An understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management • Ability to identify, formulate and solve air and noise pollution problems • Ability to design stacks and particulate air pollution control devices to meet applicable standards. • Ability to select control equipments. • Ability to ensure quality, control and preventive measures.
20155OE54B	Geographic Information System	• Have basic idea about the fundamentals of GIS. • Understand the types of data models. • Get knowledge about data input and topology. • Gain knowledge on data quality and standards. • Understand data management functions and data output
20150OE74 A	Introduction To C Programming	• Develop simple applications using basic constructs • Develop applications using arrays and strings • 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.
20150OE74B	Data Structures And	• Implement linear data structures and solve

	Algorithms	problems using them. • Implement and apply trees and graphs to solve problems. • Implement the various searching and sorting algorithms. • Use Python lists, tuples, dictionaries for representing compound data. • Read and write data from/to files in Python.
20153OE74 A	Basic Circuit Theory	• Ability to introduce electric circuits and its analysis • Ability to impart knowledge on solving circuit equations using network theorems • Ability to introduce the phenomenon of resonance in coupled circuits. • Ability to introduce Phasor diagrams and analysis of three phase circuits
20153OE74B	Introduction To Renewable Energy Systems	• Ability to understand and analyze power system operation, stability, control and protection. • Ability to handle the engineering aspects of electrical energy generation and utilization. • Ability to understand the stand alone and grid connected renewable energy systems. • Ability to design of power converters for renewable energy applications. • Ability to acquire knowledge on wind electrical generators and solar energy systems. • Ability to design power converters used for hybrid renewable energy systems.
20154OE74 A	Industrial Safety	• identify and prevent chemical, environmental mechanical, fire hazard through analysis • Apply proper safety techniques on safety engineering and management. ○ Explain the layout, construction and working of the components inside a thermal power plant. ○ Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.
20154OE74B	Testing Of Materials	• Identify suitable testing technique to inspect industrial component • Ability to use the different technique and know its applications and limitations ○ Explain the concept of Life testing • Explain the concept Reliability and techniques involved • Discuss the press working terminologies and elements of cutting dies
20155OE74 A	Green Building Design	• Identify existing energy codes, green building codes and green rating systems.

		• Identify and compare cost and performance of building materials with recycled components, non-petroleum based materials, materials with low volatile organic compounds, materials with low embodied energy and salvaged materials and incorporate them into design. • Identify and use construction materials and methods that more easily allow for salvage and re-use of building materials. • Understand the techniques and benefits of building performance testing, monitoring and metering. • Identify and make use of techniques for weatherization and sustainable remodeling of existing structures
20155OE74B	Waste Water Treatment	• Will have knowledge about adsorption and oxidation process. • Will gain idea about various methods available for water treatment. • Will appreciate the necessity of water and acquire knowledge of preliminary treatment. • Ability to design stacks and particulate air pollution control devices to meet applicable standards. • Ability to select control equipments.

PRIST
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THANJAVUR – 613 403 - TAMIL NADU

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF MECHANICAL ENGINEERING

B.TECH - FULL TIME (UG - 2020)

COURSE CODE	COURSE TITLE	CO	COURSE OUTCOMES	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
20147S11	COMMUNICATIVE ENGLISH	CO1	Read articles of a general kind in magazines and newspapers.							✓		
		CO2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.							✓		
		CO3	Comprehend conversations and short talks delivered in English							✓		
		CO4	Write short essays of a general kind and personal letters and emails in English.							✓		
20148S12	ENGINEERING MATHEMATICS – I	CO1	Use both the limit definition and rules of differentiation to differentiate functions.	✓								
		CO2	Apply differentiation to solve maxima and minima problems.		✓							

		CO3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.			✓						
		CO4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.				✓					✓
		CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.				✓					
		CO6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.	✓								
		CO7	Apply various techniques in solving differential equations.					✓				
20149S13	**ENGINEERING PHYSICS**	**CO1**	the students will gain knowledge on the basics of properties of matter and its applications,	✓								
		CO2	the students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre		✓							

			optics,									
		CO3	the students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,			✓						
		CO4	the students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and									✓
		CO5	the students will understand the basics of crystals, their structures and different crystal growth techniques.				✓					
20149S14	**ENGINEERING CHEMISTRY**	**CO1**	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.				✓					
20154S15	**ENGINEERING GRAPHICS**	**CO1**	familiarize with the fundamentals and standards of Engineering		✓							

			graphics									
		CO2	perform freehand sketching of basic geometrical constructions and multiple views of objects.			✓						
		CO3	project orthographic projections of lines and plane surfaces.							✓		
		CO4	draw projections and solids and development of surfaces.			✓						
		CO5	visualize and to project isometric and perspective sections of simple solids.				✓					
20150S16	**PROBLEM SOLVING AND PYTHON PROGRAMMING**	**CO1**	Develop algorithmic solutions to simple computational problems					✓				
		CO2	Read, write, execute by hand simple Python programs.					✓				
		CO3	Structure simple Python programs for solving problems.					✓				
		CO4	Decompose a Python program into functions.					✓				
		CO5	Represent compound data using Python lists, tuples, dictionaries.					✓				
		CO6	Read and write data from/to files in Python					✓				

			Programs.									
20150L17	**PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY**	**CO1**	Write, test, and debug simple Python programs.			✓						
		CO2	Implement Python programs with conditionals and loops.					✓				
		CO3	Develop Python programs step-wise by defining functions and calling them.				✓					
		CO4	Use Python lists, tuples, dictionaries for representing compound data.		✓							
		CO5	Read and write data from/to files in Python.	✓								
20149L18	**PHYSICS AND CHEMISTRY LABORATORY**	**CO1**	apply principles of elasticity, optics and thermal properties for engineering applications.			✓						
20147S21	**TECHNICAL ENGLISH**	**CO1**	Read technical texts and write area- specific texts effortlessly.							✓		
		CO2	Listen and comprehend lectures and talks in their area of specialisation successfully.							✓		
		CO3	Speak appropriately and effectively in varied formal and informal							✓		

			contexts.									
		CO4	Write reports and winning job applications.							✓		
20148S22	**ENGINEERING MATHEMATICS – II**	**CO1**	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.	✓								
		CO2	Gradient, divergence and curl of a vector point function and related identities.		✓							
		CO3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.			✓						
		CO4	Analytic functions, conformal mapping and complex integration.							✓		
		CO5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.									✓

20149S23C	**MATERIALS SCIENCE**	**CO1**	the students will have knowledge on the various phase diagrams and their applications				✓					
		CO2	the students will acquire knowledge on Fe-Fe_3C phase diagram,various microstructures and alloys				✓					
		CO3	the students will get knowledge on mechanical properties of materials and their measurement								✓	
		CO4	the students will gain knowledge on magnetic, dielectric and superconducting properties of materials								✓	
		CO5	the students will understand the basics of ceramics, composites and nanomaterials.								✓	
20149S24A	**ENVIRONMENTAL SCIENCE AND ENGINEERING**	**CO1**	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.				✓					
		CO2	Public awareness of environmental is at infant				✓					

			stage.									
		CO3	Ignorance and incomplete knowledge has lead to misconceptions				✓					
		CO4	Development and improvement in std. of living has lead to serious environmental disasters				✓					
20153S25D	**BASIC ELECTRICAL ELECTRONICS AND INSTRUMENTATION ENGINEERING**	**CO1**	Understand electric circuits and working principles of electrical machines				✓					
		CO2	Understand the concepts of various electronic devices				✓					
		CO3	Choose appropriate instruments for electrical measurement for a specific application								✓	
20154S26D	**ENGINEERING MECHANICS**	**CO1**	illustrate the vectorial and scalar representation of forces and moments	✓								
		CO2	analyse the rigid body in equilibrium		✓							
		CO3	evaluate the properties of surfaces and solids							✓		
		CO4	calculate dynamic forces exerted in rigid body								✓	
		CO5	determine the friction and the effects by the laws of friction									✓

20154L27	**ENGINEERING PRACTICES LABORATORY**	**CO1**	fabricate carpentry components and pipe connections including plumbing works.			✓						
		CO2	use welding equipments to join the structures.			✓						
		CO3	Carry out the basic machining operations			✓						
		CO4	Make the models using sheet metal works			✓						
		CO5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings			✓						
		CO6	Carry out basic home electrical works and appliances			✓						
		CO7	Measure the electrical quantities			✓						
		CO8	Elaborate on the components, gates, soldering practices.			✓						
20153L28D	**BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING LABORATORY**	**CO1**	Ability to determine the speed characteristic of different electrical machines			✓						
		CO2	Ability to design simple circuits involving diodes and transistors			✓						
		CO3	Ability to use operational amplifiers			✓						

20148S31C	**TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS**	**CO1**	Understand how to solve the given standard partial differential equations.	✓								
		CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.		✓							
		CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.			✓						
		CO4	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.								✓	
		CO5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.									✓

20154C32	**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								✓	
20154C33	**FLUID MECHANICS AND MACHINERY**	**CO1**	Apply mathematical knowledge to predict the properties and characteristics of a fluid.	✓								
		CO2	Can analyse and calculate major and minor losses associated with pipe flow in piping networks.		✓							
		CO3	Can mathematically predict the nature of physical quantities			✓						

		CO4	Can critically analyse the performance of pumps				✓					
		CO5	Can critically analyse the performance of turbines.					✓				
20154C34	**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.								✓	
20154C35	**ELECTRICAL DRIVES AND CONTROLS**	**CO1**	Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance	✓								
20154L36	**PRODUCTION TECHNOLOGY LABORATORY – I**	**CO1**	Demonstrate the safety precautions exercised in the mechanical workshop.			✓						
		CO2	Make the workpiece as per given shape and size using Lathe.				✓					
		CO3	Join two metals using arc welding.					✓				

		CO4	Use sheet metal fabrication tools and make simple tray and funnel.						✓			
		CO5	Use different moulding tools, patterns and prepare sand moulds.								✓	
20154L37	**COMPUTER AIDED MACHINE DRAWING**	**CO1**	Follow the drawing standards, Fits and Tolerances			✓						
		CO2	Re-create part drawings, sectional views and assembly drawings as per standards				✓					
20154L38	**ELECTRICAL ENGINEERING LABORATORY**	**CO1**	Ability to perform speed characteristic of different electrical machine			✓						
20154L39	**INTERPERSONAL SKILLS/LISTENING & SPEAKING**	**CO1**	Listen and respond appropriately.			✓						
		CO2	Participate in group discussions			✓						
		CO3	Make effective presentations			✓						
		CO4	Participate confidently and appropriately in conversations both formal and informal			✓						
20148C41D	**STATISTICS AND NUMERICAL METHODS**	**CO1**	Apply the concept of testing of hypothesis for small and large samples in real life problems.	✓								

		CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.		✓							
		CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.			✓						
		CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.				✓					
		CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications					✓				
20154C42	**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									
20154C43	**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.								✓	
20154C44	**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. .							✓		
20154C45	**STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS**	**CO1**	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.	✓								
		CO2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.		✓							
		CO3	Apply basic equation of simple torsion in designing of shafts and helical spring			✓						
		CO4	Calculate the slope and deflection in beams using different methods.				✓					
		CO5	Analyze and design thin and thick shells for the applied internal and external pressures.					✓				

20154C46	**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.				✓					
20154L47	**PRODUCTION TECHNOLOGY LABORATORY – II**	**CO1**	use different machine tools to manufacturing gears			✓						
		CO2	Ability to use different machine tools to manufacturing gears.			✓						
		CO3	Ability to use different machine tools for finishing operations			✓						
		CO4	Ability to manufacture tools using cutter grinder			✓						
		CO5	Develop CNC part programming			✓						

20154L48	**STRENGTH OF MATERIALS AND FLUID MECHANICS AND MACHINERY LABORATORY**	**CO1**	Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials.					✓				
		CO2	Perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid materials.					✓				
		CO3	Use the measurement equipments for flow measurement.					✓				
		CO4	Perform test on different fluid machinery.					✓				
20154L 49	**ADVANCED READING AND WRITING**	**CO1**	Write different types of essays.						✓			
		CO2	Write winning job applications.						✓			
		CO3	Read and evaluate texts critically.									✓
		CO4	Display critical thinking in various professional contexts.									✓
20154C51	**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								✓	
20154C52	**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.									✓
20154C53	**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								✓	
20155OE54B	**GEOGRAPHIC INFORMATION SYSTEM**	**CO1**	Understand the types of data models.									
		CO2	Get knowledge about data input and topology.									
		CO3	Gain knowledge on data quality and standards.									
		CO4	Understand data management functions and data output									
20154C55	**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.							✓		
20154L56	**THEORY OF MACHINES LABORATORY**	**CO1**	Explain gear parameters, kinematics of mechanisms, gyroscopic effect and working of lab equipments.	✓								
		CO2	Determine mass moment of inertia of mechanical element, governor effort and range sensitivity, natural frequency and damping coefficient, torsional frequency, critical speeds of shafts, balancing mass of rotating and reciprocating masses, and transmissibility ratio.		✓							
20154L57	**THERMAL ENGINEERING LABORATORY**	**CO1**	conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials.	✓								
		CO2	conduct tests on natural and forced convective heat transfer apparatus and		✓							

			evaluate heat transfer coefficient.									
		CO3	conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity.			✓						
		CO4	conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.				✓					
		CO5	conduct tests to evaluate the performance of refrigeration and airconditioning test rigs.					✓				
20154L58	**METROLOGY AND MEASUREMENTS LABORATORY**	**CO1**	Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration.	✓								
		CO2	Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection.		✓							

20154C61	**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									✓
20154C62	**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			✓						

20154C63	**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								✓	

20154C64	**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.									✓
20154C65	**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.								✓	
20154E66A	**AUTOMOBILE ENGINEERING**	**CO1**	recognize the various parts of the automobile and their functions and materials.	✓								
		CO2	discuss the engine auxiliary systems and engine emission control.		✓							
		CO3	distinguish the working of different types of transmission systems.			✓						
		CO4	explain the Steering, Brakes and Suspension Systems.				✓					
		CO5	predict possible alternate sources of energy for IC Engines.	✓								
20154L67	**CAD / CAM LABORATORY**	**CO1**	Draw 3D and Assembly drawing using CAD software	✓								
		CO2	Demonstrate manual part programming with G and M codes using CAM		✓							
20154L68	**DESIGN AND FABRICATION PROJECT**	**CO1**	design and Fabricate the machine element or the mechanical product.						✓			
		CO2	demonstrate the working model of the machine element or the mechanical							✓		

			product.									
20154L69	**PROFESSIONAL COMMUNICATION**	**CO1**	Make effective presentations				✓					
		CO2	Participate confidently in Group Discussions.					✓				
		CO3	Attend job interviews and be successful in them.						✓			
		CO4	Develop adequate Soft Skills required for the workplace							✓		
20154C71	**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.								✓	
20154C72	**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.								✓	
20154C73	**MECHATRONICS**	**CO1**	Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical andComputer 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					✓				
20154E75A	**RENEWABLE SOURCES OF ENERGY**	**CO1**	Discuss the importance and Economics of renewable Energy	✓								
		CO2	Discuss the method of power generation from Solar Energy		✓							

		CO3	Discuss the method of power generation from Wind Energy			✓						
		CO4	Explain the method of power generation from Bio Energy								✓	
		CO5	Explain the Tidal energy, Wave Energy, OTEC, Hydro energy, Geothermal Energy, Fuel									✓
20154E76A	**ROBOTICS**	**CO1**	Cells and Hybrid Systems.	✓								
		CO2	Illustrate the different types of robot drive systems as well as robot end effectors.		✓							
		CO3	Apply the different sensors and image processing techniques in robotics to improve the ability of robots.			✓						
		CO4	Develop robotic programs for different tasks and familiarize with the kinematics motions of robot.					✓				
		CO5	Examine the implementation of robots in various industrial sectors and interpolate the economic analysis of robots.								✓	
20155FE74B	**WASTE WATER TREATMENT**	**CO1**	Will have knowledge about adsorption and	✓								

			oxidation process.									
		CO2	Will gain idea about various methods available for water treatment.		✓							
		CO3	Will appreciate the necessity of water and acquire knowledge of preliminary treatment.			✓						
20154L77	**SIMULATION AND ANALYSIS LABORATORY**	**CO1**	simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using MATLAB.	✓								
		CO2	analyze the stresses and strains induced in plates, brackets and beams and heat transfer problems.					✓				
		CO3	calculate the natural frequency and mode shape analysis of 2D components and beams.							✓		
20154L78	**MECHATRONICS LABORATORY**	**CO1**	Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.	✓								

		CO2	Demonstrate the functioning of control systems with the help of PLC and microcontrollers.		✓							
20154L79	**TECHNICAL SEMINAR**	**CO1**	To enrich the communication skills of the student and presentations of technical topics of interest, this course is introduced.	✓								
20154S81	**PRINCIPLES OF MANAGEMENT**	**CO1**	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						✓			
20154E82A	**PRODUCTION PLANNING AND CONTROL**	**CO1**	Upon completion of this course, the students can able to prepare production planning and control activities such as work study, product planning, production scheduling, Inventory Control.	✓								
		CO2	They can plan manufacturing requirements		✓							

			manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP).									
20154PW83	**PROJECT WORK**	**CO1**	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.	✓								

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SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
2020R

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SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1.1.1 PROGRAMME OUTCOMES
B.TECH

Engineering Graduates will be able to:

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineeringfundamentals, and an engineering specialization to the solution of industrial problems.

PO 2: Problem analysis: Identify, formulates, and solve complex engineering problems. with high degree ofcompetence.

PO3: Conduct investigations of complex problems: Use research-based knowledge andresearch methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO4: Design/development of solutions: Design solutions for mechanical engineering problemsand 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.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, andmodern engineering use modern tools, software and equipment to analyze multidisciplinary.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge toassesssocietal, 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 engineeringsolutions 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 andnorms of the engineering practice.

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

PO 10: Communication: Communicate effectively on complex engineering activities with theengineering community and with society at large, such as, being able to comprehend and write

PO 11: effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 12: Project management and finance: Demonstrate knowledge and understanding of theengineering 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.

PO 13: Life-long learning: Recognize the need for, and have the preparation and ability toengage in independent and life-long learning in the broadest context of technological change.

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME OUTCOMES
M.TECH

M.TECH- COMPUTER SCIENCE AND ENGINEERING (Full Time - 2 Yrs; Part Time – 3Yrs)

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

PO2: **Problem analysis**: Identify, formulate, review research literature, and analyze complexengineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: **Design/development of solutions**: Design solutions for complex engineering problemsand 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 andresearch 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, andmodern 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 toassess 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 engineeringsolutions 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 andnorms of the engineering practice.

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

PO10: **Communication**: Communicate effectively on complex engineering activities with theengineering 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 theengineering 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 toengage in independent and life-long learning in the broadest context of technological change.

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SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME SPECIFIC OUTCOMES

B.TECH

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.

M.TECH

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.

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Course code	Course name	Course outcomes
20147S11	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.
20148S12	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.
20149S13	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
20149S14	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
20154S15	Engineering Graphics	Familiarize with the fundamentals and standards of Engineering graphics

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		• 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.
20150S16	Problem Solving And Basics Of 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
20150L17	Problem Solving And Basics Of 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. 28 • Use Python lists, tuples, dictionaries for representing compound data. • Read and write data from/to files in Python.
20149L18	Physics And Chemistry Laboratory	• 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.
20147S21	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.
20148S22	Engineering Mathematics – II	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.

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20149S23A	Physics For Information Science		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..
20149S24A	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
20153S25A	Basic Electrical, Electronics And Measurement Engineering		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
20150S26A	Programming In C		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.
20154L27	Engineering Practices Laboratory		• 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.
20150L28A	C Programming Laboratory		Develop C programs for simple applications making use of basic constructs, arrays and strings. • Develop

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			C programs involving functions, recursion, pointers, and structures. • Design applications using sequential and random access file processing.
20148S31A	Discrete Mathematics		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
20150S32	Digital Principles And System Design		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
20150C33	Data Structures		• 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.
20150C34	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 swing
20150S35	Communication Engineering		• 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
20150L36	Data Structures Laboratory		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
20150L37	Object Oriented Programming		Develop and implement Java programs for simple applications that make use of classes, packages and

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	Laboratory		interfaces. • Develop and implement Java programs with array list, exception handling and multithreading .•Design applications using file processing, generic programming and event handling.
20150L38	Digital Systems Laboratory		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
20150L39	Interpersonal Skills/Listening &Speaking		• Listen and respond appropriately. • Participate in group discussions • Make effective presentations • Participate confidently and appropriately in conversations both formal and informal
20148S41A	Probability And Queuing Theory		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 manne
20150C42	Computer Architecture		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.
20150C43	Database Management Systems		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
20150C44	Design And Analysis Of Algorithms		Design algorithms for various computing problems. • Analyze the time and space complexity of

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		algorithms. • Critically analyze the different algorithm design techniques for a given problem. • Modify existing algorithms to improve efficiency.
20150C45	Operating Systems	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.
20150C46	Software Engineering	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
20150L47	Database Management Systems Laboratory	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
20150L48	Operating Systems Laboratory	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 Organizationand File Allocation Strategies
20150L49	Advanced Reading And Writing	Write different types of essays. • Write winning job applications. 59 • Read and evaluate texts critically • Display critical thinking in various professional contexts
20148S51A	Algebra And Number Theory	• Apply the basic notions of groups, rings, fields which will then be used to solve related problems. • Explain the fundamental concepts of advanced

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		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.
20150C52	Computer Networks	• 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.
20150C53	Microprocessors And Microcontrollers	• 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.
20150OE54A	Database Management Systems	• 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.
20150C56	Object Oriented Analysis And Design	• 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
20150L57	Microprocessors And Microcontrollers Laboratory	• 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

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20150L58	Object Oriented Analysis And Design Laboratory	• 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
20150L59	Networks Laboratory	• 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
20150C61	Internet Programming	• 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
20150C62	Artificial Intelligence	• 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.
20150C63	Mobile Computing	• 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
20150C64	Compiler Design	• Understand the different phases of compiler • .Design a lexical analyzer for a sample language. 72

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		• 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.
20150C65	Distributed Systems	• 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
20150E66A	Data Warehousing And Data Mining	• 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
20150E66B	Software Testing	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.
20150E66C	Embedded Systems	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
20150E66D	Graph Theory And Applications	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.
20150E66E	Digital Signal Processing	Perform mathematical operations on signals. • Understand the sampling theorem and perform

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			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.
20150L61	Internet Programming Laboratory		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.
20150L62	Mobile Application Development Laboratory		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, Multithreading and GPS. • Analyze and discover own mobile app for simple needs.
20150L64	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
20150S71	Principles Of Management		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
20150C72	Cryptography And Network Security		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
20150C73	Cloud Computing		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.

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		• 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
20150E75A	Big Data Analytics	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.
20150E75B	Machine Learning Techniques	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
20150E75C	Software Project Management	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
20150E75D	Internet Of Things	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
20150E75E	Service Oriented Architecture	Understand XML technologies • Understand service orientation, benefits of SOA • Understand web services and WS standards • Use web services extensions to develop solutions

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		• Understand and apply service modeling, service oriented analysis and design for application developmen
20150E76A	Multi-Core Architectures And programming	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.
20150E76B	Human Computer Interaction	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.
20150E76C	C# And .Net Programming	Write various applications using C# Language in the .NET Framework. • Develop distributed applications using .NET Framework. • Create mobile applications using .NET compact Framework
20150E76D	Wireless Adhoc And Sensor Networks	Identify different issues in wireless ad hoc and sensor networks . • To analyze protocols developed for ad hoc and sensor networks . • To identify and understand security issues in ad hoc and sensor networks.
20150E76E	Advanced Topics On Databases	To develop in-depth understanding of relational databases and skills to optimize database performance in practice. • To understand and critique on each type of databases. • To design faster algorithms in solving practical database problems. • To implement intelligent databases and various data models.
20150L77	Cloud Computing Laboratory	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
20150L78	Security Laboratory	Develop code for classical Encryption Techniques to solve the problems. • Build cryptosystems by applying symmetric and public key encryption algorithms.

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		• Construct code for authentication algorithms. • Develop a signature scheme using Digital signature standard. • Demonstrate the network security system using open source tools
20150E81A	Digital Image Processing	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
20150E81B	Social Network Analysis	Develop semantic web related applications. • Represent knowledge using ontology. • Predict human behaviour in social web and related communities. • Visualize social networks.
20150E81C	Information Security	Discuss the basics of information security • Illustrate the legal, ethical and professional issues in information security • Demonstrate the aspects of risk management. • Become aware of various standards in the Information Security System • Design and implementation of Security Techniques.
20150E81D	Cyber Forensics	Understand the basics of computer forensics • Apply a number of different computer forensic tools to a given scenario • Analyze and validate forensics data • Identify the vulnerabilities in a given network infrastructure • Implement real-world hacking techniques to test system security
20150E81E	Soft Computing	• Apply suitable soft computing techniques for various applications. • • Integrate various soft computing techniques for complex problems
20150E82A	Information Retrieval Techniques	Use an open source search engine framework and explore its capabilities • Apply appropriate method of classification or clustering. • Design and implement innovative features in a search engine. • Design and implement a recommender system.
20150E82B	Natural Language Processing	To tag a given text with basic Language features • To design an innovative application using NLP components • To implement a rule based system to tackle

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		morphology/syntax of a language • To design a tag set to be used for statistical processing for real-time applications • To compare and contrast the use of different statistical approaches for different types of NLP applications.
20150E82C	Parallel Algorithms	Develop parallel algorithms for standard problems and applications. • Analyse efficiency of different parallel algorithms.
20150E82D	Speech Processing	Create new algorithms with speech processing • Derive new speech models • Perform various language phonetic analysis • Create a new speech identification system • Generate a new speech recognition system
20150E82E	Fundamentals Of Nano Science	• Will familiarize about the science of nanomaterials• Will demonstrate the preparation of nanomaterials• Will develop knowledge in characteristic nanomaterial
20150P83	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
201AGPE	Professional Ethics And Human Value	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

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

Dept: COMPUTER SCIENCE AND ENGINEERING

BTECH (FT)- 2020R

Mapping of COs and POs

Course Code	Title of the Course	COs	POS										
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
20147S11	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.								✓	✓	✓		✓
20148S12	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.	✓	✓	✓									
20149S13	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	✓	✓	✓	✓	✓							
		The students will understand the basics of crystals, their structures and different crystal growth techniques.	✓	✓	✓									
20149S14	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	✓	✓	✓									
20150S16	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	✓	✓	✓		✓	✓						✓
20154S15	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.			✓	✓					✓			
20150L17	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.			✓									
20149L18	PHYSICS AND CHEMISTRY LABORATORY	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.			✓	✓	✓							✓
191VEA19	VALUE EDUCATION	Students will understand the importance of value based living.						✓	✓					
		Students will gain deeper understanding about the purpose of their life.						✓	✓					
		Students will understand and start applying the essential steps to become good leaders.									✓		✓	✓
		Students will emerge as responsible citizens with clear conviction to practice values and ethics in life.						✓	✓	✓				
		Students will become value based professionals.						✓	✓	✓				
		Students will contribute in building a healthy nation						✓	✓	✓				
20147S21	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.								✓	✓	✓		✓
20148S22A	ENGINEERING MATHEMATICS – II	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.		✓		✓								
20149S23A	PHYSICS FOR INFORMATION SCIENCE	Gain knowledge on classical and quantum electron theories, and energy band structures	✓	✓										
		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..			✓	✓									
20153S25A	BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING	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.	✓	✓	✓										
20149S24A	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							✓	✓	✓	✓		✓
20150S26A	PROGRAMMING IN C	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.		✓	✓									
20154L27	ENGINEERING PRACTICES LABORATORY	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.	✓	✓	✓	✓	✓		✓	✓				
20150L28A	C - PROGRAMMING LAB	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	✓	✓	✓	✓	✓			✓				
20148C31A	DISCRETE MATHEMATICS	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.	✓	✓	✓	✓	✓	✓	✓			✓		
20150C32	DIGITAL PRINCIPLES AND SYSTEM DESIGN	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	✓	✓	✓	✓		✓	✓	✓				✓
20150C33	DATA STRUCTURES	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	✓	✓	✓						✓			
20150C34	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	✓	✓	✓	✓	✓	✓			✓		✓	✓
20150C35	COMMUNICATION ENGINEERING	Apply analog and digital communication techniques	✓		✓	✓								✓
		Use data and pulse communication techniques.		✓							✓			✓
		Analyze Source and Error control coding.		✓							✓			✓
		Ability to comprehend and appreciate the significance and role of this course in the present contemporary world			✓									✓
20150L36	DATA STRUCTURES LABORATORY	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												
20150L37	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.		✓	✓		✓							
20150L38	DIGITAL SYSTEMS LABORATORY	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			✓									
20150L39	INTERPERSONAL SKILLS/LISTENING&SPEAKING	Listen and respond appropriately									✓	✓		✓
		Participate in group discussions									✓	✓		✓
		Make effective presentations									✓	✓		✓
		Participate confidently and									✓	✓		✓

		appropriately in conversations both formal and informal												
20148S41A	PROBABILITY AND QUEUING THEORY	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		✓	✓									
20150C42	COMPUTER ARCHITECTURE	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	✓	✓	✓	✓								
20150C43	DATABASE MANAGEMENT SYSTEMS	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	✓	✓	✓	✓	✓	✓						
20150C44	DESIGN AND ANALYSIS OF ALGORITHMS	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.		✓	✓		✓	✓						
20150C45	OPERATING SYSTEMS	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150C46	SOFTWARE ENGINEERING	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150L47	DATABASE MANAGEMENT SYSTEMS	Use typical data definitions and manipulation commands	✓	✓	✓						✓	✓	✓	✓	
		Design applications to test	✓	✓	✓						✓	✓	✓	✓	

	LABORATORY	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	✓	✓	✓						✓	✓	✓	✓
20150L48	OPERATING SYSTEMS LABORATORY	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	✓	✓	✓		✓			✓	✓	✓		✓
20150L49	ADVANCED READING AND WRITING	Write winning job applications.	✓								✓	✓		✓
		Read and evaluate texts critically.	✓								✓	✓		✓
		Display critical thinking in various professional contexts	✓								✓	✓		✓
		Write different types of essays.	✓					✓	✓	✓	✓	✓		✓
201AGCE	COMMUNITY	Exposure to various research domains	✓	✓	✓	✓	✓							✓

	ENGAGEMENT	Acquaintance with languages of research	✓	✓	✓	✓								✓
		Development of research aptitude			✓	✓	✓							✓
20148S51A	ALGEBRA AND NUMBER THEORY	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	Understand the basic layers and its functions in computer networks	✓	✓	✓	✓								✓

20150C52	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.	✓	✓	✓	✓								
20150C53	MICROPROCESSORS AND MICROCONTROLLERS	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150C55	THEORY OF COMPUTATION	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.												
20150C56	OBJECT ORIENTED ANALYSIS AND DESIGN	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	✓	✓	✓	✓	✓		✓	✓				✓
201AGIE	INNOVATION AND ENTREPRENEURSHIP	Understanding research questions and tools	✓	✓		✓								
		Experience in scientific writings	✓	✓	✓	✓								
		Practice in various aspects of scientific publications	✓	✓	✓	✓								
		Inculcation of research ethics	✓	✓	✓	✓				✓				
20150L57	MICROPROCESSORS AND MICROCONTROLLERS LABORATORY	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	✓					✓		✓			✓	
20150L58	OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY	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		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
20150L59	NETWORKS LABORATORY	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.	✓		✓	✓		✓	✓		✓	✓	✓	✓
201AGIE	INNOVATION AND ENTREPRENEURSHIP	Take up any challenging practical problems and find	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

		solution by formulating proper methodology												
20150C61	INTERNET PROGRAMMING	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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150C62	ARTIFICIAL INTELLIGENCE	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150C63	MOBILE COMPUTING	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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150C64	COMPILER DESIGN	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.	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓

20150C65	DISTRIBUTED SYSTEMS	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		✓	✓	✓	✓	✓							
20150L61	INTERNET PROGRAMMING LABORATORY	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

20150L62	MOBILE APPLICATION DEVELOPMENT LABORATORY	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150L63	MINI PROJECT	apply the knowledge of all related courses in providing hardware/software solutions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150L64	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	✓		✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
201ASTT	TECHNICAL TRAINING	Hands on exposure to problem solving tools in contemporary research	✓	✓	✓	✓										
		Evolution of research intuitiveness and orientation	✓	✓	✓	✓										
		Familiarity with cutting edge research trends	✓	✓	✓	✓	✓									

20150C71	PRINCIPLES OF MANAGEMENT	to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management	✓					✓	✓	✓	✓	✓	✓	✓
		Understand the fundamentals of networks security, security architecture, threats and vulnerabilities	✓	✓				✓	✓	✓	✓	✓	✓	✓
20150C72	CRYPTOGRAPHY AND NETWORK SECURITY	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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		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.	✓	✓	✓									

20150C73	CLOUD COMPUTING	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.	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
20150L77	CLOUD COMPUTING LABORATORY	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.												
20150L78	SECURITY LABORATORY	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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150P83	Project Work	Identify the problem by applying acquired knowledge.	✓	✓		1			✓	✓	✓			
		Analyze and categorize executable project modules after considering risks.		✓	✓	✓		✓	✓		✓	✓		✓
		Choose efficient tools for designing project modules.			✓	✓	✓			✓	✓	✓	✓	✓
		Combine all the modules through effective team work after efficient testing.							✓	✓	✓	✓	✓	✓
201AGPE	PROFESSIONAL ETHICS AND HUMAN VALUE	Identify the problem by applying acquired knowledge	✓	✓		✓			✓	✓	✓			
		Analyze and categorize executable project modules after considering risks		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

20150E66A	DATA WAREHOUSING AND DATA MINING	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	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
20150E66B	SOFTWARE TESTING	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.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20150E66C	COMPUTER GRAPHICS AND MULTIMEDIA	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	✓	✓	✓	✓	✓				✓	✓		
20150E66D	GRAPH THEORY AND APPLICATIONS	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.	✓	✓	✓	✓	✓				✓			
20150E75A	BIG DATA ANALYTICS	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.	✓	✓	✓	✓	✓					✓		✓
20150E75B	MACHINE LEARNING TECHNIQUES	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	✓	✓	✓	✓	✓							
20150E75C	SOFTWARE PROJECT MANAGEMENT	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	✓	✓	✓	✓	✓							
20150E75D	SERVICE ORIENTED ARCHITECTURE	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	✓	✓		✓	✓					✓		✓
20150E76A	INTERNET OF THINGS	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	✓	✓	✓	✓	✓							
20150E76B	MULTI-CORE ARCHITECTURES AND PROGRAMMING	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.	✓	✓		✓	✓	✓			✓			✓
20150E76C	HUMAN COMPUTER INTERACTION	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.	✓		✓	✓	✓							

20150E76D	WIRELESS ADHOC AND SENSOR NETWORKS	To identify and understand security issues in ad hoc and sensor networks	✓											
		To analyze protocols developed for ad hoc and sensor networks	✓	✓	✓	✓	✓							✓
		Identify different issues in wireless ad hoc and sensor networks	✓	✓	✓							✓	✓	
20150E81A	DIGITAL IMAGE PROCESSING	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.	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓
	SOCIAL NETWORK	Represent knowledge using ontology.	✓		✓			✓	✓	✓	✓			
		Develop semantic web related applications.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

20150E81B	ANALYSIS	Predict human behaviour in social web and related communities	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
		Visualize social networks	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
20150E81C	INFORMATION SECURITY	Discuss the basics of information security	✓				✓		✓			✓		
		Illustrate the legal, ethical and professional issues in information security	✓	✓	✓						✓		✓	✓
		Demonstrate the aspects of risk management	✓	✓	✓	✓	✓	✓			✓	✓		✓
		Become aware of various standards in the Information Security System	✓	✓	✓		✓		✓		✓	✓	✓	✓
		Design and implementation of Security Techniques.	✓	✓	✓	✓	✓				✓	✓	✓	✓
20150E81D	CYBER FORENSICS	Understand the basics of computer forensics	✓							✓			✓	
		Apply a number of different computer forensic tools to a given scenario	✓	✓	✓							✓		✓
		Analyze and validate forensics data	✓	✓	✓	✓		✓		✓	✓	✓		✓
		Identify the vulnerabilities in a given network infrastructure	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓
		Implement real-world hacking techniques to test system security.	✓	✓	✓		✓	✓		✓	✓	✓		✓
	INFORMATION RETRIEVAL	Use an open source search engine framework and explore	✓											

20150E82A	TECHNIQUES	its capabilities												
		Apply appropriate method of classification or clustering.	✓	✓	✓									
		Design and implement innovative features in a search engine.	✓	✓	✓		✓				✓			
		Design and implement a recommender system.	✓	✓	✓	✓	✓							
20150E82CB	GPU ARCHITECTURE AND PROGRAMMING	Implement efficient algorithms in GPUs for common application kernels, such as matrix multiplication	✓		✓									
		Write simple programs using OpenCL	✓	✓	✓			✓				✓		
		Identify efficient parallel programming patterns to solve problems	✓	✓	✓	✓	✓							
		Describe GPU Architecture	✓	✓	✓	✓	✓					✓		✓
		Write programs using CUDA, identify issues and debug them	✓	✓	✓	✓	✓	✓		✓	✓			✓
20150E82C	NATURAL LANGUAGE PROCESSING	To tag a given text with basic Language features	✓				✓							
		To design an innovative application using NLP components	✓	✓	✓						✓			✓
		To implement a rule based system to tackle morphology/syntax of a language	✓	✓	✓	✓		✓			✓			✓
		To design a tag set to be used	✓	✓	✓	✓		✓						✓

		for statistical processing for real-time applications												
		To compare and contrast the use of different statistical approaches for different types of NLP applications	✓	✓			✓							✓
20150E82D	SPEECH PROCESSING	Create new algorithms with speech processing	✓											
		Derive new speech models	✓	✓	✓	✓				✓				
		Perform various language phonetic analysis	✓	✓	✓	✓	✓				✓	✓	✓	
		Create a new speech identification system	✓	✓	✓	✓	✓	✓			✓			✓
		Generate a new speech recognition system	✓	✓	✓	✓				✓				✓
20150FE54A	CLOUD COMPUTING	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.	✓	✓	✓		✓				✓			✓
		Choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.	✓	✓	✓		✓							✓
20150FE54B	DATABASE MANAGEMENT SYSTEMS	understand relational data model, evolve conceptual model of a given problem, its mapping to relational model and Normalization	✓											
		query the relational database and write programs with database connectivity	✓	✓	✓									✓
		understand the concepts of database security and information retrieval systems	✓	✓	✓	✓	✓				✓			✓
20152FE54A	BASICS OF BIO MEDICAL INSTRUMENTATION	To learn the different bio potential and its propagation	✓											
		To get Familiarize the different electrode placement for various physiological recording	✓	✓	✓									
		Students will be able design bio amplifier for various physiological recording	✓	✓	✓	✓				✓				✓
		Students will understand various technique non electrical physiogical measurements	✓	✓	✓	✓	✓	✓						✓
		Understand the different	✓	✓	✓	✓						✓	✓	✓

		biochemical measurements												
20152FE54 B	SENSORS AND TRANSDUCERS	Expertise in various calibration techniques and signal types for sensors	✓											
		Apply the various sensors in the Automotive and Mechatronics applications	✓	✓	✓									
		Study the basic principles of various smart sensors.	✓	✓	✓	✓	✓						✓	
		Implement the DAQ systems with different sensors for real time applications	✓	✓	✓	✓	✓							
20153FE54 A	INDUSTRIAL NANO TECHNOLOGY	To elucidate on advantages of nanotechnology based applications in each industry	✓											
		To provide instances of contemporary industrial applications of nanotechnology	✓	✓	✓		✓	✓			✓			✓
		To provide an overview of future technological advancements and increasing role of nanotechnology in each industry	✓	✓	✓	✓	✓				✓			✓
20153FE54 B	ENERGY CONSERVATION AND MANAGEMENT	To analyse the energy data of industries.	✓											✓
		Can carryout energy accounting and balancing	✓	✓	✓	✓		✓	✓		✓	✓		✓
		Can suggest methodologies for energy savings	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
20154FE54	RENEWABLE	Ability to classify the solar	✓											

A	ENERGY SOURCES	energy collectors and methodologies of storing solar energy.												
		Knowledge in applying solar energy in a useful way.	✓	✓	✓									
		Knowledge in wind energy and biomass with its economic aspects.	✓	✓	✓	✓					✓	✓		✓
		Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
		Understanding the physics of solar radiation.	✓	✓	✓				✓		✓	✓	✓	✓
20154FE54 B	AUTOMOTIVE SYSTEMS	the students will be able to identify the different components in automobile engineering	✓		✓	✓	✓							✓
		Have clear understanding on different auxiliary and transmission systems usual.	✓	✓	✓	✓	✓		✓	✓		✓		✓
20155FE54 A	AIR POLLUTION AND CONTROL ENGINEERING	Basic concepts of air quality management.	✓											
		Ability to identify, formulate and solve air and noise pollution problems.	✓	✓	✓									
		Ability to design stacks and particulate air pollution control devices to meet applicable standards		✓	✓									

		Ability to select control equipments		✓	✓	✓	✓				✓				
		Ability to ensure quality, control and preventive measures.		✓	✓		✓	✓			✓				
20155FE54B	GEOGRAPHIC INFORMATION SYSTEMS	Have basic idea about the fundamentals of GIS.	✓												
		Understand the types of data models.	✓	✓	✓				✓						
		Get knowledge about data input and topology.	✓	✓	✓			✓		✓					✓
		Gain knowledge on data quality and standards.	✓	✓	✓	✓	✓			✓		✓		✓	✓
		Understand data management functions and data output	✓	✓	✓				✓			✓		✓	✓
20152FE74A	ROBOTICS	Apply the basic engineering knowledge for the design of robotics	✓	✓	✓	✓	✓								
		understand importance of robotics in today and future goods production	✓	✓	✓	✓									
		understand robot configuration and subsystems	✓	✓	✓										
		understand principles of robot programming and handle with typical robot	✓	✓	✓	✓									
		understand working of mobile robots	✓	✓	✓	✓									
	ELECTRONIC DEVICES	Analyze the characteristics of semiconductor diodes.	✓	✓	✓	✓									

20152FE74B		Analyze and solve problems of Transistor circuits using model parameters.	✓	✓	✓									
		Identify and characterize diodes and various types of transistors.	✓	✓	✓									
		Analyze the characteristics of special semiconductor devices.	✓	✓	✓									
		Analyze the characteristics of Power and Display devices.	✓	✓	✓									
			✓	✓	✓	✓								
20153FE74A	BASIC CIRCUIT THEORY	Ability to introduce electric circuits and its analysis	✓	✓	✓	✓								
		Ability to impart knowledge on solving circuit equations using network theorems	✓	✓	✓	✓								
		Ability to introduce the phenomenon of resonance in coupled circuits.	✓	✓	✓	✓								
		Ability to introduce Phasor diagrams and analysis of three phase circuits	✓	✓	✓	✓								
20153FE74B	INTRODUCTION TO RENEWABLE ENERGY SYSTEM	Ability to understand and analyze power system operation, stability, control and protection.	✓	✓	✓	✓								
		Ability to handle the engineering aspects of electrical energy generation and utilization.	✓	✓	✓									

		Ability to understand the stand alone and grid connected renewable energy systems.	✓	✓	✓	✓								
		Ability to design of power converters for renewable energy applications.	✓	✓	✓	✓	✓							
		Ability to acquire knowledge on wind electrical generators and solar energy systems.	✓	✓	✓	✓								
		Ability to design power converters used for hybrid renewable energy systems.	✓	✓	✓	✓								
20154FE74A	INDUSTRIAL SAFETY	Illustrate and familiarize the basic concepts and scope of engineering safety.	✓	✓				✓	✓	✓				
		Understand the standards of professional conduct that are published by professional safety organizations and certification bodies.						✓	✓	✓				
		Illustrate the importance of safety of employees while working with machineries.						✓	✓	✓				
20154FE74B	TESTING OF MATERIALS	Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.	✓	✓	✓	✓								
		Identify, formulate and solve engineering problems of						✓	✓	✓				

		structural elements subjected to flexure.												
		Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials.			2									
20155FE74 A	WASTE WATER MANAGEMENT	Will have knowledge about adsorption and oxidation process.	✓	✓	✓	✓								
		Will gain idea about various methods available for water treatment.	✓	✓	✓	✓								
		Will appreciate the necessity of water and acquire knowledge of preliminary treatment.	✓	✓	✓	✓			✓					
20155FE74 B	GREEN BUILDING DESIGN	Students should be able to describe the importance and necessity of green building.	✓											
		Students should be able to assess a building on the norms available for green building.	✓	✓	✓	✓	✓	✓	✓	✓				
		Students should be able to suggest materials and technologies to improve energy efficiency of building.	✓	✓			✓	✓	✓	✓				
		Students should be able to design and assess building	✓	✓	3									
20150FE74		Develop simple applications	✓	✓	✓									

A	INTRODUCTION TO C PROGRAMMING	using basic constructs												
		Develop applications using arrays and strings	✓	✓	✓	✓			✓		✓			✓
		Develop applications using functions and structures	✓	✓	✓	✓	✓			✓		✓	✓	✓
20150FE74B	DATA STRUCTURES AND ALGORITHMS	Implement linear data structures and solve problems using them	✓	✓	✓									
		Implement and apply trees and graphs to solve problems.	✓	✓	✓	✓				✓	✓			✓
		Implement the various searching and sorting algorithms.	✓	✓	✓	✓	✓	✓				✓		✓

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes(PSOs) and Course Outcomes(COs) of the Programmes offered by the University (20UGBTGE)

Program Outcomes and Course outcomes of

Department of Biotechnology

REGULATION – 2020

	LOCAL
	REGIONAL
	NATIONAL
	GLOBAL

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

School of Arts and Science
Department of Biotechnology
20UGBTGEC
20220Regulation
Program Outcomes and Course outcomes of
B.Sc., Mapping of Cos and Pos

Programme offered:

S. No	Programme Name	PO and CO
1.	B. Sc Biotechnology	Yes
2.	M. Sc Biotechnology	Yes
3.	M. Phil Biotechnology	Yes

PROGRAMME OUTCOMES	
PO1	Understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life
PO2	Understanding and better knowledge of the causes, types and control methods for environmental pollution by the students
PO3	The student will be able to discuss the mechanisms associated with gene expression system in prokaryotes and eukaryotes
PO4	Developed various communication skills such as reading, listening, speaking etc.,
PO5	Acquired the skills in handling scientific instruments, planning and performing in laboratory experiments
PO6	Ethics: Convey and practice social, environmental and biological ethics
PO7	To get knowledge about research tools and learn to do review literature. Ability to carry out independent literature survey corresponding to the specific publications type and asses basic research tool
PROGRAM SPECIFIC OUTCOME	
PSO1	Graduates will exhibit contemporary knowledge in Biotechnology and students will be eligible for doing jobs in pharmaceutical and biotechnological Industry.
PSO2	An expert in biotechnology and allied fields (medical, microbial, Agricultural, environmental, plant and animal) for utilizing the practical skill to address biotechnological challenges.
PSO3	Graduates will be able to work individually as well as in team to survive in multidisciplinary environment.
PSO4	If students will engage themselves in the process of effective learning, it will give opportunities to utilize acquired knowledge for the catering the needs of science and technology as well as for the betterment of human mankind.
PSO5	Graduates will be able to understand the potentials, and impact of biotechnological innovations on environment and their implementation for finding sustainable solution to issues pertaining to environment, health sector, agriculture, etc.
PROGRAM EDUCATIONAL OBJECTIVES	
PEO1	To obtain detailed information about the fundamentals of Biotechnology, allied subjects and life skills
PEO2	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
PEO3	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
PEO4	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
PEO5	To enable them to excute a research objective through experimentation

Semester	Course Code	Title of the Course	Cos
I	20110AEC11	Language-I (Tamil-I)	**CO1 -** Learn the changes that have occurred in literature since the classical period.
			CO2 - Make use of vocabulary systematically.
			CO3 - Understand how to lead one's life realizing the modernity and its environment/atmosphere.
I	20111AEC11	Advanced English-I	**CO1 -** Develop vocabulary
			CO2 - Learn to edit and do proof reading
			CO3 - Read and comprehend literature
I	20111AEC12	English-I	**CO1 -** Read and comprehend literature
			CO2 - Appreciate poetry and prose
			CO3 - Familiarize students with fiction.
I	20117AEC13	Fundamentals of Biological system	**CO1 -** Understand the physical, chemical, and mathematical basis of biology
			CO2 - Appreciate the different scales of biological systems
			CO3 - To understand the Basics in life sciences, evolution and organization of life, living and non-living things
			CO4 - To understand the basics of biomolecules, carbohydrates, proteins, lipids and Nucleic acids
I	20117AEC15L	Fundamentals of Biological system Lab	**CO1 -** The learners will acquire knowledge on the structure and functions relationship of biological system and as well their roll in various biological process
			CO2 - To know the cellular organization of life, cell theory- cell organization-cell organelles- plant and animal cell
			CO3 - To understanding the basic fundamentals of Biological System
I	20115AEC14A	Biological Chemistry	**CO1 -** The learners will acquire knowledge on the structure and functions relationship of proteins nucleic acid carbohydrates and as well their roll in various biological process
			CO2 - They study the influence and role of structure in reactivity of biomolecules

			CO3 - Through this course the students are exposed to importance of biological macromolecules
I	20115AEC16AL	Biological Chemistry Lab	**CO1 -** Students will use current biochemical and molecular techniques to plan and carry out experiments.
			CO2 - Biochemistry Majors will gain proficiency in basic laboratory techniques in both chemistry and biology, and be able to apply the scientific method to the processes of experimentation and hypothesis testing
			CO3 - At the end of the course, the students have a thorough understanding on the role of biomolecules and their functions
I	201ACLSUHV	Universal Human Values	**CO1 -** Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
			CO2 - Learn from case studies of lives of great and successful people who followed and practised human values and achieved self-actualisation.
			CO3 - Become conscious practitioners of human values.
			CO4 - Realise their potential as human beings and conduct themselves properly in the ways of the world.
I	201ACLSICN	Indian Constitution	**CO1 -** Democratic values and citizenship Training and gained
			CO2 - Awareness on fundamental Rights are established
			CO3 - The functions of union Government and State Government are learnt
			CO4 - The Power and functions of the Judiciary learnt thoroughly
			CO5 - Appreciation of Democratic Parliamentary Rule is learnt
II	20110AEC21	Language-II (Tamil-II)	**CO1 -** Know what devotion really is.
			CO2 - Know the fruitfulness obtained through devotion
			CO3 - Perceive the progress achieved in the society through devotion.
II	20111AEC21	Advanced English-II	**CO1-** Develop technological skills.
			CO2 - Able to write in a variety of formats
			CO3 - Read biographies and develop personality
II	20111AEC22	English-II	**CO1 -** Appreciate different forms of literature
			CO2 - Acquire language skills through literature
			CO3 - Broadens the horizon of knowledge
II	20117AEC23	Cell Biology and Genetics	**CO1 -** This paper will enable the students to learn the basics and lay strong foundation in understanding the composition of cells, how cells works is fundamental to living systems.
II	20117AEC25L	Cell Biology and Genetics lab	**CO1 -** It will provide an understanding of the unique features of plant cells and animal cell
			CO2 - Gain understanding on the interaction between cells and the environment
II	20116AEC24	Microbiology	**CO1 -** Students will gain rigorous foundation in various methods to cultivate the microbes and maintenance of the microorganism

II	20116AEC26L	Microbiology lab	**CO1 -** This curse will provide to this students about the mechanics of experimentation methods of genetics
II	20117RLC27	Research LED Seminar	**CO1 -** Exposure to various research domains
			CO2 - Acquaintance with languages of research
			CO3 - Development of research aptitude
II	201ACSSBBE	Basic Behavioral Etiquette	**CO1 -** Eliminating negative thought, developing enriching habits, unlocking individual potentials and well-versed communication
II	201ACLSCOS	Communicative skills	**CO1 -** By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities
III	20110AEC31	Language-III (Tamil-III)	**CO1 -** Achieve one's goal by following the ancestral path
			CO2 - Learn to lead life of perfection by realizing the uncertainty in the life
			CO3 - Attain happiness through honesty
III	20111AEC31	Advanced English-III	**CO1 -** Understand phonetics.
			CO2 - Develop writing skill
			CO3 - Able to develop creative writing
III	20111AEC32	English-III	**CO1 -** Enable to appreciate different types of prose
			CO2 - Develop the conversational skills through one-act plays
			CO3 - Enhance the skill of making grammatically correct sentences.
III	20117AEC33	Plant Physiology	**CO1 -** Provide examples of the variety of plants on Earth, their distinctive features, and how they fit into their unique ecosystems
III	20117AEC35L	Plant physiology Lab	**CO1 -** Produce a report of their work, which employs a range of skills of written expression and uses appropriate vocabulary consisting of a practical report
III	20117AEC34	Immunology	**CO1 -** The students may understanding the immune system, its components and various techniques used in bio manipulation.
III	20117AEC36L	Immunology Lab	**CO1 -** Identify the structure, function, and characteristics of immunoglobulins.
			CO2 - Explain the principles of and perform serological tests.
			CO3 - It's a paper which accomplishes the learning of techniques involved in understanding the immunological aspects of physiology and biological samples
III	20117RMC37	Research Methodology	**CO1 -** Understanding research questions and tools
			CO2 - Experience in scientific writings
			CO3 - Practice in various aspects of scientific publications
			CO4 - Inculcation of research ethics

III	20117RMC37	Research Methodology	**CO1 -** Ability to carry out independent literature survey corresponding to the specific publication type and assess basic computational frameworks used in mathematical researches.
III	201ACLSOAN	Office Automation	**CO1 -** After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet
IV	20110AEC41	Language-IV (Tamil-IV)	**CO1 -** Realize how the ancient people changed their lifestyle according to the ages
			CO2 - Learn how to change one's lifestyle according to the needs of the future
			CO3 - Accept the modern trends and its uses
IV	20111AEC41	Advanced English-IV	**CO1 -** Develop writing skill.
			CO2 - Comprehend and describe poems
			CO3 - Learn interviewing skills
IV	20111AEC42	English-IV	**CO1 -** Improve their ability to read and understand them
			CO2 - Know the genius of Shakespeare
			CO3 - Express in writing their views.
IV	20117AEC43	Animal physiology	**CO1 -** To provide advanced undergraduate and introductory graduate students with a comprehensive overview of animal physiology from molecular, cellular and whole animal systems approaches.
			CO2 - To critically evaluate clinical and research case problems relating to endocrinology and cell biology.
IV	20117AEC46L	Animal Physiology Lab	CO1 - Understand the physiological processes that regulate body functions and the regulation of an organ system from the molecular all the way to the whole animal level
			CO2 - Understand how changes in one system may impact a different system
IV	20117AEC44	Molecular biology	**CO1 -** To outline the basics of A central goal is understanding gene regulation at all levels, and the structure-function relationships of nucleic acids and proteins
			CO2 - Be able to perform and interpret bioinformatics and statistical analyses with real molecular biology data.
			CO3 - Be able to describe statistical methods and probability distributions relevant for molecular biology data.
IV	20117AEC47L	Molecular Biology Lab	**CO1 -** To know the isolation methods of protein and nucleic acids
			CO2 - To know the structure-function of nucleic acid and protein
			CO3 - To find out newer methods to implement rDNA Technology for various organisms
			CO4 - To understand several modern molecular methods to elucidate molecular and genetic questions

IV	201ENSTU45	Environmental Studies	CO1 - Students will gain about environmental pollutions, preventive measures
			CO2 - Student will gain information related to societal issues in concern with environment.
			CO3 - Students should have out line knowledge on natural resources and effective management of resources
IV	201ACLSLMS	Leadership and Management Skills	CO1 - Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision
			CO2 - Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.
			CO3 - Understand the basics of entrepreneurship and develop business plans
			CO4 - Apply the design thinking approach for leadership
			CO5 - Appreciate the importance of ethics and moral values for making of a balanced personality
V	20117AEC51	Food and Agricultural Biotechnology	CO1 - To study about molecular biology and enzymes and fermentation in food
			CO2 - To understand the food production and preservation techniques
			CO3 - To acquire knowledge on agricultural techniques
			CO4 - To know the knowledge about genetically modified food
			CO5 - To understand food safety and standards
V	20117SEC52	Cell and Tissue culture	**CO1 -** The students should be able to know how to use different sources of tissues
V	20117AEC53	Industrial Biotechnology	CO1 - To understand the vital role of various substrate used in fermentation
			CO2 - To Learn the different types of reactors or fermenters
			CO3 - To gain knowledge about upstream and downstream processing
			CO4 - To acquire the knowledge on different product production
V	20117AEC54L	Food and Agricultural Biotechnology, Tissue Culture Lab	**CO1 -** To introduce basic processes in food technology and regulatory bodies and various factors in food shelf life evaluation
			CO2 - Discuss the basic processes of plant metabolism, transport, nutrition, growth, and reproduction
V	20117AEC56L	Industrial Biotechnology Lab	CO1 - To gain knowledge on enzyme production and characteristic analysis
			CO2 - To know the industrial process of various product production
			CO3 - To gain the knowledge on industrial strain isolation and purification
V	20117DSC54A	Discipline Specific Elective -I rDNA Technology	**CO1 -** This paper provides the student a thorough knowledge in principles and methods in genetic engineering and their applications.
V	20117DSC54B	Discipline Specific Elective -I Bioinformat-	CO1 - Know the applications and limitations of different bioinformatics and statistical methods.

		ics and Biostatistics	CO2 - Be able to perform and interpret bioinformatics and statistical analyses with real molecular biology data
			CO3 - Be able to describe statistical methods and probability distributions relevant for molecular biology data
V	20117BRC57	Participation in Bounded Research	**CO1 -** Hands on exposure to problem solving tools in contemporary research
			CO2 - Evolution of research intuitiveness and orientation
			CO3 - Familiarity with cutting edge research trends
V	201ACLSPSL	Professional Skills	CO1 - Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax
			CO2 - Participate in a simulated interview
			CO3 - Actively participate in group discussions towards gainful employment
			CO4 - Capture a self - interview simulation video regarding the job role concerned
			CO5 - Enlist the common errors generally made by candidates in an interview
			CO6 - Perform appropriately and effectively in group discussions
			CO7 - Explore sources (online/offline) of career opportunities
			CO8 - Identify career opportunities in consideration of their own potential and aspirations
			CO9 - Use the necessary components required to prepare for a career in an identified occupation (as a case study).
VI	20117AEC61	Plant and Animal Biotechnology	**CO1 -** Basic concepts and procedures, pitfalls, and remedies of using machine learning
VI	20117SEC62	Applied Biotechnology	**CO1 -** Evaluate and describe systems of product research, development, and production
			CO2 - Analyze the potential for commercialization for innovations within the biotechnology industry
			CO3 - The students will gain the basic knowledge of aquaculture and Students will solve a variety of problems using creative thinking skills and analytical skills in the lab.
VI	20117SEC64L	Plant, Animal and Applied Biotechnology Lab	CO1 - Economic aspects of transgenic animals and Ethical issues of animal welfare and animal rights.
			CO2 - Determination of IAA Activity
VI	20117AEC64L	Environmental Biotechnology Lab	**CO1 -** To present an overview of important environmental biotechnologies involved in treatment of pollutants and resource recovery
			CO2 - The students will be able to demonstrate the use of environmental science principle in solving various environmental problems
			CO3 - Describe the most commonly applied disinfection methods, and the steps typically involved in drinking water treatment process

VI	20117DSC63A	Discipline Specific Elective - II Environmental Biotechnology	**CO1 -** Biofuels: Advantages, Energy from biomass, Biogas, Biohydrogen, Biosafety, Toxicity Bio magnification, Threshold Dose, Factor Affecting Toxicity.
			CO2 - Students will gain about environmental pollutions, preventive measures.
			CO3 - Explain the microbial processes and growth requirements undelaying the activated sludge process, nitrification, denitrification, enhanced phosphorus removal, and anaerobic digestion
VI	20117DSC63B	Discipline Specific Elective - II Environmental Management	CO1 - Students will gain about environmental pollutions, preventive measures
			CO2 - Student will gain information related to societal issues in concern with environment
VI	20117PRW67	Project Work	**CO1 -** Understand basic concepts of research and its methodologies
			CO2 - Identify appropriate research problem and parameters
			CO3 - Prepare a research report
VI	201ACLSCET	Community Engagement	CO1 - Gain an understanding of rural life, culture and social realities
			CO2 - Develop a sense of empathy and bonds of mutuality with local community
			CO3 - Appreciate significant contributions of local communities to Indian society and economy
			CO4 - Learn to value the local knowledge and wisdom of the community
			CO5 - Identify opportunities for contributing to community's socio-economic improvements

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School of Arts and Science
Department of Biotechnology
20PGBTGEC
2020 Regulation
Program Outcomes and Course outcomes of
M.Sc., Biotechnology

PROGRAMME OUTCOMES	
PO1	Vital Thinking: Acquire knowledgeable actions after identifying the hypothesis

	that frame our idea and dealings, read-through out the degree to which these hypothesis are precise and suitable, and give the impression of being at our thoughts and assessments (academic, organizational and individual) from diverse perception.
PO2	Precious communication: Study about speak, read, write and listen noticeably in person and throughout electronic media in English and in one Indian language and build meaning of the globe by connecting people, thoughts books, media and technology.
PO3	Effectual citizenship: Reveal empathetic social concern and fairnesscentred national progress and the capability to act with andtake part in civic life through volunteering
PO4	Ethics: Be aware of diverse value systems including the individual, under the ethical dimensions of personal choice, and believe responsibility for them.
PO5	Environment and Sustainability: Analyze the importance of microbes for environmental clean-up and sustainable development.
PO6	Self-directed and life-long learning: To gain the talent to employ in self-determining and life-long learning in the broadest circumstance socio technological transforms.
PROGRAM SPECIFIC OUTCOME	
PSO1	Upon master graduation, Microbiology majors will master a set of advanced skills, which would be useful to function effectively as professionals and to their continued development and learning within the field of Microbiology.
PSO2	Able to explain why microorganisms are ubiquitous in nature, inhabiting a multitude of habitats and occupying a wide range of ecological habitats.
PSO3	Able to cite examples of the vital role of microorganisms in biotechnology, fermentation, medicine and other industries important to human well-being.
PSO4	Able to demonstrate that microorganisms have an indispensible role in the environment, including elemental cycles, biodegradation etc
PSO5	Able to systematically collect record and analyze data, identify sources of error, interpret the result and reach logical conclusion.
PROGRAM EDUCATIONAL OBJECTIVES	
PEO1	To provide detailed knowledge of Microbiology and their application fields. To understand the beneficial and harmful role of microorganisms in the environment and in the industries.
PEO2	To understand the fundamentals of physiological reactions including metabolic pathways and biochemical reactions in microorganisms. To understand the fundamental concepts of immunology, biochemistry, biotechnology and genetics etc.
PEO3	To develop human resource and entrepreneurs in microbiology with the ability to independently start their own ventures or small biotech units in the field of biotechnology.
PEO4	Understand modern microbiology - practices and approaches with an emphasis in technology application in pharmaceutical, medical, industrial, environmental and agricultural areas.
PEO5	Gain experience with standard molecular tools and approaches utilized: manipulate genes, gene products and organisms. Become familiar with handling of Laboratory animals for the research purpose. Interpret differences in data distributions via visual displays.

Semester	Course Code	Title of the Course	COs
I	20217AEC11	General Microbiology	**CO1 -** Students can gain the idea of how to identify the microorganisms based on the modern polyphasic approach.
	20217AEC12	Molecular genetics	**CO1 -** After successful completion of the paper the students will get an overall view about genetic makeup of organisms and can take up a career in research.
	20217AEC13	Biochemistry	**CO1 -** This paper in biochemistry has been designed to provide the student with a firm foundation in the biochemical aspects of cellular functions which forms a base for their future research.
	19217SEC14L	Microbiology & Molecular Genetics Lab	**CO1 -** After successful completion of the paper the students will get an overall view about genetic makeup of organisms and can take up a career in research.
	20217DSC15A	Discipline specific elective I Immunology	**CO1 -** This course will provide the student insights into the various aspects of Immunology such as classical immunology, clinical immunology, Immunotherapy and diagnostic immunology.
	20217DSC15B	Discipline specific elective I Biosafety and Biodiversity	CO1 - To study the diversity of plants and animal life in a particular habitat, ethical issues and potential of biotechnology for the benefit of man kind
	20217RLS16	Research Led Seminar	CO1 - Exposure to various research domains
			CO2 - Acquaintance with languages of research
			CO3 - Development of research aptitude
II	20217SEC21	Cell & Molecular Biology	CO1 - Students after completion of this paper will be exceptionally well prepared to pursue careers in cellular and sub cellular biological research, biomedical research, or medicine or allied health fields.
	20217SEC22	Biophysics & Bioinformatics	CO1 - This paper has been designed to give the students comprehensive training in the emerging and exciting upcoming filed of Systems Biology, which will help students to get career in both industry/R&D.
	20217SEC23	Industrial Biotechnology	CO1 - This course is important in the era of industrialization leading to environmental hazards and hence will help students to take up a career in tackling industrial pollution and also to take up the research in areas like development of biological systems for remediation of contaminated environments (land, air, water), and for environment-friendly processes such as green manufacturing technologies and sustainable development.

	20217SEC24L	Molecular Biology & Industrial Biotechnology Lab	CO1 - Students after completion of this paper will be exceptionally well prepared to pursue careers in cellular and sub cellular biological research, biomedical research, or medicine or allied health fields
	20217DSC25A	Discipline specific elective II Endocrinology	CO1 -To know the pathophysiological significance of the system with special reference to humans.
	20217DSC25B	Discipline specific elective II Bioethics And IPR	CO1 - To get registration in our country and foreign countries of their invention, designs and thesis or theory written by the students during their project work and for this they must have knowledge of patents, copy right, trademarks, designs and information Technology Act. Further teacher will have to demonstrate with products and ask the student to identify the different types of IPR'
	20217RMC26	Research Methodology	CO1 - To culminate this final stage, students will learn to write a comprehensive research proposal that may be conducted in the future
	20217BRC27	Participation in Bounded Research	CO1 - Hands on exposure to problem solving tools in contemporary research
			CO2 - Evolution of research intuitiveness and orientation
			CO3 - Familiarity with cutting edge research trends
III	20217AEC31	Genomics	CO1 - Acquire the aspects of Gene Contig and Shotgun method.
			CO2 - Know the features of the Genome Mapping databases.
	20217AEC32	Proteomics	CO1 - Gain knowledge on phylogenetic profiles
			CO2 - Describe the features of Yeast two-hybrid system.
	20217SEC33L	Genomics & Proteomics - Lab	CO1 - This paper will help students interested in careers as laboratory, research or animal care technicians in the fields of veterinary and human health or biotechnology.
	20217DSC34A	Discipline specific elective III Nanobiotechnology	CO1 - This course will act as a bridge between students from non-biology course at all levels
	20217DSC34B	Discipline specific elective III Environmental biotechnology	CO1 - This course is important in the era of industrialization leading to environmental hazards and hence will help students to take up a career in tackling industrial pollution and also who is willing to take up the research in areas like development of biological systems for remediation of contaminated environments (land, air, water), and for environment-friendly processes such as green manufacturing technologies and sustainable development
III	20217SRC35	Design\socio technical research	CO1 - Familiarity with cutting edge research trends
IV	20217AEC41	Food Technology	CO1 - To understand the basic food safety issues in the food market

		CO2 - To develop and evaluate quality of new food products using objective and subjective methodologies.
		CO3 - To understand the basic concepts in food chemistry and food analysis
20217AEC42	Bio instrumentation	CO1 - Check for analytical functions and find the analytical function and study
		CO2 - Learn the measurement systems, errors of measurement
		CO3 - Demonstrate basic knowledge of Biotechniques
20217SEC43L	Food technology and Bio instrumentation lab	CO1 - Ability to apply principles of food engineering in industry.
		CO2 - Understand, identify and analyze a problem related to food industry and ability to find an appropriate solution for the same.
19217DSC44A	Discipline specific elective IV Gene therapy utilization pharmacology	CO1 - Understand some of the types of disease that might be treatable by gene therapy
		CO2 - Understand the basic principles of genetic manipulation
		CO3 - Understand how genetics may be used in the design of drugs
19217DSC44B	Discipline specific elective IV Plant conservation & disaster management	CO1 - To make sustainable utilization of species and ecosystems
		CO2 - Familiarity with disaster management theory (cycle, phases) Knowledge about existing global frameworks and existing agreements (e.g. Sendai)
		CO3 - Regulatory practices, biosensors and applications in Pharmaceuticals
		CO4 - Quality Assurance and Validation
20217PRW45	Project work	CO1 - Experience from a master's project and international literature.
		CO2 - Develop ability to independently carry out a complete scientific process.
		CO3 - Learn about how to write dissertations and proposals for the scientific community.

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School of Arts and Science

Department of Biotechnology

20MPBTGE

2020 Regulation

Program Outcomes and Course outcomes of

M. Phil., Mapping of COs and POs

Semester	Course Code	Title of the Course	COs
I	203BTC12	Advanced Biotechnology	CO1 - Understanding research questions and tools
			CO2 - Experience in scientific writings
			CO3 - Practice in various aspects of scientific publications
			CO4 - Inculcation of research ethics
	203BTE13A	Environmental Biotech-nology	CO1 - Develop and demonstrate the advanced genetic engineering and cloning techniques
			CO2 - Explain the elaborate details of plant biotechnology like vector for gene transfer, Binary vector
			CO3 - Demonstrate the advanced fermentation techniques and conventional fermentation versus biotransformation.
	203BTE13B	Microbial Genomics	CO1 - Knowledge on the structure, organization and plasticity of microbial genomes, as well as on the tools and methodologies of genome analysis
			CO2 - Emphasis will be given to current applications of microbial genomics in different areas such as human, animal and environmental health, agriculture and biotechnology
	203RPE14	Research and Publication Ethics	CO1 - Be aware about the publication ethics and publication misconducts
			CO2 - Understand the philosophy of science and ethics and research integrity
			CO3 - Develop hands-on skills to identify research misconduct and predatory publications
			CO4 - Differentiate indexing and citation databases, open access publication and research metrics
			CO5 - Use plagiarism tools

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School of Arts and Science
Department of Biotechnology
20UGBTGEC
2020 Regulation
Program Outcomes and Course outcomes of
B.Sc., Mapping of COs and Pos

Semester	Course Code	Title of the Course	COs	POS						
				PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	20110AEC11	Language-I (Tamil-I)	CO1 - Learn the changes that have occurred in literature since the classical period.	*		*	*	*		*
			CO2 - Make use of vocabulary systematically.	*	*	*		*	*	*
			CO3 - Understand how to lead one's life realizing the modernity and its environment/atmosphere.	*	*	*		*	*	*
I	20111AEC11	Advanced English-I	CO1 - Develop vocabulary	*	*	*		*	*	*
			CO2 - Learn to edit and do proof reading	*	*		*	*		*
			CO3 - Read and comprehend literature	*	*	*		*	*	*
I	20111AEC12	English-I	CO1 - Read and comprehend literature	*	*	*	*		*	*
			CO2 - Appreciate poetry and prose	*		*	*	*	*	*
			CO3 - Familiarize students with fiction.		*	*	*	*		*

I	20117AEC13	Fundamentals of Biological system	CO1 - Understand the physical, chemical, and mathematical basis of biology	*		*	*	*		*
			CO2 - Appreciate the different scales of biological systems	*	*		*	*	*	*
I	20117AEC15L	Fundamentals of Biological system Lab	CO1 - The learners will acquire knowledge on the structure and functions relationship of biological system and as well their roll in various biological process	*	*	*	*	*	*	*
I	20115AEC14A	Biological Chemistry	CO1 - The learners will acquire knowledge on the structure and functions relationship of proteins nucleic acid carbohydrates and as well their roll in various biological process	*	*	*	*	*	*	*
I	20115AEC16AL	Biological Chemistry Lab	CO1 - The molecular orbital theory, preparation and properties of inorganic compounds	*	*	*	*		*	*
			CO2 - Theory of covalent bond, polar effects and stereochemistry of organic compounds	*	*	*	*	*	*	*
			CO3 - Elements of photochemistry, chemical kinetics and chromatography	*	*	*	*	*	*	*
I	201ACLSUHV	Universal Human Values	CO1 - Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.	*	*	*		*	*	*
			CO2 - Learn from case studies of lives of great and successful people who followed and practised human values and achieved self-actualisation.	*	*	*	*	*	*	*
			CO3 - Become conscious practitioners of human values.	*	*	*	*	*	*	*
			CO4 - Realise their potential as human beings and conduct themselves properly in the ways of the world.	*	*		*	*	*	*
I	201ACLSICN	Indian Constitution	CO1 - Democratic values and citizenship Training and gained	*		*	*	*	*	*
			CO2 - Awareness on fundamental Rights are established	*	*	*	*	*	*	*
			CO3 - The functions of union Government and State Government are learnt	*	*	*		*	*	*

			CO4 - The Power and functions of the Judiciary learnt thoroughly	*		*	*	*		*
			CO5 - Appreciation of Democratic Parliamentary Rule is learnt	*	*		*		*	*
II	20110AEC21	Language-II (Tamil-II)	CO1 - Know what devotion really is.	*	*		*		*	*
			CO2 - Know the fruitfulness obtained through devotion	*	*	*		*	*	*
			CO3 - Perceive the progress achieved in the society through devotion.	*	*	*	*	*	*	
II	20111AEC21	Advanced English-II	CO1 - Develop technological skills.	*	*	*	*	*	*	*
			CO2 - Able to write in a variety of formats	*	*		*	*	*	*
			CO3 - Read biographies and develop personality	*	*		*	*	*	
II	20111AEC22	English-II	CO1 - Appreciate different forms of literature	*	*		*	*	*	*
			CO2 - Acquire language skills through literature	*	*	*		*	*	*
			CO3 - Broadens the horizon of knowledge	*	*		*	*	*	*
II	20117AEC23	Cell Biology and Genetics	CO1 - This paper will enable the students to learn the basics and lay strong foundation in understanding the composition of cells, how cells works is fundamental to living systems.	*	*		*	*	*	*
II	20117AEC25L	Cell Biology and Genetics lab	CO1 - It will provide an understanding of the unique features of plant cells and animal cell	*	*	*	*		*	*
			CO2 - Gain understanding on the interaction between cells and the environment	*	*	*	*		*	*
II	20116AEC24	Microbiology	CO1 - Students will gain rigorous foundation in various methods to cultivate the microbes and maintenance of the microorganism	*		*	*	*	*	*
II	20116AEC26L	Microbiology lab	CO1 - This curse will provide to this students about the mechanics of experimentation methods of genetics	*	*	*	*		*	*
II	20117RLC27	Research LED	CO1 - Exposure to various research domains	*	*	*	*		*	*

		Seminar	CO2 - Acquaintance with languages of research	*	*	*	*		*	*
			CO3 - Development of research aptitude	*	*	*		*	*	*
II	201ACSSBBE	Basic Behavioral Etiquette	CO1 - Eliminating negative thought, developing enriching habits, unlocking individual potentials and well-versed communication	*	*	*		*	*	*
II	201ACLSCOS	Communicative skills	CO1 - By the end of this program participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities	*	*	*	*	*	*	*
III	20110AEC31	Language-III (Tamil-III)	CO1 - Achieve one's goal by following the ancestral path	*	*	*	*	*	*	*
			CO2 - Learn to lead life of perfection by realizing the uncertainty in the life	*	*	*		*	*	*
			CO3 - Attain happiness through honesty	*	*	*	*	*		*
III	20111AEC31	Advanced English-III	CO1 - Understand phonetics.	*	*	*		*	*	*
			CO2 - Develop writing skill	*	*		*	*	*	*
			CO3 - Able to develop creative writing	*	*		*	*	*	*
III	20111AEC32	English-III	CO1 - Enable to appreciate different types of prose	*	*		*	*	*	*
			CO2 - Develop the conversational skills through one-act plays	*	*	*		*	*	*
			CO3 - Enhance the skill of making grammatically correct sentences.	*	*		*	*	*	*
III	20117AEC33	Plant Physiology	CO1 - Provide examples of the variety of plants on Earth, their distinctive features, and how they fit into their unique ecosystems	*	*	*		*	*	*
III	20117AEC35L	Plant physiology Lab	CO1 - Produce a report of their work, which employs a range of skills of written expression and uses appropriate vocabulary consisting of a practical report	*	*		*	*	*	*

III	20117AEC34	Immunology	CO1 - The students may understanding the immune system, its components and various techniques used in bio manipulation	*	*	*		*	*	*
III	20117AEC36L	Immunology Lab	CO1 - Identify the structure, function, and characteristics of immunoglobulins.	*		*	*	*	*	*
			CO2 - Explain the principles of and perform serological tests.	*	*	*		*	*	*
			CO3 - It's a paper which accomplishes the learning of techniques involved in understanding the immunological aspects of physiology and biological samples	*	*		*	*	*	*
III	20117RMC37	Research Methodology	CO1 - Ability to carry out independent literature survey corresponding to the specific publication type and assess basic computational frameworks used in mathematical researches.	*	*	*		*		*
III	201ACLSOAN	Office Automation	CO1 - After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with internet	*	*		*	*	*	*
IV	20110AEC41	Language-IV (Tamil-IV)	CO1 - Realize how the ancient people changed their lifestyle according to the ages	*	*		*	*	*	*
			CO2 - Learn how to change one's lifestyle according to the needs of the future	*	*	*	*	*		*
			CO3 - Accept the modern trends and its uses	*	*	*		*	*	*
IV	20111AEC41	Advanced English-IV	CO1 - Develop writing skill.	*	*	*	*	*		*
			CO2 - Comprehend and describe poems	*	*	*	*		*	*
			CO3 - Learn interviewing skills	*	*		*	*	*	*
IV	20111AEC42	English-IV	CO1 - Improve their ability to read and understand them	*	*	*	*		*	*
			CO2 - Know the genius of Shakespeare	*	*	*		*	*	*

			CO3 - Express in writing their views.	*	*		*	*	*	*
IV	20117AEC43	Animal physiology	CO1 - Understand the physiological processes that regulate body functions and the regulation of an organ system from the molecular all the way to the whole animal level	*		*	*	*	*	*
			CO2 - Understand how changes in one system may impact a different system	*	*	*	*		*	*
IV	20117AEC46L	Animal Physiology Lab	CO1 - Have an enhanced knowledge and appreciation of mammalian physiology		*	*	*	*	*	*
			CO2 - Understand the functions of important physiological systems including the cardiorespiratory, renal, reproductive and metabolic systems	*		*	*	*	*	*
IV	20117AEC44	Molecular biology	CO1 - To outline the basics of A central goal is understanding gene regulation at all levels, and the structure-function relationships of nucleic acids and proteins	*	*	*		*	*	*
IV	20117AEC47L	Molecular Biology Lab	CO1 - To know the isolation methods of protein and nucleic acids	*		*	*	*	*	*
			CO2 - To know the structure-function of nucleic acid and protein	*	*	*	*	*	*	*
			CO3 - To find out newer methods to implement rDNA Technology for various organisms	*	*	*		*	*	*
			CO4 - To understand several modern molecular methods to elucidate molecular and genetic questions	*	*	*	*	*	*	*
IV	201ENSTU45	Environmental Studies	CO1 - Students will gain about environmental pollutions, preventive measures	*	*	*	*	*	*	*
			CO2 - Student will gain information related to societal issues in concern with environment.	*	*	*	*	*		*

			CO3 - Students should have out line knowledge on natural resources and effective management of resources	*		*	*	*	*	*
IV	201ACLSLMS	Leadership and Management Skills	CO1 - Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision	*	*	*		*	*	*
			CO2 - Learn and demonstrate a set of practical skills such as time management, self management, handling conflicts, team leadership, etc.	*	*		*	*	*	*
			CO3 - Understand the basics of entrepreneurship and develop business plans	*	*	*	*	*		*
			CO4 - Apply the design thinking approach for leadership	*	*		*	*	*	*
			CO5 - Appreciate the importance of ethics and moral values for making of a balanced personality	*	*	*	*	*	*	*
V	20117AEC51	Food and Agricultural Biotechnology	CO1 - To study about molecular biology and enzymes and fermentation in food	*	*	*	*		*	*
			CO2 - To understand the food production and preservation techniques	*		*	*	*	*	*
			CO3 - To acquire knowledge on agricultural techniques	*	*	*		*	*	*
			CO4 - To know the knowledge about genetically modified food	*	*	*		*	*	*
			CO5 - To understand food safety and standards	*	*	*	*		*	*
V	20117SEC52	Cell and Tissue culture	CO1 - The students should be able to know how to use different sources of tissues	*	*		*	*	*	*
V	20117AEC53	Industrial Biotechnology	CO1 - To understand the vital role of various substrate used in fermentation	*	*	*	*	*		*

			CO2 - To Learn the different types of reactors or fermenters	*	*		*	*	*	*
			CO3 - To gain knowledge about upstream and downstream processing	*	*	*		*	*	*
			CO4 - To acquire the knowledge on different product production	*	*		*	*	*	*
V	20117AEC54L	Food and Agricultural Biotechnology, Tissue Culture Lab	CO1 - To introduce basic processes in food technology and regulatory bodies and various factors in food shelf life evaluation	*		*	*	*	*	*
			CO2 - Discuss the basic processes of plant metabolism, transport, nutrition, growth, and reproduction	*	*	*	*		*	*
V	20117AEC56L	Industrial Biotechnology Lab	CO1 - To gain knowledge on enzyme production and characteristic analysis	*		*	*		*	*
			CO2 - To know the industrial process of various product production	*	*		*	*	*	
			CO3 - To gain the knowledge on industrial strain isolation and purification	*	*		*	*	*	*
V	20117DSC54A	Discipline Specific Elective -I rDNA Technology	CO1 - This paper provides the student a thorough knowledge in principles and methods in genetic engineering and their applications.	*	*		*	*	*	*
V	20117DSC54B	Discipline Specific Elective -I Bioinformatics and Biostatistics	CO1 - Know the applications and limitations of different bioinformatics and statistical methods.	*		*	*	*	*	*
			CO2 - Be able to perform and interpret bioinformatics and statistical analyses with real molecular biology data	*	*	*	*		*	*
			CO3 - Be able to describe statistical methods and probability distributions relevant for molecular biology data	*	*		*	*	*	*

V	20117BRC57	Participation in Bounded Research	CO1 - Hands on exposure to problem solving tools in contemporary research	*	*		*	*	*	*
			CO2 - Evolution of research intuitiveness and orientation	*	*		*		*	*
			CO3 - Familiarity with cutting edge research trends	*	*	*	*	*		*
V	201ACLSPSL	Professional Skills	CO1 - Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax	*		*	*		*	
			CO2 - Participate in a simulated interview	*	*	*	*	*		*
			CO3 - Actively participate in group discussions towards gainful employment	*	*	*	*	*		*
			CO4 - Capture a self - interview simulation video regarding the job role concerned	*	*	*	*		*	*
			CO5 - Enlist the common errors generally made by candidates in an interview	*	*	*	*	*	*	*
			CO6 - Perform appropriately and effectively in group discussions	*	*	*	*	*	*	*
			CO7 - Explore sources (online/offline) of career opportunities	*	*	*	*		*	*
			CO8 - Identify career opportunities in consideration of their own potential and aspirations	*	*		*	*	*	*
			CO9 - Use the necessary components required to prepare for a career in an identified occupation (as a case study).	*	*	*	*	*	*	*
VI	20117AEC61	Plant and Animal Biotechnology	CO1 - Basic concepts and procedures, pitfalls, and remedies of using machine learning	*	*	*	*		*	*
VI	20117SEC62	Applied Biotechnology	CO1 - Evaluate and describe systems of product research, development, and production	*	*		*	*	*	*

			CO2 - Analyze the potential for commercialization for innovations within the biotechnology industry	*	*		*	*		*
			CO3 - The students will gain the basic knowledge of aquaculture and Students will solve a variety of problems using creative thinking skills and analytical skills in the lab.	*	*	*		*	*	*
VI	20117SEC64L	Plant, Animal and Applied Biotechnology Lab	CO1 - Economic aspects of transgenic animals and Ethical issues of animal welfare and animal rights.	*	*	*	*	*	*	*
			CO2 - Determination of IAA Activity	*	*	*	*	*	*	*
VI	20117AEC65L	Applied Biotechnology Lab	CO1 - To present an overview of important environmental biotechnologies involved in treatment of pollutants and resource recovery	*	*		*	*	*	*
			CO2 - The students will be able to demonstrate the use of environmental science principle in solving various environmental problems	*		*	*		*	*
			CO3 - Describe the most commonly applied disinfection methods, and the steps typically involved in drinking water treatment process	*	*	*		*		*
VI	20117DSC63A	Discipline Specific Elective - I Environmental Biotechnology	CO1 - Biofuels: Advantages , Energy from biomass, Biogas, Biohydrogen, Biosafety		*		*	*	*	*
			CO2 - Toxicity – Bio magnification, Threshold Dose, Factor Affecting Toxicity , Antidotal Procedure	*	*		*	*		*
VI	20117DSC63B	Environmental Management	CO1 - Students will gain about environmental pollutions, preventive measures		*	*	*		*	*
			CO2 - Student will gain information related to societal issues in concern with environment	*		*	*	*	*	*
			CO3 - Students should have out line knowledge on natural resources and effective management of resources	*	*		*	*	*	*

2020 Regulation

Program Outcomes and Course outcomes of

M.Sc., Mapping of COs and Pos

Semester	Course Code	Title of the Course	COs	POS					
				PO1	PO2	PO3	PO4	PO5	PO6
I	20217AEC11	General Microbiology	CO1 - Students can gain the idea of how to identify the microorganisms based on the modern polyphasic approach.	3	1	0	1	2	2
	20217AEC12	Molecular genetics	CO1 - After successful completion of the paper the students will get an overall view about genetic makeup of organisms and can take up a career in research.	2	0	0	1	2	2
	20217AEC13	Biochemistry	CO1 - This paper in biochemistry has been designed to provide the student with a firm foundation in the biochemical aspects of cellular functions which forms a base for their future research.	3	0	0	3	2	2
	20217SEC14L	Microbiology & Molecular Genetics Lab	CO1 - After successful completion of the paper the students will get an overall view about genetic makeup of organisms and can take up a career in research.	2	2	1	0	1	2
	20217DSC15A	Discipline specific elective I Immunology	CO1 - This course will provide the student insights into the various aspects of Immunology such as classical immunology, clinical immunology, Immunotherapy and diagnostic immunology.	2	1	1	0	0	1
	20217DSC15B	Discipline specific elective I Biosafety and Biodiversity	CO1 - To study the diversity of plants and animal life in a particular habitat, ethical issues and potential of biotechnology for the benefit of man kind	3	1	1	2	2	1
	20217RLS16	Research Led Seminar	CO1 - Exposure to various research domains	3	2	1	0	2	2

			CO2 - Acquaintance with languages of research	3	2	2	0	0	1
			CO3 - Development of research aptitude	2	1	1	2	2	1
II	20217SEC21	Cell & Molecular Biology	CO1 - Students after completion of this paper will be exceptionally well prepared to pursue careers in cellular and sub cellular biological research, biomedical research, or medicine or allied health fields.	2	1	1	1	1	1
	20217SEC22	Biophysics & Bioinformatics	CO1 - This paper has been designed to give the students comprehensive training in the emerging and exciting upcoming filed of Systems Biology, which will help students to get career in both industry/R&D.	2	1	1	2	1	1
	20217SEC23	Industrial Biotechnology	CO1 - This course is important in the era of industrialization leading to environmental hazards and hence will help students to take up a career in tackling industrial pollution and also to take up the research in areas like development of biological systems for remediation of contaminated environments (land, air, water), and for environment-friendly processes such as green manufacturing technologies and sustainable development.	2	1	0	1	1	1
	20217SEC24L	Molecular Biology & Industrial Biotechnology Lab	CO1 - Students after completion of this paper will be exceptionally well prepared to pursue careers in cellular and sub cellular biological research, biomedical research, or medicine or allied health fields	2	1	0	0	1	2
	20217DSC25A	Discipline specific elective II Endocrinology	CO1 -To know the pathophysiological significance of the system with special reference to humans.	1	2	0	1	1	3

	20217DSC25B	Discipline specific elective II Bioethics And IPR	CO1 - To get registration in our country and foreign countries of their invention, designs and thesis or theory written by the students during their project work and for this they must have knowledge of patents, copy right, trademarks, designs and information Technology Act. Further teacher will have to demonstrate with products and ask the student to identify the different types of IPR'	2	2	1	1	2	2
	20217RMC26	Research Methodology	CO1 - To culminate this final stage, students will learn to write a comprehensive research proposal that may be conducted in the future	1	2	1	1	2	2
	20217BRC27	Participation in Bounded Research	CO1 - Hands on exposure to problem solving tools in contemporary research	3	1	1	0	2	1
			CO2 - Evolution of research intuitiveness and orientation	3	1	1	0	2	1
			CO3 - Familiarity with cutting edge research trends	3	1	1	1	2	1
III	20217SEC31	Genomics	CO1 - Acquire the aspects of Gene Contig and Shotgun method.	3	0	0	2	1	2
			CO2 - Know the features of the Genome Mapping databases.	3	1	0	3	1	1
	20217SEC32	Proteomics	CO1 - Gain knowledge on phylogenetic profiles	2	1	0	3	1	1
			CO2 - Describe the features of Yeast two-hybrid system.	2	2	0	3	2	1
	20217SEC33L	Genomics & Proteomics - Lab	CO1 - This paper will help students interested in careers as laboratory, research or animal care technicians in the fields of veterinary and human health or biotechnology.	1	1	0	1	1	1
	20217DSC34A	Discipline specific elective III Nanobiotechnology	CO1 - This course will act as a bridge between students from non-biology course at all levels	1	1	1	1	1	1

	20217DSC34B	Discipline specific elective III Environmental biotechnology	CO1 - This course is important in the era of industrialization leading to environmental hazards and hence will help students to take up a career in tackling industrial pollution and also who is willing to take up the research in areas like development of biological systems for remediation of contaminated environments (land, air, water), and for environment- friendly processes such as green manufacturing technologies and sustainable development	2	1	1	1	1	1
III	20217SRC35	Design\socio technical research	CO1 - Familiarity with cutting edge research trends	3	0	2	2	2	1
IV	20217SEC41	Food Technology	CO1 - To understand the basic food safety issues in the food market	2	1	1	1	2	2
			CO2 - To develop and evaluate quality of new food products using objective and subjective Methodologies	2	1	2	1	1	2
			CO3 - To understand the basic concepts in food chemistry and food analysis	2	2	2	1	1	2
	20217SEC42	Bio instrumentation	CO1 - Check for analytical functions and find the analytical function and study	2	0	0	1	1	2
			CO2 - Learn the measurement systems, errors of measurement	2	0	0	1	1	2
			CO3 - Demonstrate basic knowledge of Biotechniques	2	1	1	1	1	2
	20217SEC43L	Food technology and Bio instrumentation lab	CO1 - Ability to apply principles of food engineering in industry.	3	0	1	1	1	2
			CO2 - Understand, identify and analyze a problem related to food industry and ability to find an appropriate solution for the same.	2	1	1	1	1	1

				PO1	PO2	PO3	PO4	PO5	PO6
I	203BTC12	Advanced Biotechnology	CO1 - Understanding research questions and tools	3	0	1	0	2	1
			CO2 - Experience in scientific writings	2	1	1	0	1	1
			CO3 - Practice in various aspects of scientific publications	3	1	2	0	2	1
			CO4 - Inculcation of research ethics	2	1	0	1	2	1
	203BTE13A	Environmental Biotechnology	CO1 - Develop and demonstrate the advanced genetic engineering and cloning techniques	2	0	0	1	2	2
			CO2 - Explain the elaborate details of plant biotechnology like vector for gene transfer, Binary vector	1	3	0	1	2	2
			CO3 - Demonstrate the advanced fermentation techniques and conventional fermentation versus biotransformation.	1	1	1	1	1	2
	203BTE13B	Microbial Genomics	CO1 - Knowledge on the structure, organization and plasticity of microbial genomes, as well as on the tools and methodologies of genome analysis	3	0	1	0	2	1
			CO2 - Emphasis will be given to current applications of microbial genomics in different areas such as human, animal and environmental health, agriculture and biotechnology	2	1	1	0	1	1
	203RPE14	Research and Publication Ethics	CO1 - Be aware about the publication ethics and publication misconducts	3	1	2	0	2	1
			CO2 - Understand the philosophy of science and ethics and research integrity	2	1	0	1	2	1

			CO3 - Develop hands-on skills to identify research misconduct and predatory publications	2	0	0	1	2	2
			CO4 - Differentiate indexing and citation databases, open access publication and research metrics	1	3	0	1	2	2
			CO5 - Use plagiarism tools	1	1	1	1	1	2

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DEPARTMENT OF CIVIL ENGINEERING
1.1.1 -CO-PO-PSO MAPPING

B.TECH (F.T)- 2020R

Sem	Course Code	Title of the Course	COs	POS									
				PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
SEM 1	20147S11	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			✓							
	20148S12	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.	✓									✓
	20149S13	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.			✓	✓							✓
	20149S14	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.	✓	✓		✓	✓	✓					
	20154S15	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, and dictionaries.					✓						✓
			Read and write data from/to files in Python Programs.											
	20150S16	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.	✓										
	20150L17	Problem Solving and Python Programming Laboratory	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.	✓										✓
	20149L18	Physics and Chemistry Laboratory	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	✓										
	201AGIT	Induction Training	Developing respect for the dignity of individual and society.	✓										

		Programme	Inculcation of a spirit of patriotism and national integration.					✓						
			Developing a democratic way of thinking and living.					✓						
SEM 2	20147S21	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.							✓				
	20148S22A	Engineering Mathematics – II	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.	✓	✓									
	20149S23D	Physics for Civil Engineering	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.	✓				✓						
	20149S25E	Basic Electrical and Electronics Engineering	Ability to identify the electrical components and explain the characteristics of electrical machines.	✓										
			ability to identify electronics components and understand the characteristics	✓										

	19153S25E	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 disaster	✓					✓				✓
	20154S26D	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	✓									
	20154L27	Engineering Practices Laboratory	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.	✓									
	20155L28E	Computer Aided Building Drawing	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.	✓			✓						
	201AGIC	Indian Constitution	Democratic values and citizenship Training are gained.					✓					
			Awareness on Fundamental Rights are established.					✓					
			The functions of union Government and State Governments are learnt.					✓					
			The power and functions of the Judiciary learnt thoroughly.					✓					
			Appreciation of Democratic Parliamentary Rule is learnt.					✓					

SEM 3	20148C31C	Transforms and Partial Differential Equations	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	✓									
	20155C32	Engineering Geology	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	✓									
	20155C33	Construction Materials	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.	✓									
	20155C34	Strength of Materials I	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	✓									
	20155C35	Fluid Mechanics	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.										
	20155C36	Surveying	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.										
	20155L37	Surveying Laboratory	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.	✓	✓		✓		✓			✓	
	20155L38	Construction Materials Laboratory	the students will have the required knowledge in the area of testing of construction materials and components of construction elements experimentally.	✓	✓				✓				
	20155L39	Interpersonal Skills / Listening and Speaking	Listen and respond appropriately.	✓									✓
			Participate in group discussions	✓									
			Make effective presentations	✓									
			Participate confidently and appropriately in conversations both formal and informal	✓									✓
SEM 4	20148S41C	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.	✓									
	20155C42	Construction Techniques and Practices	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.						✓		✓		
	19155C43	Strength of Materials II	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.										✓
	20155C44	Applied Hydraulic Engineering	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.	✓	✓								

	20155C45	Concrete Technology	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.	✓				✓					
	20155C46	Soil Mechanics	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.	✓		✓							
	20155L47	Strength of Materials Lab	The students will have the required knowledge in the area of testing of materials and components of structural elements experimentally.	✓	✓	✓	✓	✓					✓
	20155L48	Hydraulic Engineering Lab	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.					✓	✓		✓	✓	
	20155L49	Advanced Reading & Writing	Write different types of essays.	✓		□							
			Write winning job applications.										
			Read and evaluate texts critically.	✓									
			Display critical thinking in various professional contexts									✓	
	20155CRS	Research Led Seminar	Exposure to various research domains	✓									
			Acquaintance with languages of research	✓									
			Development of research aptitude	✓									
	201AGCE	Community Engagement	Gain an understanding of rural life, culture and social realities					✓					
			Develop sense of empathy and bond so mutuality with local community					✓					
			Appreciatesignificantcontributionsoflocalcommunitiestoindiansocietyandeconomy					✓					
			Learnt value the local knowledge and wisdom of the community					✓					
			Identify opportunities for contributing to community's socio-economic improvements					✓					

SEM 5	20155C51	Design of Reinforced Cement Concrete Elements	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.	✓		✓							
	20155C52	Structural Analysis I	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.		✓	✓						✓	✓
	20155C53	Water Supply Engineering	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			✓	✓					✓	

			Evaluate equipment and techniques required during construction.	✓		✓							
			Understand the operation of a batching plant.		✓								
			Analyze the equipment life cycle management.	✓									
	20155E55A	Construction Equipment and Automation	Comprehend mechanization and digitalisation in construction.										
	20155E55B	Principles of Architecture	The students sttall have acquired knowledge of the process involved in addressing a design problem with emphasls on slte planning.										
			Study of Principles of Design										
			Study of Furniture&learning Facilitation. Understand Climate &design : Orientation, climatic coordination and & architectural elements.										
			Application of the knowledge gained in other subjects.										
	20155FE55C	Geographic Information System	Have basic idea about the fundamentals of GIS.	✓									
			Understand the types of data models.										
			Get knowledge about data input and topology.	✓									
			Gain knowledge on data quality and standards.	✓				✓					
			Understand data management functions and data output					✓					
	20155E55D	Forensic Engineering & Rehabilitation	learn to analyze and reconstruct incidents using engineering principles.										
			learn to perform structural analysis.										
			learn to perform material testing.										
			learn to reconstruct accidents.										
	20155E55E	Energy Efficient Buildings	Introduce the concepts of energy efficiency, energy conservation and thermal comfort in the built environment.										
			Familiarize participants with the modes of heat transfer and heat losses in building materials.										

			Obtain knowledge on the various properties of conventional and advanced building materials, used for thermal insulation and moisture control.										
			Explain the concepts of heat energy storage, cooling and ventilation in buildings.										
	20155C56	Foundation Engineering	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.							✓			✓
	20155L57	Soil Mechanics Lab	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.			✓		✓	✓				
	20155L58	Water and Waste Water Analysis Lab	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		✓		✓						✓
	20155L59	Survey Camp	Interpret the contours			✓	✓					✓	
			Work in a teamwork								✓		
			Mark a road alignment of (L-section, Cross-section) a given gradient connecting any two stations on the map				✓					✓	
			Calculate the earth work			✓							
			Prepare a topographical plan of a given area					✓					
	20155CRM	Research Methodology	Ability to carry out independent literature survey corresponding to the specific publication type and assess basic experimental as well as conceptual set up.	✓									

SEM 6	20155C61	Design of Steel Structural Elements	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.	✓									
	20155C62	Structural Analysis II	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.	✓			✓						
	20155C63	Irrigation Engineering	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.		□		✓						
	20155C64	Highway Engineering	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.		✓	✓	□			□			□
	20155C65	Waste Water Engineering	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.		□		✓			□			□
	20155E66A	Energy and Environment	Gain knowledge on methods and selection of ground improvement techniques.	✓	□		✓			✓			□
			Understand dewatering techniques and design for simple cases.	✓	□		□			□			□
			Get knowledge on insitu treatment of cohesionless and cohesive soils.		□		□			✓			□
			Understand the concept of earth renforcement and design of reinforced earth.		□		□		✓	□			□
			Get to know types of grouts and grouting technique.		□		□	✓		□			□
	20155E66B	Environmental Policies and Legislation	Understand the theory and measurement of vibration.	✓	□		□			✓			□
			Understand the concept of wave propagation in infinite medium and due to machine foundation.	✓	□		✓		✓	□			□
			Get knowledge on dynamic properties of soils and laboratory and field testing.	✓	□		□			□			□
			Design of foundation for different types of machines		□		□		✓	□			□
			Understand liquefaction, motion isolation and vibration control.	✓	□		□	✓		□			□
	20155E66C	Sustainable Urban Development Concepts and Strategies	Classify the rocks, study the index properties of rock systems.	✓	□		□			□			□
			Understand the modes of rock failure, stares-strain characteristics, failure criteria.	✓	□	✓	✓		□	□			□

			Estimate the stresses in rocks.	✓	□	✓	□			□			□
			Apply rock mechanics in engineering.		□		□		✓	□			□
			Get knowledge on rock stabilization.		□		□	✓		□			□
	20155E66D	Instrumental Methods and Analysis of Environmental Pollutants	Describe basic issues in urban planning	✓	□		□			□			□
			Formulate plans for urban and rural development and	✓	□	✓	✓		□	□			□
			Plan and analyse socio economic aspects of urban and rural planning		□	✓	✓		✓	□			□
			Design of urban development projects.	✓	□		□	✓	✓	□			□
			Manage urban development projects.		□		□	✓		□			□
	20155E66E	Air pollution and control Engineering	an understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management	✓	□		□		✓	□			□
			ability to identify, formulate and solve air and noise pollution problems	✓	□	✓	□		□	□			✓
			ability to design stacks and particulate air pollution control devices to meet applicable standards.		□	✓	✓		✓	□			□
			Ability to select control equipments.	✓	□		□		□	□			□
			Ability to ensure quality, control and preventive measures.		□		□	✓		□			□
	20155L67	Highway Engineering Laboratory	Student knows the techniques to characterize various pavement materials through relevant tests.	✓			✓				✓		
	20155L68	Irrigation and Environmental Engineering Drawing	The students after completing this course will be able to design and draw various units of Municipal water treatment plants and sewage treatment plants.	✓	✓		✓						
	20155L69	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		□		□			□			□

	20155CBR	Participation in Bounded Research	Hands on exposure to problem solving tools in contemporary research	✓			✓			✓			
			Evolution of research intuitiveness and orientation		□	✓	✓		✓	□		✓	□
			Familiarity with cutting edge research trends	✓	□		□	✓	✓	□			□
SEM 7	20155C71	Estimation , Costing & Valuation Engineering	For buildingsEstimate the quantities,		□		□	✓		✓			□
			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.		□	✓	✓		✓	✓			□
	20155C72	Railways, Airports, Docks And Harbour Engineering	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.	✓	□	✓	□		□	□			□
	20155C73	Structural Design and drawing	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.		✓			✓		□			□
	20155E75A	Building Automation & Management System	Complete knowledge of Building Automation.	✓	□		✓		✓				
			Able to Program, Testing & Commissioning of Hardware.										
			Able to Troubleshoot Hardware & Software.				✓				✓		
			Control & MCC Panel Wiring & Designing.							✓			✓

			Web-based Multi-protocol Building Automation and Energy Management Platform.	✓		✓							
	20155E75B	Design of prestressed concrete structures	Understand the behaviour of prestressed concrete members and able to analyze the prestressed concrete beams.	✓			✓						
			Design the prestressed concrete members for flexure and shear as per the relevant design code (IS 1343).			✓	✓						
			Analyze for deflection of prestressed concrete members and design the anchorage zone.					✓					
			Analyze and design of composite beams and continuous beams.				✓				✓		
			Design of prestressed concrete structures - sleepers, Tanks, pipes and poles.				□				□		
	20155E75C	Pavement Engineering	Get knowledge about types of rigid and flexible pavements.	□		✓		✓					
			Able to design of rigid pavements.				□		✓		✓		
			Able to design of flexible pavements.										
			Determine the causes of distress in rigid and flexible pavements.				□		✓		✓		
			Understand stailisation of pavements, testing and field control.	□		✓		✓					
	20155E75D	Town Planning	Students may learn about the basic principles of planning, including the purpose, meaning, and history of planning.	□		✓		✓					
			Students may learn about various planning exercises, such as layout planning, neighborhood planning, and urban renewal.										
			Students may learn about building bye laws for residential buildings.		✓								
			Students may learn about the importance of site visits related to planning exercises.					✓					
			Students may learn about the various components of buildings, including their size, abbreviations, and symbols.				✓						✓

	20155E75E	Smart materials and smart structures	Learn the basic principles of smart materials and structures, including the stimulus-response effects in smart materials and their design, fabrication, modeling, and performance predictions.	✓			✓						
			This ability drives innovation in industries from construction to automotive, creating more efficient, durable, and adaptable products.			✓	✓					✓	
			Understand various smart material and its importance in engineering application										
			Know various processing technics of smart materials			✓	✓			✓			
			Get knowledge of use of smart material as sensors and actuators.										
	20155L76	Creative and Innovation project (activity based –subject related)	On completion of the design projectstudents will have a better experience in designing various design problems related to Civil Engineering.			✓		✓					✓
				✓			✓	✓					
					✓								
								✓					
	20155L77	Industrial Training (4weeks During VI Semester – Summer)	• The intricacies of implementation textbook knowledge into practice			✓							
			• The concepts of developments and implementation of new techniques							✓			
	20155L78	Technical Seminar	To effectively communicate by making an oral presentation							✓			
			To study research papers for understanding of anew field, in the absence of a text book, to summarize and review them.	✓			✓					✓	
	20155CSR	Design / Socio - Technical Project (Scaffolded Research)	Sensitization of social needs for innovation	✓						✓			
			Team work towards interdisciplinary synchronous research strategy				✓					✓	
			Development of critical thinking and synergistic research approach.						✓				✓
SEM8	20155E81A	Environmental Economics	To understand the economic behaviour of individuals, firms and markets.										

			To understand the overall structure of the economy in theoretical and contemporary perspectives for Ist semester post graduate students.					✓			✓			
			Student will be able to understand the links between household behavior and the economic models of demand.											
			To develop mathematical approach in analysis of economic problems.		✓						✓			
			To discuss the structure and change in variables. It helps understand the overall static and dynamic perspectives of the economy in a purely theoretical perspective.	✓			✓							✓
	20155E81B	Simulation and Modeling in Environmental Systems	Understand the different modeling approaches, their scope and limitations	✓						✓				
			Understand the idea, methodology and basic tools of environmental modeling				✓							
			Understand the fate and transport of pollutant						✓					
			Become aware of a wide range of applications of modelling in environmental management & decision making											
	20155E81C	Membrane Separation for Water and Waste water	Analyze and interpret environmental pollution data					✓						
			Design environmental engineering systems											
			Forecast and predict fate of pollutants in the environment.		✓					✓				
			Identify best waste management practices	✓			✓							
			Predict the environmental impacts of developmental projects and engineered solutions in global, and socio-economic context.	✓						✓				
	20155E81D	Theory and Practice of Industrial Wastewater Treatment	The options for disposal or reuse must be considered so the correct treatment process is used on the wastewater.				✓							
			Industrial water treatment seeks to manage four main problem areas						✓					
			It is a form of waste management.											

			Boilers do not have many problems with microbes as the high temperatures prevent their growth.					✓						
			This is achieved by removing contaminants from the sewage.											
	20155E81E	Geo-environmental engineering	Exposed to the economic aspects and analysis of water resources systems by which they will get an idea of comprehensive and integrated planning of a water resources project.		✓						✓			
			Understanding the concept of linear programming and apply in water resource system.	✓			✓							
			Understanding the concept of dynamic programming and apply in water resource system.	✓							✓			
			Develops simulation models.				✓							
			developing skills in solving problems in operations research through LP, DP and Simulation techniques.						✓					
	20155E82A	Airport & Waterways Engineering	To understand the function of different components of airports, docks and harbours.	✓										
			The students will get a diverse knowledge of highway engineering practices applied to real life problems.					✓						
			Classify and identify the available rock in the construction site. interpret the different geological features and their engineering importance.											
			apply the geological concepts in civil engineering projects.		✓						✓			
	20155E82B	Surface Hydrology	Students apply scientific knowledge to study the hydrologic cycle, precipitation, and abstractions.	✓			✓							
			Students learn to identify and analyze precipitation and runoff characteristics.	✓							✓			
			Students learn to design, develop, and analyze hydrograph components using various methods.				✓							

			Students apply knowledge of mathematics and engineering to estimate flood magnitude.						✓				
	20155E82C	Prefabricated structures	The student will have good knowledge about design principles, layout of factory and stages of loading in precast construction.										
			The student will have good knowledge about design principles, layout of factory and stages of loading in precast construction.					✓					
			Acquire knowledge about types of floor systems, stairs and roofs used in precast construction.										
			Acquire knowledge about types of walls used in precast construction, sealants, design of joints.		✓					✓			
			Acquire knowledge about components in industrial building.	✓			✓						
	20155E82D	Contracts Management	To understand legal language in contracts	✓						✓			
			To select the right contract type for your project or organization				✓						
			To negotiate favorable contract terms						✓				
			To effectively administer contracts										
	20155E82E	Sustainable Construction methods	Learn to assess the qualities of building materials in the context of sustainability					✓					
			Learn to distinguish between the different methods of sustainable construction for residential and non-residential buildings										
			Learn to evaluate the concepts of depreciation and obsolescence in buildings within the context of sustainability		✓					✓			
			Learn to propose suitable building maintenance strategies during a building's lifecycle		✓					✓			

			Sustainable construction is a vital part of modern construction projects that aims to reduce the depletion of natural resources, greenhouse gas emissions, and promote the well-being of the community.	✓			✓							
	20155P83	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.	✓						✓				

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NAAC ACCREDITED
THANJAVUR – 613403 - TAMILNADU

DEPARTMENT OF CIVIL ENGINEERING

COURSE OBJECTIVE (R-2020)

B.TECH(F.T)-R-2020

SEM	COURSE CODE	TITLE OF THE COURSE	COS
I	20147S11	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 • Read articles of a general kind in magazines and newspapers.
I	20148S12	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,

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				partial fractions and integration by parts.
			•	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
			•	Apply various techniques in solving differential equations.
I	20149S13	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.
			•	The students will understand the basics of crystals, their structures and different crystal growth techniques.
I	20149S14	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.
I	20154S15	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.

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			• Decompose a Python program into functions.
			• Represent compound data using Python lists, tuples, and dictionaries.
I	20150S16	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.
I	20150L17	Problem Solving and Python Programming Laboratory	• 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.
I	20149L18	Physics and Chemistry Laboratory	• 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.

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I	201AGIT	Induction Training Programme	• Developing respect for the dignity of individual and society. • Inculcation of a spirit of patriotism and national integration. • Developing a democratic way of thinking and living.
II	20147S21	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.
II	20148S22A	Engineering Mathematics – II	• 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.
II	20149S23D	Physics for Civil	• The students will have knowledge on the thermal performance of

		Engineering	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.
			• The students will understand the hazards of buildings.
II	19153S24A	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 disaster.
II	20149S25E	Basic Electrical and Electronics Engineering	• Ability to identify the electrical components and explain the characteristics of electrical machines.
			• Ability to identify electronics components and understand the characteristics.
II	20154S26D	Engineering Mechanics	• Illustrate the vectorial and scalar representation of forces and moments.
			• Analysethe rigid body in equilibrium.
			• Evaluate the properties of surfaces

			and solids.
			• Calculate dynamic forces exerted in rigid body.
II	20154L27	Engineering Practices Laboratory	• 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.
II	20155L28E	Computer Aided Building Drawing	• 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.
II	201AGIC	Indian Constitution	• Democratic values and citizenship Training are gained.
			• Awareness on Fundamental Rights are established.
			• The functions of union Government and State Governments are learnt.
			• The power and functions of the Judiciary learnt thoroughly.
			• Appreciation of Democratic Parliamentary Rule is learnt.
II	201ASBE	Basic Behavioral Etiquette	• Determine the attitudes and behaviors appropriate to workplace situations and setings.

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			• Use inerpersonal and communication skills to enhance his/her job effectiveness.
III	20148C31C	Transforms and Partial Differential Equations	• 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.
III	20155C32	Engineering Geology	• 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 harbor.
III	20155C33	Construction Materials	•	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.
III	20155C34	Strength of Materials I	•	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.
III	20155C35	Fluid Mechanics	•	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.
III	20155C36	Surveying	• 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.
III	20155L37	Surveying Laboratory	• 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.
III	20155L38	Construction Materials Laboratory	• The students will have the required knowledge in the area of testing of construction materials and components of construction elements experimentally.
III	20155L39	Interpersonal Skills / Listening and Speaking	• Listen and respond appropriately.
			• Participate in group discussions.
			• Make effective presentations.
			• Participate confidently and appropriately in conversations both formal and informal.
III	201AGGS	Introduction to	• Identify gendered social structures in

		Gender Studies		their lives, and understand how gender intersects with other factors like race, class, and sexuality.
			•	The evolution of gender studies as a discipline, and become familiar with key concepts and debates.
IV	20148S41C	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.
			•	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
IV	20155C42	Construction Techniques and Practices	•	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.
IV	20155C43	Strength of Materials II	•	Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.

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			• 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.
IV	20155C44	Applied Hydraulic Engineering	• 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.
IV	20155C45	Concrete Technology	• 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.
IV	20155C46	Soil Mechanics	• 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.
IV	20155L47	Strength of Materials Lab	• The students will have the required knowledge in the area of testing of materials and components of structural elements experimentally.
IV	20155L48	Hydraulic Engineering Lab	• 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.
IV	20155L49	Advanced Reading & Writing	• Write different types of essays.
			• Write winning job applications.
			• Read and evaluate texts critically.
			• Display critical thinking in various professional contexts.
IV	20155CRS	Research Led Seminar	• Exposure to various research domains .
			• Acquaintance with languages of research.
			• Development of research aptitude.
IV	201AGCE	Community Engagement	• Gain an understanding of rural life, culture and social realities.
			• Develop sense of empathy and bond so mutuality with local community.
			• Appreciatesignificantcontributionsofl ocalcommunitiestoIndiansocietyande conomy.

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			• Learnt value the local knowledge and wisdom of the community.
			• Identify opportunities for contributing to community's socio-economic improvements.
IV	201ASGS	Technical, General Aptitude and Skill Set Development	• Use their logical thinking ability and solve questions related to reasoning based exercises.
			• Use their logical thinking and analytical abilities to solve reasoning questions from company specific and other competitive tests.
V	20155C51	Design of Reinforced Cement Concrete Elements	• 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.
V	20155C52	Structural Analysis I	• 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.
V	20155C53	Water Supply Engineering	• 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.
V	20155E55A	Construction Equipment and Automation	• Evaluate equipment and techniques required during construction.
			• Understand the operation of a batching plant.
			• Analyze the equipment life cycle management.
			• Comprehend mechanization and digitalisation in construction.
V	20155E55B	Principles of Architecture	• The students sttall have acquired knowledge of the process involved in addressing a design problem with emphasls on slte planning.
			• Study of Principles of Design
			• Study of Furniture&learning Facilitation. Understand Climate &design : Orientation, climatic

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			coordination and & architectural elements.
			• Application of the knowledge gained in other subjects.
V	20155FE55C	Geographic Information System	• Have basic idea about the fundamentals of GIS.
			• Understand the types of data models.
			• Get knowledge about data input and topology.
			• Gain knowledge on data quality and standards.
			• Understand data management functions and data output.
V	20155E55D	Forensic Engineering & Rehabilitation	• learn to analyze and reconstruct incidents using engineering principles.
			• learn to perform structural analysis.
			• learn to perform material testing.
			• learn to reconstruct accidents.
V	20155E55E	Energy Efficient Buildings	• Introduce the concepts of energy efficiency, energy conservation and thermal comfort in the built environment.
			• Familiarize participants with the modes of heat transfer and heat losses in building materials.
			• Obtain knowledge on the various properties of conventional and advanced building materials, used for thermal insulation and moisture control.
			• Explain the concepts of heat energy storage, cooling and ventilation in buildings.
V	20155C56	Foundation Engineering	• Understand the site investigation, methods and sampling.
			• Get knowledge on bearing capacity and testing methods.

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			• Design shallow footings.
			• Determine the load carrying capacity, settlement of pile foundation.
			• Determine the earth pressure on retaining walls and analysis for stability.
V	20155L57	Soil Mechanics Lab	• 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.
V	20155L58	Water and Waste Water Analysis Lab	• 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.
V	20155L59	Survey Camp	• Interpret the contours.
			• Work in a teamwork.
			• Mark a road alignment of (L-section, Cross-section) a given gradient connecting any two stations on the map.
			• Calculate the earth work
			• Prepare a topographical plan of a given area.
V	20155CRM	Research Methodology	• Ability to carry out independent literature survey corresponding to the specific publication type and assess basic experimental as well as conceptual set up.
VI	20155C61	Design of Steel Structural Elements	• Understand the concepts of various design philosophies
			• Design common bolted and welded connections for steel structures

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			• 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.
VI	20155C62	Structural Analysis II	• 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.
VI	20155C63	Irrigation Engineering	• Have knowledge and skills on crop water requirements.
			• Understand the methods and management of irrigation.
			• Gain knowledge on types of Impounding structures
			• irrigation. Understand methods of irrigation including canal
			• Get knowledge on water management on optimization of water use.
VI	20155C64	Highway Engineering	• 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.
VI	20155C65	Waste Water Engineering	• 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.
VI	20155E66A	Energy and Environment	• Gain knowledge on methods and selection of ground improvement techniques.
			• Understand dewatering techniques and design for simple cases.
			• Get knowledge on insitu treatment of cohesionless and cohesive soils.
			• Understand the concept of earth renforcement and design of reinforced earth.
			• Get to know types of grouts and grouting technique.
VI	20155E66B	Environmental Policies and Legislation	• Understand the theory and measurement of vibration.
			• Understand the concept of wave propagation in infinite medium and due to machine foundation.
			• Get knowledge on dynamic properties of soils and laboratory and field testing.
			• Design of foundation for different types of machines

			• Understand liquefaction, motion isolation and vibration control.
VI	20155E66C	Sustainable Urban Development Concepts and Strategies	• Classify the rocks, study the index properties of rock systems.
			• Understand the modes of rock failure, stares-strain characteristics, failure criteria.
			• Estimate the stresses in rocks.
			• Apply rock mechanics in engineering.
			• Get knowledge on rock stabilization.
VI	20155E66D	Instrumental Methods and Analysis of Environmental Pollutants	• Describe basic issues in urban planning
			• Formulate plans for urban and rural development and
			• Plan and analyse socio economic aspects of urban and rural planning
			• Design of urban development projects.
			• Manage urban development projects.
VI	20155E66E	Air pollution and control Engineering	• an understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management
			• ability to identify, formulate and solve air and noise pollution problems
			• ability to design stacks and particulate air pollution control devices to meet applicable standards.
			• Ability to select control equipments.
			• Ability to ensure quality, control and preventive measures.
VI	20155L67	Highway Engineering Laboratory	• Student knows the techniques to characterize various pavement materials through relevant tests.
VI	20155L68	Irrigation and Environmental	• The students after completing this course will be able to design and

		Engineering Drawing		draw various units of Municipal water treatment plants and sewage treatment plants.
VI	20155L69	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
VI	20155CBR	Participation in Bounded Research	•	Hands on exposure to problem solving tools in contemporary research
			•	Evolution of research intuitiveness and orientation
			•	Familiarity with cutting edge research trends
VII	20155C71	Estimation , Costing & Valuation Engineering	•	for buildingsEstimate the quantities,
			•	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.
VII	20155C72	Railways, Airports, Docks And Harbour Engineering	•	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

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				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.
VII	20155C73	Structural Design and drawing	•	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
VII	20155E75A	Building Automation & Management System	•	Complete knowledge of Building Automation.
			•	Able to Program, Testing & Commissioning of Hardware.
			•	Able to Troubleshoot Hardware & Software.
			•	Control & MCC Panel Wiring & Designing.
			•	Web-based Multi-protocol Building Automation and Energy Management Platform.
VII	20155E75B	Design of prestressed concrete structures	•	Understand the behaviour of prestressed concrete members and able to analyze the prestressed concrete beams.
			•	Design the prestressed concrete members for flexure and shear as per the relevant design code (IS 1343).
			•	Analyze for deflection of prestressed concrete members and design the

			anchorage zone.
			• Analyze and design of composite beams and continuous beams.
			• Design of prestressed concrete structures - sleepers, Tanks, pipes and poles.
VII	20155E75C	Pavement Engineering	• Get knowledge about types of rigid and flexible pavements.
			• Able to design of rigid pavements.
			• Able to design of flexible pavements.
			• Determine the causes of distress in rigid and flexible pavements.
			• Understand stailisation of pavements, testing and field control.
VII	20155E75D	Town Planning	• Students may learn about the basic principles of planning, including the purpose, meaning, and history of planning.
			• Students may learn about various planning exercises, such as layout planning, neighborhood planning, and urban renewal.
			• Students may learn about building bye laws for residential buildings.
			• Students may learn about the importance of site visits related to planning exercises.
			• Students may learn about the various components of buildings, including their size, abbreviations, and symbols.
VII	20155E75E	Smart materials and smart structures	• Learn the basic principles of smart materials and structures, including the stimulus-response effects in smart materials and their design, fabrication, modeling, and performance predictions.
			• This ability drives innovation in

			industries from construction to automotive, creating more efficient, durable, and adaptable products.
			• Understand various smart material and its importance in engineering application
			• Know various processing technics of smart materials
			• Get knowledge of use of smart material as sensors and actuators.
VII	20155L76	Creative and Innovation project (activity based –subject related)	• On completion of the design projectstudents will have a better experience in designing various design problems related to Civil Engineering.
VII	20155L77	Industrial Training (4weeks During VI Semester – Summer)	• The intricacies of implementation textbook knowledge into practice
			• The concepts of developments and implementation of new techniques
VII	20155L78	Technical Seminar	• To effectively communicate by making an oral presentation
			• To study research papers for understanding of anew field, in the absence of a text book, to summarize and review them.
VII	20155CSR	Design / Socio - Technical Project (Scaffolded Research)	• Sensitization of social needs for innovation
			• Team work towards interdisciplinary synchronous research strategy
			• Development of critical thinking and synergistic research approach.
VIII	20155E81A	Environmental Economics	• To understand the economic behaviour of individuals, firms and markets.
			• To understand the overall structure

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			of the economy in theoretical and contemporary perspectives for Ist semester post graduate students.
			• Student will be able to understand the links between household behavior and the economic models of demand.
			• To develop mathematical approach in analysis of economic problems.
			• To discuss the structure and change in variables. It helps understand the overall static and dynamic perspectives of the economy in a purely theoretical perspective.
VIII	20155E81B	Simulation and Modeling in Environmental Systems	• Understand the different modeling approaches, their scope and limitations
			• Understand the idea, methodology and basic tools of environmental modeling
			• Understand the fate and transport of pollutant
			• Become aware of a wide range of applications of modelling in environmental management & decision making
VIII	20155E81C	Membrane Separation for Water and Waste water	• Analyze and interpret environmental pollution data
			• Design environmental engineering systems
			• Forecast and predict fate of pollutants in the environment.
			• Identify best waste management practices
			• Predict the environmental impacts of developmental projects and engineered solutions in global, and socio-economic context.

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VIII	20155E81D	Theory and Practice of Industrial Wastewater Treatment	• The options for disposal or reuse must be considered so the correct treatment process is used on the wastewater. • Industrial water treatment seeks to manage four main problem areas • It is a form of waste management. • Boilers do not have many problems with microbes as the high temperatures prevent their growth. • This is achieved by removing contaminants from the sewage.
VIII	20155E81E	Geo-environmental engineering	• Exposed to the economic aspects and analysis of water resources systems by which they will get an idea of comprehensive and integrated planning of a water resources project. • Understanding the concept of linear programming and apply in water resource system. • Understanding the concept of dynamic programming and apply in water resource system. • Develops simulation models. • developing skills in solving problems in operations research through LP, DP and Simulation techniques.
VIII	20155E82A	Airport & Waterways Engineering	• To understand the function of different components of airports, docks and harbours. • The students will get a diverse knowledge of highway engineering practices applied to real life problems. • Classify and identify the available rock in the construction site. interpret the different geological features and their engineering importance.

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			• apply the geological concepts in civil engineering projects.
VIII	20155E82B	Surface Hydrology	• Students apply scientific knowledge to study the hydrologic cycle, precipitation, and abstractions.
			• Students learn to identify and analyze precipitation and runoff characteristics.
			• Students learn to design, develop, and analyze hydrograph components using various methods.
			• Students apply knowledge of mathematics and engineering to estimate flood magnitude.
VIII	20155E82C	Prefabricated structures	• The student will have good knowledge about design principles, layout of factory and stages of loading in precast construction.
			• Acquire knowledge about panel systems, slabs, connections used in precast construction and they will be in a position to design the elements.
			• Acquire knowledge about types of floor systems, stairs and roofs used in precast construction.
			• Acquire knowledge about types of walls used in precast construction, sealants, design of joints.
			• Acquire knowledge about components in industrial building.
VIII	20155E82D	Contracts Management	• To understand legal language in contracts
			• To select the right contract type for your project or organization
			• To negotiate favorable contract terms
			• To effectively administer contracts
VIII	20155E82E	Sustainable	• Learn to assess the qualities of

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		Construction methods		building materials in the context of sustainability
			•	Learn to distinguish between the different methods of sustainable construction for residential and non-residential buildings
			•	Learn to evaluate the concepts of depreciation and obsolescence in buildings within the context of sustainability
			•	Learn to propose suitable building maintenance strategies during a building's lifecycle
			•	Sustainable construction is a vital part of modern construction projects that aims to reduce the depletion of natural resources, greenhouse gas emissions, and promote the well-being of the community.
VIII	20155P83	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.

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PRIST
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THANJAVUR – 613 403 - TAMIL NADU

SCHOOL OF COMEMRCE AND MANAGEMENT

DEPARTMENT OF COMMERCE

1.1.1 -Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) of the Programmes

Local	
Global	
National	
Regional	

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THANJAVUR – 613 403 - TAMILNADU

Criterion I – Curricular Aspects

2020

Program Outcomes and Course outcomes of

Department of Commerce

Programme offered:

S.No	Programme Name	PO and CO
1.	B.Com	Yes
2.	B.Com CA	Yes
3	M.Com	Yes
4.	M.Phil	Yes

B.Com

PROGRAMME OUTCOMES	
PO1	To train them to communicate commerce 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.
PO2	Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO3	Elicit views of others, mediate disagreements and help reach conclusions in group settings. Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO4	The commerce and finance focused curriculum offers a number of specializations and practical exposures which would equip the student to face the modern-day challenges in commerce and business.
PO5	The all-inclusive outlook of the course offer a number of values based and job oriented courses ensures that students are trained into up-to-date. In advanced accounting courses beyond the introductory level, affective development will also

	progress to the valuing and organization levels.
PO6	This program could provide Industries, Banking Sectors, Insurance Companies, Financing companies, Transport Agencies, Warehousing etc., well trained professionals to meet the requirements.
PROGRAM SPECIFIC OUTCOME	
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.
PROGRAM EDUCATIONAL OBJECTIVES	
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

Course outcomes (Cos)

B.Com

S.No	Semester	Course Code/Name	Course Outcome
20110AEC11	**I**	**Tamil I**	➢ Learn the changes occurred in literature since classical period. ➢ Make use of vocabulary systematically. ➢ Understand how to lead one's life realizing the modernity and its environment/atmosphere.
20111AEC11	**I**	**Advanced English-I**	➢ Develop vocabulary ➢ Read and comprehend literature ➢ Learn to edit and do proof reading

20161SEC12	**I**	**English-I**	➢ Read and comprehend literature ➢ Appreciate poetry and prose ➢ Familiarize students with fiction.
20161SEC13	**I**	**Basic Accounting**	➢ Understanding the fundamental of financial accounting ➢ Develop the modern market economy ➢ Prepare the different kinds of financial statement ➢ Acquire conceptual knowledge of basics of accounting ➢ Identify and analyze the reasons for the difference between cash book and pass book balances ➢ Develop the skill of recording financial transactions and preparation of reports inaccordance with GAAP
20161AEC14	**I**	**Business Environment**	➢ Discuss the supply and demand theory and its impact on insurance ➢ Outline an how entity operate in the Business environment ➢ Explain the legal frame work that regulate the insurance industry ➢ Understand relationship between environment and business; Applying the environmental analysis techniques in practice ➢ Understand Economic, Socio-Cultural and Technological Environment ➢ Know state policies Economic legislations and Economic reforms laid by the government
20161AEC15	**I**	**Marketing**	➢ Understand fundamental marketing concepts, theories and principles in areas of marketing policy ➢ Apply the knowledge, concepts, tools necessary to understand challenges ➢ Understand the marketing concepts and its evolution

			➢ Analyze the market based on segmentation, targeting and positioning ➢ Know the consumer behavior and their decision making process ➢ Understand the rural markets and the contemporary issues in marketing ➢ Make decisions on product, price , promotion mix and distribution ➢ The course helped the students to know the principles and Practices of Marketing Mix and Marketing Research.
20161AEC16	**I**	**Business Economics**	➢ Apply the concept of opportunity cost. ➢ Understand the concepts of cost, nature of production and its relationship to Business operations. ➢ Apply Economic theories to business decision ➢ Use the theoretical concept of demand and supply analysis in practice ➢ Understand the cost concepts, theories of profit and business cycles ➢ Use different demand forecasting techniques and apply different pricing techniques in business ➢ Understand the importance of Fiscal policy
201INDCONS	**I**	**Indian Constitution**	➢ Democratic values and citizenship Training are gained. ➢ Awareness on Fundamental Rights are established. . ➢ Learn the functions of union and State Governments ➢ Learn the power and functions of the Judiciary ➢ Appreciate of Democratic Parliamentary Rule

201LSCUV	**I**	**Universal Human Value**	❖ Know about universal human values and understand the importance of values in individual, social circles, career path, and national life. ❖ Learn from case studies of lives of great and successful people who followed and practiced human values and achieved self-actualisation. ❖ Become conscious practitioners of human values. ❖ Realize their potential as human beings and conduct themselves properly in the ways of the world.
20110AEC21	**II**	**Tamil II**	➢ Know what devotion really is. ➢ Know the fruitfulness obtained through devotion. ➢ Perceive the progress achieved in the society through devotion.
20111AEC21	**II**	**Advanced English-II**	➢ Develop technological skill. ➢ Able to write in a variety of formats ➢ Read biographies and develop personality
20111AEC22	**II**	**English-II**	➢ Appreciate different forms of literature ➢ Acquire language skills through literature ➢ Broadens the horizon of knowledge
20161SEC23	**II**	**Business Accounting**	➢ Familiarize the concept of Branch account and its system ➢ Understand the Scope of departmental accounting ➢ Appreciate the need for negotiable instruments and procedure of accounting for bills honoured and dishonoured ➢ Differentiate Trade bills from Accommodation Bills ➢ Understand the concept of Consignment and learn the accounting treatment of the various aspects of consignment ➢ Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture ➢ Understand the meaning and features of Non-Profit Organizations ➢ Learn to prepare Receipts &

			Payment Account, Income & Expenditure Account and Balance Sheet for Non-Profit Organizations
20161SEC24	**II**	**Ethics in Business**	➢ Understand, and evaluate various organizational influences affecting ethical decisions ➢ Present and analyze ethical and moral issues ➢ Explore ethical theories ➢ Use contemporary and classical frameworks to analyze and suggest resolutions to ethical dilemmas. ➢ Identify and address common ethical issues that arise for individuals, managers, and organizations. ➢ Organize how individual differences and cognitive barriers can influence ethical judgment. ➢ Identify and prioritize personal values and apply those to making ethical decisions. ➢
20161AEC25	**II**	**Business Statistics**	➢ Critically evaluate the underlying assumptions of analysis tools ➢ Solve a range of problems using the techniques covered ➢ Conduct basic statistical analysis of data. ➢ Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data ➢ Calculate measures of central tendency, dispersion and asymmetry, correlation and regression analysis ➢ Choose a statistical method for solving practical problems ➢
20161AEC26	**II**	Business Organization and Management	➢ Understand the dynamics of marketing in business ➢ Ability and confidence to tackle common practical financial problems of business. ➢ Understand the scope of Business, and its importance.

			➢ Identify different forms of business organizations viz; Sole Proprietorship, Partnership, Joint Hindu Family Business & Co-operative Organizations. ➢ Understand a Joint Stock Company and various formalities to promote a Company ➢ Learn various sources Industrial Financial resources and the means to raise them
20161RLS27	**II**	**Research Led seminar**	➢ Know the emerging areas in research ➢ Learning experiences of students subject to research led teaching ➢ The institutional and organization issues surrounding such learning environments ➢ The development of such teaching on the disciplinary (subject-based) requirements of curricula design ➢ The opportunity to develop high level transferable skills
201LSCCS	**II**	**Communication skill**	By the end of this program, participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.
201SSCBE	**II**	**Basis behavior etiquettes**	By the end of this program, participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.
20111OAEC31	**III**	**Tamil III**	➢ Achieve one's goal by following the ancestral path ➢ Learn to lead life of perfection by realizing the uncertainty in the life ➢ Attain happiness through honesty

20111AEC31	**III**	**Advanced English-III**	➢ Understand Phonetics. ➢ Develop writing skill ➢ Able to develop creative writing systems. ➢ Correct methodology when developing mathematical models. ➢ Skill in applications ➢ Designing and developing the solutions
20111AEC32	**III**	**English-III**	➢ Enable to appreciate different types of prose ➢ Develop the conversational skills through one-act plays ➢ Enhance the skill of making grammatically correct sentences.
20161SEC33	**III**	Cost Accounting	➢ Understand various costing systems and management systems ➢ Analyze and provide recommendations to improve the operations of organizations ➢ Imbibe conceptual knowledge of cost accounting. ➢ Understand the significance of cost accounting in the modern economic environment ➢ Select the costs according to their impact on business ➢ Apply cost accounting methods to evaluate and project business performance
20161SEC34	**III**	Banking Theory Law and Practice	➢ Understanding of Banking Channels and Payments ➢ Practices on Banking Technology ➢ Understanding of Core Banking ➢ To gather knowledge on banking and financial system in India ➢ Understand better customer relationship ➢ To create awareness about modern banking services like e-banking, m-banking and internet banking ➢
20161AEC35	**III**	Business Law for Managers	➢ Explain the concepts in business laws with respect to foreign trade ➢ Apply the global business laws to current business environment ➢ Demonstrate an understanding of the

			Legal Environment of Business. ➢ Communicate effectively using standard business and legal terminology. ➢ Demonstrate recognition of the requirements of the contract agreement ➢ Identify contract remedies ➢ understand the various provisions of Company Law ➢
20161AEC36	**III**	Essentials of Business Communication	➢ Identify ethical, legal, cultural, and global issues affecting business communication. ➢ Utilize analytical and problem solving skills appropriate to business communication. ➢ Effective business writing ➢ Research approaches and information collection. ➢ Developing and delivering effective presentations ➢ Effective interpersonal communications ➢ Skills that maximize team effectiveness. ➢ Good time management. ➢

20161RMC37	**III**	**Research methodology**	➢ Able to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools. ➢ Familiarize participants with basic of research and the research process. ➢ Enable the participants in conducting research work and formulating research synopsis and report. ➢ Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling. ➢ Have basic knowledge on qualitative research techniques ➢ Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis ➢ Have basic awareness of data analysis-and hypothesis testing procedures
201ACLSOAN	**III**	**OFFICE AUTOMATION**	After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with the internet.
20110AEC41	**IV**	**Tamil IV**	➢ Realize how the ancient people changed their life style according to the ages ➢ Learn how to change one's lifestyle according to the needs of the future ➢ Accept the modern trend and its uses
20111AEC41	**IV**	**Advanced English-IV**	➢ Develop writing skill. ➢ Comprehend and describe poems ➢ Learn interviewing skills
20111AEC42	**IV**	**English IV**	➢ Improve their ability to read and understand them ➢ Know the genius of Shakespeare ➢ Express in writing their views.
20161SEC43	**IV**	Partnership Accounting	➢ Understand the concept of partnership

			➢ Understand the journal entries for the formation of partnership ➢ Familiarize the concept of Branch account and its system ➢ Understand the Scope of departmental accounting ➢ Introduce the system of Hire Purchasing ➢ Understand partnership account from admission to dissolution
20161SEC44	**IV**	Advertising and sales promotion	➢ Understand the key principles and tools of integrated marketing communication ➢ Explain the environmental factors which influence consumer and organizational decision ➢ Identify the elements of the communication process between buyers and sellers in business. making process ➢ Identify the marketing mix components in relation to market segmentation ➢ Outline a marketing plan ➢ Utilize marketing research techniques to resolve into competitive marketing decisions.
20161AEC45	**IV**	Company Law and Secretarial practice	➢ Get a basic understanding of different type of meeting of board of directors. ➢ Use international trade terms and concepts when communicating. ➢ Demonstrate comprehensive knowledge and understanding of social and economic policy considerations arising in this area. ➢ Understanding of those areas of company law identified in the indicative syllabus above and form a critical judgement on areas of controversy within the topics studied; ➢ Read and study primary and secondary sources of company law, with minimal staff guidance; critically analyse, interpret,

			evaluate and synthesise information from a variety of sources ➢ Identify sources for research and further develop a strategy for research using standard and electronic research tools
20161AEC46	**IV**	Office management	➢ To make them understand officemanagement and duties of an office manager ➢ To give an idea about proper filingand indexing of office documents ➢ To understand the principles of record management and differenttypes of records in business organization ➢ To enable them to aware aboutsafety hazardous and steps to improve office safety ➢ To introduce different measures ofoffice work ➢ The course helped the students toknow the importance of Office Management in the present competitive world.
201ENVTSTU	**IV**	**Environmental Studies**	➢ Learn about environmental pollution. ➢ Familiarize with the social issues and the environment

201LSCLS	**IV**	**Leadership And Management Skill**	➢ Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision ➢ Learnanddemonstrateasetofpractical skillssuchastimemanagement,selfmanagement, handling conflicts, team leadership, etc. ➢ Understand the basics of entrepreneurship and develop business plans ➢ Apply the design thinking approach to leadership Appreciate the importance of ethics and moral values for making of a balanced personality
201SOCAQ	**IV**	**General aptitude and quantities ability**	➢ Use their logical thinking and analytical abilities to solve Quantitative aptitude questions from company specific and other competitive tests. ➢ Solve questions related to Time and distance and time and work etc. from company specific and other competitive tests.
20161SEC51	**V**	Corporate Accounting	➢ Find out how a company can dissolve. ➢ Understand Mutual funds' investments. ➢ Learn about working format of companies. ➢ Enabling the students to understand the features of Shares and Debentures ➢ Develop an understanding about redemption of Shares and Debenture and its type ➢ Exposure to the company final

			accounts
20161SEC52	**V**	Financial Management	➢ Use business finance terms and concepts when communicating. ➢ Demonstrate a basic understanding of financial management. ➢ Provide introduction to Financial Management ➢ Create an awareness about capital structure and theories of capital structure ➢ Make them understand the cost of capital in wide aspects ➢ Provide knowledge about dividend policies and various dividend models. ➢ Enable them to understand working capital management
20161SEC53	**V**	Financial Services	➢ Forecast a firm's future financing requirements ➢ Design an optimal capital structure. ➢ Give an idea about fundamentals of financial services and players in financial sectors ➢ Create an awareness about merchant banking, issue management, capital markets and role of SEBI ➢ Provide knowledge about leasing and hire purchase concepts ➢ Make them understand about different types of insurance and IRDA Act.
20161SEC54	**V**	Computer Application in Business	➢ Study the development of computers and their components in each stage. ➢ Develop an idea of software, programming language and operating system. ➢ Study the concept of developing database and its maintenance using computers in a business Concern ➢ Analyze the importance of management information system

			and networking in a business. ➢ Be aware and perform various activities using computers in day to day life.
20161DSC54A	**V**	Co-operative law and practices	➢ Know about the company law in the India. ➢ Understand the use of the memorandum of association and article of association in a ➢ company, they also learn from this course ➢ Develop Professionals in the filed of Co-operation, Co-operative law and Management. ➢ Promote qualified, Skilled and professional manpower to manage the affairs of the Cooperative Institutions. ➢ Enhance the Knowledge base of the in-service Personnel on the subject Co-operation, Co-operative law and Co-operative Management. ➢ Enable the in-service personnel to develop skills on Co-operative Management Techniques
20161DSC55B	**V**	**Stock Exchange Practice**	➢ Understand the vocabulary and grammar of a trading floor. ➢ Experience the interactions between traders, sales, clients, brokers ➢ Realize in a personal and lively way what it requires to be a trader, a sales, a structure ➢ Identify Risk Management issues related to market positions ➢ Become familiar with practical trading techniques ➢ Formal training to Bloomberg platform (Bloomberg Market Concepts)
20161BRC56	**V**	**Participation in Bounded Research**	➢ Do the allotted work in research ➢ Learn to do review of literature ➢ Hands on exposure to problem solving

			tools in contemporary research ➢ Evolution of research intuitiveness and orientation ➢ Familiarity with cutting edge research trends
201ACLSPSL	**V**	**Professional skill**	➢ Prepare their resume in an appropriate template without grammatical land other errors and using proper syntax ➢ Participate in a simulated interview ➢ Actively participate in group discussions towards gainful employment ➢ Capture a self - interview simulation video regarding the job role concerned ➢ Enlist the common errors generally made by candidates in an interview
20161SEC61	**VI**	Management Accounting	➢ Prepare analysis of various special decisions, using relevant costing and benefits ➢ More effective planning and control systems ➢ The students thought and knowledge on management Accounting ➢ Helps to give proper idea on financial statement analysis in practical point of view ➢ Introduce the concept of fund flow and cash flow statement ➢ Provide knowledge about budget control keeping in mind the scope of the concept ➢ Develop the know-how and concept of marginal costing with practical problems
20161SEC62	**VI**	Entrepreneurship and Small Business Management	➢ Understand the systematic process to select the business ideas. ➢ Write a business plan ➢ Develop students about Entrepreneurship development ➢ Create an awareness on various Entrepreneurship Development Programme ➢ Enable them to understand project formulation

			➢ Familiarize the students with EDP scheme
20161SEC63	**VI**	Auditing	➢ Articulate knowledge of fundamental audit concepts ➢ Apply critical thinking skills and solve auditing Problems. ➢ Apply and demonstrate the accounting knowledge and skills in Auditing. ➢ Explain how analytical procedures are used as an audit tool. ➢ Illustrate effective internal controls ➢ Apply ethical standards to issues in auditing
20161DSC64A		Income Tax Law & Practices	➢ File IT Return on individuals basis ➢ Compute the total Income and Define tax complicacies and structure. ➢ In order to familiarize the different know-how and heads of income with its components ➢ It helps to build an idea about income from house property as a concept ➢ It gives more idea about the income from business or profession ➢ Make the students familiarizes with the concept of depreciation and its provisions
20161DSC64B	**VI**	Cooperation Theory	➢ Greater Social support ➢ More on-task behavior ➢ Develop Professionals in the filed of Co-operation, Co-operative law and Management. ➢ Promote qualified, Skilled and professional manpower to manage the affairs of the Cooperative Institutions. ➢ Enhance the Knowledge base of the in-service Personnel on the subject Co-operation, Co-operative law and Co-operative Management. ➢ Enable the in-service personnel to develop skills on Co-operative Management Techniques
20161PRW66	**VI**	**Project Work**	➢ Develop plans with relevant people to achieve the project's goals

			➢ Break work down into tasks and determine handover procedures ➢ Identify links and dependencies, and schedule to achieve deliverables ➢ Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources ➢ Allocate roles with clear lines of responsibility and accountability. ➢ Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysi
201SSCIM	**VI**	**Interview skill training and mock test**	➢ Gain an understanding of rural life, culture and socialrealities ➢ Developasenseofempathyand the bondsofmutualitywith the local community ➢ AppreciatesignificantcontributionsoflocalcommunitiestoIndiansocietyand economy ➢ Learn to value the local knowledge and wisdom of the community
201LSCCE	**VI**	**Community engagement**	➢ Identifying and prioritizing learning outcomes gives focus on both teaching and learning. ➢ Making learning outcomes explicit can help students find the right fit for their skill level, and help them be aware of the multiple dimensions to learning through community engagement. ➢ Making outcomes explicit also guides faculty in course design to optimize

			teaching strategies and assignments of student work.

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PROGRAMME OUTCOMES	
PO1	To train them to communicate commerce 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.
PO2	Graduates will be able to develop strong understanding of core Commerce and Computer Applicationcourses.
PO3	Able to take up challengin career options in Commerce and IT sector.
PO4	Gain updated knowledge to take up employment
PO5	Become ethically and socially responsible commerce graduates with computer application knowledge
PO6	Apply the knowledge of mathematics, Social science, accounting fundamentals, and computer specialization to the solution of complex accounting & management problems

PROGRAM SPECIFIC OUTCOME	
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.
PSO4	To integrate knowledge, skill and attitude that will sustain an environment of learning and creativity among the students.

PROGRAM EDUCATIONAL OBJECTIVES	
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

Course outcomes (Cos)

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S.No	Semester	Course Code/Name	Course Outcome
201110AEC11	**I**	**Tamil I**	➢ Learn the changes occurred in literature since classical period. ➢ Make use of vocabulary systematically. ➢ Understand how to lead one's life realizing the modernity and its environment/atmosphere.
20111AEC11	**I**	**Advanced English-I**	➢ Develop vocabulary ➢ Read and comprehend literature ➢ Learn to edit and do proof reading
201AAAEC12	**I**	**English-I**	➢ Read and comprehend literature ➢ Appreciate poetry and prose ➢ Familiarize students with fiction.
20198SEC13	**I**	Financial accounting	➢ Understanding the fundamental of financial accounting ➢ Develop the modern market economy ➢ Prepare the different kinds of financial statement ➢ Acquire conceptual knowledge of basics of accounting ➢ Identify and analyze the reasons for the difference between cash book and pass book balances ➢ Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP ➢ The course helped the students the principles and objectives of basic Financial
20198SEC14	**I**	Business Management	➢ Apply conceptual learning skills in today's business environment. ➢ Analyze financial performance of an organization. ➢ Evaluate organizational decisions with consideration of the political, legal and ethical aspects of business. ➢ Understand relationship between environment and business; Applying the environmental analysis techniques in practice ➢ Assess strengths, weaknesses, opportunities and threats of the business environment. ➢ Know state policies Economic legislations and Economic reforms laid by the
20198AEC15	**I**	Information Technology	➢ Perform end user support including identifying and implementing solutions to user requests.

			➢ Analyze technical requirements to determine resource requirements and the impact the solution will have on an organization. ➢ Design, plan, budget and propose an IT project for an identified need within a specific scope. ➢ Install technical hardware and software including network, database and security components. ➢ Perform routine maintenance to maintain the currency of an operating system, network, database and security needs. ➢ Identify and resolve technical problems using trouble-shooting and research techniques. ➢ Analyze and select application and operating system settings to create an optimal user environment.
20198AEC16	**I**	Operating System	➢ Describe and explain the fundamental components of a computer operating system. [ABET (a), ➢ (i), (j), (k)] Assessment: Students will take midterm exams, final exams, and homework ➢ Describe and explain the fundamental components of a computer operating system. [ABET (a), ➢ (i), (j), (k)] Assessment: Students will take midterm exams, final exams, and homework. ➢ Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. [ABET (a), (i), (j), (k)] Assessment: ➢ Students will take midterm exams, final exams, and homework. ➢ Describe and extrapolate the interactions among the various components of computing systems. ➢ [ABET (a), (i), (j), (k)] Assessment: Students will take midterm exams, final exams, and homework ➢ Design and construct the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems. [ABET (a), (c), (i), (j), (k)] Assessment: ➢ Students will design and implement the above OS components within NACHOS with C++. ➢

201INDCONS	**I**	**Indian Constitution**	➢ Democratic values and citizenship Training are gained. ➢ Awareness on Fundamental Rights are established. . ➢ Learn the functions of union and State Governments ➢ Learn the power and functions of the Judiciary ➢ Appreciate of Democratic Parliamentary Rule
201LSCUV	**I**	**Universal Human Value**	❖ Know about universal human values and understand the importance of values in individual, social circles, career path, and national life. ❖ Learn from case studies of lives of great and successful people who followed and practiced human values and achieved self-actualisation. ❖ Become conscious practitioners of human values. ❖ Realize their potential as human beings and conduct themselves properly in the ways of the world.
201110AEC21	**II**	**Tamil II**	➢ Know what devotion really is. ➢ Know the fruitfulness obtained through devotion. ➢ Perceive the progress achieved in the society through devotion.
20111AEC21	**II**	**Advanced English-II**	➢ Develop technological skill. ➢ Able to write in a variety of formats ➢ Read biographies and develop personality
20111AEC22	**II**	**English-II**	➢ Appreciate different forms of literature ➢ Acquire language skills through literature ➢ Broadens the horizon of knowledge
20198SEC23	**II**	Business Accounting	➢ Familiarize the concept of Branch account and its system ➢ Understand the Scope of departmental accounting ➢ Appreciate the need for negotiable instruments and procedure of accounting for bills honoured and dishonoured ➢ Differentiate Trade bills from Accommodation Bills ➢ Understand the concept of Consignment and learn the accounting treatment of the various aspects of consignment

			➢ Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture ➢ Understand the meaning and features of Non-Profit Organizations ➢ Learn to prepare Receipts & Payment Account, Income & Expenditure Account and Balance Sheet for Non-Profit Organizations
20198SEC24	**II**	Business Law	➢ Explain the concepts in business laws with respect to foreign trade ➢ Apply the global business laws to current business environment ➢ Demonstrate an understanding of the Legal Environment of Business. ➢ Communicate effectively using standard business and legal terminology. ➢ Demonstrate recognition of the requirements of the contract agreement ➢ Identify contract remedies ➢ understand the various provisions of Company Law ➢
20198AEC25	**II**	Business Statistics	➢ Critically evaluate the underlying assumptions of analysis tools ➢ Solve a range of problems using the techniques covered ➢ Conduct basic statistical analysis of data. ➢ Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data ➢ Calculate measures of central tendency, dispersion and asymmetry, correlation and regression analysis ➢ Choose a statistical method for solving practical problems ➢

20198AEC26	**II**	Programming in C	➢ Understanding a functional hierarchical code organization. ➢ Ability to define and manage data structures based on problem subject domain. ➢ Understanding a concept of object thinking within the framework of functional model. ➢ Understanding a concept of functional hierarchical code organization. ➢ Understand operators, expressions and preprocessors. ➢ Understand arrays, its declaration and uses. ➢
20198AEC26L	**II**	Programming in C lab	➢ Develop their programming skills. ➢ Declaration of variables and constants ➢ Be familiar with programming environment with C Program structure. ➢ Ability to work with textual information, characters and strings. ➢ Understanding a defensive programming concept. Ability to handle possible errors during program execution ➢ Understanding a functional hierarchical code organization. Ability to define and manage data structures based on problem subject domain.
20198RLS27	**II**	**Research Led seminar**	➢ Know the emerging areas in research ➢ Learning experiences of students subject to research led teaching ➢ The institutional and organization issues surrounding such learning environments ➢ The development of such teaching on the disciplinary (subject-based) requirements of curricula design ➢ The opportunity to develop high level transferable skills Students will be able to new technologies and research skill developme

201LSCCS	**II**	**Communication skill**	By the end of this program, participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.
201SSCBE	**II**	**Basis behavior etiquettes**	By the end of this program, participants should have a clear understanding of what good communication skills are and what they can do to improve their abilities.
20110AEC31	**III**	**Tamil III**	➢ Achieve one's goal by following the ancestral path ➢ Learn to lead life of perfection by realizing the uncertainty in the life ➢ Attain happiness through honesty
20111AEC31	**III**	**Advanced English-III**	➢ Understand Phonetics. ➢ Develop writing skill ➢ Able to develop creative writing systems. ➢ Correct methodology when developing mathematical models. ➢ Skill in applications ➢ Designing and developing the solutions
20111AEC32	**III**	**English-III**	➢ Enable to appreciate different types of prose ➢ Develop the conversational skills through one-act plays ➢ Enhance the skill of making grammatically correct sentences.
20198SEC33	**III**	Cost Accounting	➢ Understand various costing systems and management systems ➢ Analyze and provide recommendations to improve the operations of organizations ➢ Imbibe conceptual knowledge of cost accounting. ➢ Understand the significance of cost accounting in the modern economic environment ➢ Select the costs according to their impact on business ➢ Apply cost accounting methods to evaluate and project business performance ➢
20198SEC34	**III**	Banking Theory	➢ Understanding of Banking Channels and Payments ➢ Practices on Banking Technology

		Law and Practice	➢ Understanding of Core Banking ➢ To gather knowledge on banking and financial system in India ➢ Understand better customer relationship ➢ To create awareness about modern banking services like e-banking, m-banking and internet banking ➢
20198AEC35	**III**	Programming in C++	➢ To know the proper lines of C++, Encapsulation, Inheritance and Polymorphism. ➢ To explain the various data types, operations and functions of C++. ➢ To know the concept of constructors and destructors. ➢ To explain the concept of inheritances, types of inheritance and polymorphism, virtual ➢ Functions. ➢ To explain the types of streams, format and format of input and output operations. ➢ To Know the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects. ➢
20198AEC36L	**III**	Programming in C++ Lab	➢ To know the proper lines of C++, Encapsulation, Inheritance and Polymorphism. ➢ To explain the various data types, operations and functions of C++. ➢ To know the concept of constructors and destructors. ➢ To explain the concept of inheritances, types of inheritance and polymorphism, virtual Functions. ➢ To explain the types of streams, format and format of input and output operations. ➢ To Know the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects. ➢
20198RMC37	**III**	**Research methodology**	➢ Able to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools. ➢ Familiarize participants with basic of research and the research process. ➢ Enable the participants in conducting research work and formulating research synopsis and report. ➢ Develop understanding on various kinds of research,

			objectives of doing research, research process, research designs and sampling. ➢ Have basic knowledge on qualitative research techniques ➢ Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis ➢ Have basic awareness of data analysis-and hypothesis testing procedures
201ACLSOAN	**III**	**Office Automation**	After completion of the course, students would be able to documents, spreadsheets, make small presentations and would be acquainted with the internet.
20110AEC41	**IV**	**Tamil IV**	➢ Realize how the ancient people changed their life style according to the ages ➢ Learn how to change one's lifestyle according to the needs of the future ➢ Accept the modern trend and its uses
20111AEC41	**IV**	**Advanced English-IV**	➢ Develop writing skill. ➢ Comprehend and describe poems ➢ Learn interviewing skills
20111AEC42	**IV**	**English IV**	➢ Improve their ability to read and understand them ➢ Know the genius of Shakespeare ➢ Express in writing their views.
20198SEC43	**IV**	Auditing	➢ Articulate knowledge of fundamental audit concepts ➢ Apply critical thinking skills and solve auditing Problems. ➢ Apply and demonstrate the accounting knowledge and skills in Auditing. ➢ Explain how analytical procedures are used as an audit tool. ➢ Illustrate effective internal controls ➢ Apply ethical standards to issues in auditing ➢
20198SEC44	**IV**	Business Statistics	➢ Critically evaluate the underlying assumptions of analysis tools ➢ Solve a range of problems using the techniques covered ➢ Conduct basic statistical analysis of data. ➢ Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data ➢ Calculate measures of central tendency, dispersion and asymmetry, correlation and regression analysis ➢ Choose a statistical method for solving practical problems

19198AEC45	**IV**	Visual Basic Programming	➢ Students code visual programs by using Visual Basic work environment. ➢ Distinguish and compose events and methods. ➢ Distinguish and compose events and methods. ➢ Recognize and arrange control structures. ➢ Understand development of applications. ➢ Identify sources for research and further develop a strategy for research using standard and electronic research tools C ➢ This course will be helped the students understanding on database operations
20198AEC46L	**IV**	Visual Basic Programming in Lab	➢ Understand an overview of computers and computer programming. ➢ Understand Visual Basic applications. ➢ Understand how to perform operations and store results. ➢ Understand the concept of data-driven program execution flow control in Visual Basic programming ➢ Understand additional Visual Basic controls. ➢ Understand loops to do repetition. ➢
201ENVTSTU	**IV**	**Environmental Studies**	➢ Learn about environmental pollution. ➢ Familiarize with the social issues and the environment ➢ Will be able to do independent research on human interactions with the environment. ➢ To recognize the physical, chemical, and biological components of the earth's systems and show how they function ➢ Analyze and evaluate ideological and philosophical approaches used to understand environmental relationships. ➢ Carry out an applied research project in the natural sciences. ➢
201LSCLS	**IV**	**Leadership And Management Skill**	➢ Examine various leadership models and understand/assess their skills, strengths and abilities that affect their own leadership style and can create their leadership vision ➢ Learnanddemonstrateasetofpracticalskillssuchastimemanagement,selfmanagement, handling conflicts, team leadership, etc.

			➢ Understand the basics of entrepreneurship and develop business plans ➢ Apply the design thinking approach to leadership Appreciate the importance of ethics and moral values for making of a balanced personality
20198SEC51	**V**	Corporate Accounting	➢ Find out how a company can dissolve. ➢ Understand Mutual funds' investments. ➢ Learn about working format of companies. ➢ Enabling the students to understand the features of Shares and Debentures ➢ Develop an understanding about redemption of Shares and Debenture and its type ➢ Exposure to the company final accounts
20198SEC52	**V**	Business Economics	➢ Apply the concept of opportunity cost. ➢ Understand the concepts of cost, nature of production and its relationship to Business operations. ➢ Apply Economic theories to business decision ➢ Use the theoretical concept of demand and supply analysis in practice ➢ Understand the cost concepts, theories of profit and business cycles ➢ Use different demand forecasting techniques and apply different pricing techniques in business ➢ Understand the importance of Fiscal policy ➢
20198SEC53	**V**	Financial Management	➢ Use business finance terms and concepts when communicating. ➢ Demonstrate a basic understanding of financial management. ➢ Provide introduction to Financial Management ➢ Create an awareness about capital structure and theories of capital structure ➢ Make them understand the cost of capital in wide aspects ➢ Provide knowledge about dividend policies and various dividend models. ➢ Enable them to understand working capital management
20198SEC54	**V**	Software Engineering	➢ To identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics ➢ To apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social,

			environmental, and economic factors ➢ An ability to communicate effectively with a range of audiences ➢ Analyze the importance of management information system and networking in a business. ➢ Be aware and perform various activities using computers in day to day life.
20198DS C55A	**V**	Investment Management	➢ The knowledge and skills to select and employ base ➢ Level tools for financial analysis. ➢ The knowledge and skills to analyze companies for ➢ Investment purposes. ➢ The knowledge and skills to develop portfolio strategies for individual and institutional investors. ➢ The knowledge and to operate ethically as ➢ Investment management professionals. ➢ Understand the various alternatives available for investment. ➢ Gain knowledge of the various strategies followed by investment practitioners
20198DS C55B	**V**	**Stock Market Practice**	➢) Understand the vocabulary and grammar of a trading floor Experience the interactions between traders, sales, clients, brokers ➢ Realize in a personal and lively way what it requires to be a trader, a sales, a structure ➢ Identify Risk Management issues related to market positions ➢ Become familiar with practical trading techniques ➢ Formal training to Bloomberg platform (Bloomberg Market Concepts)
20198BR C56	**V**	**Participation in Bounded Research**	➢ Do the allotted work in research ➢ Learn to do review of literature ➢ Hands on exposure to problem solving tools in contemporary research ➢ Evolution of research intuitiveness and orientation ➢ Familiarity with cutting edge research trends
201ACLS PSL	**V**	**Professional skill**	➢ Prepare their resume in an appropriate template without grammatical and other errors and using proper syntax ➢ Participate in a simulated interview ➢ Actively participate in group discussions towards gainful employment ➢ Capture a self - interview simulation video regarding

			the job roleconcerned ➢ Enlist the common errors generally made by candidates in aninterview
20198SE C61	**VI**	Management Accounting	➢ Prepare analysis of various special decisions, using relevant costing and benefits ➢ More effective planning and control systems ➢ The students thought and knowledge on management Accounting ➢ Helps to give proper idea on financial statement analysis in practical point of view ➢ Introduce the concept of fund flow and cash flow statement ➢ Provide knowledge about budget control keeping in mind the scope of the concept ➢ Develop the know-how and concept of marginal costing with practical problems ➢ ➢
20198SE C62	**VI**	Income Tax Law & Practices	➢ File IT Return on individuals basis ➢ Compute the total Income and Define tax complicacies and structure. ➢ In order to familiarize the different know-how and heads of income with its components ➢ It helps to build an idea about income from house property as a concept ➢ It gives more idea about the income from business or profession ➢ Make the students familiarizes with the concept of depreciation and its provisions
19198SE C63	**VI**	Database Management System	➢ Understand database concepts and structures and query language ➢ Understand the E R model and relational model ➢ Understand Functional Dependency and Functional Decomposition. ➢ Apply various Normalization techniques ➢ Understand query processing and techniques involved in query optimization. ➢ Understand the principles of storage structure and recovery management. ➢ Understand database concept and structures and query language.
20198DS C64A	**VI**	E- Commerce	➢ Demonstrate an understanding of the foundations and importance of E-commerce

			➢ Analyze the impact of E-commerce on business models and strategy ➢ Describe the infrastructure for E-commerce ➢ Discuss legal issues and privacy in E-Commerce ➢ Assess electronic payment systems ➢ Recognize and discuss global E-commerce issues ➢
20198DSC64B	**VI**	**Web Designing**	➢ Develop a fully functioning website and deploy on a web server. ➢ Find and use code packages based on their documentation to produce working results in a project. ➢ Create webpages that function using external data. ➢ Architect solutions to programming problems by combining visual components and classes. ➢ Develop JavaScript applications that transition between states. ➢ Identify mobile strategies and design for multiple operating systems. ➢ Distinguishing trends in multi-device implementation. ➢
20198PRW66	**VI**	**Project Work**	➢ Develop plans with relevant people to achieve the project's goals ➢ Break work down into tasks and determine handover procedures ➢ Identify links and dependencies, and schedule to achieve deliverables ➢ Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources ➢ Allocate roles with clear lines of responsibility and accountability. ➢ Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis ➢
201SSCIM	**VI**	**Interview skill training and mock test**	➢ Gain an understanding of rural life, culture and socialrealities ➢ Developasenseofempathyand the bondsofmutualitywith the localcommunity ➢ Appreciatesignificantcontributionsoflocalcommunities

			toIndiansocietyand economy ➢ Learntovaluethelocalknowledgeandwisdomofthecommunity
201LSCCE	**VI**	**Community engagement**	➢ Identifying and prioritizing learning outcomes gives focus on both teaching and learning. ➢ Making learning outcomes explicit can help students find the right fit for their skill level, and help them be aware of the multiple dimensions to learning through community engagement. ➢ Making outcomes explicit also guides faculty in course design to optimize teaching strategies and assignments of student work.

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PROGRAMME OUTCOMES	
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.
PO5	Serve as a human resource needed for industry, consultancy, education, service, research, public administration, insurance and management
PO6	Understand financial and marketing both local and international issues and responsibilities of a business organization.
PROGRAM SPECIFIC OUTCOME	
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.
PROGRAM EDUCATIONAL OBJECTIVES	
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.

Course outcomes (Cos)

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S.No	Semester	Course Code/Name	Course Outcome
20261SEC11	**I**	Marketing Research and Consumer Behaviour	➢ This specialization lays the necessary groundwork for an overall successful marketing strategy ➢ Knowledge required to understand the state of your product before approaching the market strategy ➢ Interpret development of marketing research ➢ Identify the major influences in Consumer Behaviour ➢ Theory of Consumer behaviour and relates it to the practice of marketing. ➢ Demonstrate how knowledge of consumer behaviour can be applied to marketing.
20261SEC12	**I**	Human Resource Management	➢ Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes ➢ Develop, implement, and evaluate employee orientation, training, and development programs. ➢ Understanding of the basic concepts, functions and processes of HRM ➢ Develop a selection and interviewing program ➢ Know formalize, Design and evaluate various Recruitment and Placement policies. ➢ Use methods of collecting job analysis information.
20261SEC13	**I**	Services Marketing	➢ Focuses on services, service design, and service innovation,

			with the aim of developing empathy for customers and understanding the customer experience ➢ Strategies that support broader marketing decisions. ➢ Develop an understanding of the role of relationship marketing and customer service ➢ Demonstrate knowledge of the extended marketing mix for services. ➢ Exhibit the capability to work effectively within a team environment. ➢ Develop and justify marketing planning and Control Systems.
19261SEC14	**I**	Advanced Cost Management	➢ Study of decision making and performance evaluation techniques in management accounting ➢ Understand decision making and performance evaluation techniques in management accounting. ➢ In modern competitive business environment, suitable business decision making is very crucial ➢ Identify relevant information for decision making purposes in order to produce financial analyses for a range of decisions such as product-mix, pricing, outsourcing and special orders. ➢ Use standard costs to prepare budgets for planning and control purposes. ➢ Understand the principles of standard costing.
20261DSC15A	**I**	**Strategic Management**	➢ Understand the basic concepts and principles of strategic management analyse the internal and external environment of business. ➢ Develop and prepare organizational strategies that will

			be effective for the current business environment ➢ Devise strategic approaches to managing a business successfully in a global context
20261DSC15B	**I**	Organizational Behaviour	➢ Examine the differences and similarities between leadership, power, and management ➢ Impact that a company's structure and design can have on its organizational behavior ➢ Impact of culture on organizational behavior ➢ Analyze management issues as related to organizational behavior ➢ Examine challenges of effective organizational communication ➢ Evaluate ethical issues as related to organizational behavior
20261RLC16	**I**	Research Led Seminar	➢ Develop skills in data collection and complex analysis ➢ Clarify terminology and approaches to different facets of research-based teaching ➢ Explore good practices in institution-driven, strategic approaches on how to integrate research and education missions ➢ Generate ideas on how to build the capacity of faculty members to implement research based teaching ➢ Create a research-based learning environment ➢ Analyze national frameworks, policies and funding
20261SEC21	**II**	Quantitative techniques for Business Decision Making	➢ Employ basic statistical methods to decision making ➢ Understand how to apply basic models and theories in business ➢ Solve management problems effectively ➢ Use software tools to model

			decision problems. ➢ Clearly identify an otherwise unstructured business problem and its components ➢ Employ effective techniques for addressing the major challenges presented ➢ Provide a solution to the decision process
20261SEC 22	**II**	Total Quality Management	➢ Given a product or a service type, the student manager will be able to enumerate and justify the dimensions of product quality or service quality for the same ➢ Given the quality gurus (Deming/ Juran/ Taguchi/ Crosby), the student manager will be able to justify their philosophies/ contributions in Quality Management. ➢ Given a quality problem/ failure mode, the student manager will be able to identify causes and sub causes of the effect/ problem draw and justify Ishikawa Diagram. ➢ For a given type of organization, the student manager will be able to enlist and justify the four levels of benchmarking and/ or enlist and brief seven step benchmarking model ➢ The student manager will be able to differentiate between common and special cause of variation and/ or differentiate between attributes and variables and/ or construct and write formulae for control charts for variables and attributes. ➢ Critically appraise the organisational, communication and teamwork requirements for effective quality management
20261SEC23	**II**	Advanced Management	➢ Activity based approaches to management and cost analysis

		Accounting	➢ Analysis of common costs in manufacturing and service industry ➢ Techniques for profit improvement, cost reduction, and value analysis ➢ Throughput accounting ➢ Target costing; cost ascertainment and pricing of products and services ➢ Pricing Decisions ➢ Budgets and Budgetary Control ➢ Evolution of standards, continuous -improvement; keeping standards meaningful and relevant; variance analysis
20261DSC25A	**II**	Retail Management	➢ The role that retailing plays in the distribution component of the marketing mix ➢ Understanding of the concept of social responsibility and the role it plays in retailing ➢ Aware of the moral and ethical dilemmas that face the retailing industry in today's business environment ➢ Development and understanding of implementing a retail strategy. ➢ Understanding of the increased use of technology in the field of retailing ➢ Identify key roles within retail businesse
20261DSC25B	**II**	**Corporate Legal Frame Work**	➢ able to appreciate the importance of law and legal institutions in business ➢ able to have a basic understanding of the laws relating to contract, consumer protection, competition, companies and dispute resolution
20261RMC26	**II**	**Research**	➢ Assess critically the following

		Methodology	methods: literature study, case study, structured surveys, interviews, focus groups, participatory approaches, narrative analysis, cost- ➢ Critically assess research methods pertinent to technology innovation research. ➢ Understanding research questions and tools ➢ Experience in scientific writings ➢ Practice in various aspects of scientific publications ➢ Inculcation of research ethics
20261BRC27	**II**	**Participation in bounded research**	➢ Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling. ➢ Have basic knowledge on qualitative research techniques ➢ Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis ➢ Have basic awareness of data analysis-and hypothesis testing procedures ➢ knowledge for enabling students to develop data analytics skills and meaningful interpretation to the data sets so as to solve the business/Research problem. ➢ Describe sampling methods, measurement scales and instruments, and appropriate uses of each
20261SEC31	**III**	Project Planning and Control	➢ Understand the How Subcontract Administration and Control is practiced in the Industry. ➢ Understand the contract management, Project Procurement, Service level Agreements and productivity

			➢ Apply the risk management plan and analyse the role of stakeholders. ➢ Analyse the learning and understand techniques for Project planning, scheduling and Execution Control. ➢ Understand the conceptual clarity about project organization ➢ Understand project characteristics and various stages of a project
20261SEC32	**III**	Advanced Corporate Accounting	➢ Critically analyse both older and newer MA methods and their effects in organisations ➢ Knowledge and understanding about MA issues, including its problems and difficulties ➢ Part in the design and use of the management accounting system in organisations ➢ Updated concerning the more recent development in MA and the emergence of new methods ➢ More advanced level compared to the basic knowledge acquired on the Bachelor level ➢ Exposure to the company final accounts
20261DSC34A	**III**	**International Marketing**	➢ Upon successful completion, students will have the knowledge and skills to: ➢ **Classify strategies for entering export markets from extant knowledge and research**. ➢ Apply core theoretical concepts in international marketing to find practical solutions to constraints of small businesses.
20261DSC34B	**III**	Indian Financial System	➢ Knowledge, understanding and skills in the area of international financial relations and tolls for its implementation

			➢ Knowledge and understanding of characteristics, activities, principles and specifics of international financial relations ➢ Ability to summarize and critically evaluate results obtained by researchers in the field of international financial relations ➢ Ability to analyze and use various sources of information and data in the field and make assessment ➢ Use methods in the field of international finance in practice ➢ Economic essence and currency classifications: the concept of currency and its basic classification; characteristics of currencies
20261SRC35	**III**	Scaffold Research (Societal Project)	➢ To help students manage individual or team projects. ➢ Begin project-planning with a specific audience with a specific and pressing concern ➢ Let students design their own projects. Or require that projects iterate or counter existing cultural trends and patterns or that address compelling social concerns (e.g. Technology addiction). ➢ Use concept-mapping before, during, and after the project is completed. ➢ Give students the opportunities to use their specific gifts, skills, and backgrounds in completing the project. ➢ Help students brainstorm the opportunities for creative risk-taking at the beginning of a project. ➢
20261SEC41	**IV**	Income Tax Law and Tax Planning	➢ File IT Return on individuals basis ➢ Compute the total Income and Define tax complicacies and

			structure. ➢ In order to familiarize the different know-how and heads of income with its components ➢ It helps to build an idea about income from house property as a concept ➢ Make the students familiarizes with the concept of depreciation and its provisions ➢ It give more idea about the income from business or profession ➢
20261SEC42	**IV**	International Business	➢ Have developed an understanding of major issues related to international Business ➢ Have developed skills in researching and analyzing trends in global markets and in modern marketing practice ➢ An organization's ability to enter and compete in international markets. ➢ Develop skills in researching and analyzing international Business opportunities ➢ Develop a high level of analytical skills and critical thinking in an international Business context ➢ Explain the main institutions that shape the global marketplace;
20261SEC43	**IV**	Cooperation in India and Abroad	➢ Know about the company law in the Abroad. ➢ Understand the use of the memorandum of association and article of association in a ➢ company, they also learn from this course ➢ Develop Professionals in the filed of Co-operation, Co-operative law and Management. ➢ Promote qualified, Skilled and professional manpower to manage the affairs of the Cooperative

			Institutions. ➢ Enhance the Knowledge base of the in-service Personnel on the subject Co-operation, Co-operative law and Co-operative Management. ➢ Enable the in-service personnel to develop skills on Co-operative Management Techniques
20261DSC44A	**IV**	International Financial Management	➢ Understand international capital and foreign exchange market. ➢ Identify and appraise investment opportunities in the international environment. ➢ Identify risk relating to exchange rate fluctuations and develop strategies to deal with them ➢ Identify and evaluate foreign direct investment and international acquisition opportunities ➢ Develop strategies to deal with other types of country risks associated with foreign operations ➢ Express well considered opinion on issues relating to international financial management.
20261PRW45	**IV**	Project Work	➢ Develop plans with relevant people to achieve the project's goals ➢ Break work down into tasks and determine handover procedures ➢ Identify links and dependencies, and schedule to achieve deliverables ➢ Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources ➢ Allocate roles with clear lines of responsibility and accountability. ➢ Have adequate knowledge on measurement & scaling techniques as well as the q ➢ uantitative data analysis

M.Phil.,

PROGRAMME OUTCOMES	
PO1	➢ Infusing research flair among scholars by developing their research aptitude
PO2	➢ Provide an extensive and in-depth knowledge on subject of specialization
PO3	➢ To inculcate problem solving and decision making skills necessary to execute their day to day professional &social responsibilities
PO4	➢ Prepare scholars for undertaking higher responsibilities in such areas as Financial Management, Human Resource Management, Marketing
PO5	➢ To sensitize about the emerging challenges and issues across the Globe in Trade and Commerce
PO6	➢ To make the students to develop a comprehensive idea of commerce and trade
PO7	➢ Provide training required for undertaking research in commerce
PROGRAM SPECIFIC OUTCOME	
PSO1	➢ Capable to carry out Quality Research independently
PSO2	➢ Able to understand subjects clearly and communicate effectively making them ideal choice for occupying academic positions
PSO3	➢ Pursue Ph.D programme with norms of scholarly research that chip into theaugmentation of students personal and professional development
PSO4	➢ Acquire in-depth knowledge of the process of developing new materials as well as gain expertise of well-defined area of research in Commerce.
PROGRAM EDUCATIONAL OBJECTIVES	
PEO1	➢ Research Scholarswill be capable of making a positive contribution to commerce, trade and industry in the national and global context
PEO2	➢ They will be able to apply frameworks and tools to arrive at informed decisions in profession and practice, striking a balance between business

	and social dimensions.
PEO3	➢ They are capable to recognize the need for adapting to change and have the aptitude and ability to engage in independent and life – long learning in the broadest context of socio-economic, technological and global change.
PEO4	➢ They gain expertize Skill to Act as administrators in public, private and government organizations or business establishments or entrepreneurs with further training and education
PEO5	➢ They will identifyand Pursuefurther researches for doctoral Programme.
PEO6	➢ They are capable to work as a lecturer in where is colleges and universities

Course outcomes (Cos)

M.Phil.,

S.No	Semester	Course Code/Name	Course Outcome
2003COC11	**I**	**Research Methodology**	➢ Understanding the nature of problem to be studied and identifying the related area of knowledge. ➢ Reviewing literature to understand how others have approached or dealt with the problem. ➢ Collecting data in an organized and controlled manner so as to arrive at valid decisions. ➢ Analyzing data appropriate to the problem. ➢ Define and develop a possible HIED research interest area using specific research designs;
203COC12	**I**	Advanced Functional Management	➢ To help the students gain understanding of the functions and responsibilities of managers. ➢ To know various tools from accounting and cost accounting this would facilitate the decision making ➢ To explore the economics of information and network industries and to equip students with an

			understanding of how economics affect the business strategy of companies in these industries. ➢ To provide the students with an understanding of fundamental legal issues pertaining to the business world to enhance their ability to manage businesses effectively. ➢ To use statistical techniques for analysis of research data ➢ To gain a solid understanding of human behavior in the workplace from an individual, group, and organizational perspective. ➢ To learn to study and design HRM system ➢ To understand the relationship between Operations & SCM and other business functions, such as Marketing, Finance, Accounting, and Human Resources
203COC13A	**I**	Marketing Management	➢ To introduce the concept of Marketing Mix as a framework for Marketing Decision making. ➢ To emphasize the need, importance and process of Marketing Planning and Control. ➢ To sensitize the students to the dynamic nature of Marketing Function. ➢ Understand fundamental marketing concepts, theories and principles in areas of marketing policy ➢ Apply the knowledge, concepts, tools necessary to understand challenges ➢ Understand the marketing concepts and its evolution ➢ The course helped the students

			to know the principles and Practices of Marketing Mix and Marketing Research.
203COC13B	**I**	Human Resource Management	➢ To understand the role of HRMin an organization ➢ To learn to gain competitive advantage through people ➢ To learn to study and designHRM system ➢ Contribute to the development, implementation, and evaluationof employee recruitment, selection, and retention plans and processes ➢ Develop, implement, and evaluate employee orientation,training, and development programs. ➢ Understanding of the basic concepts, functions and processes of HRM
203COC13C	**I**	Financial Management	➢ To understand various concepts related to financial management. ➢ To study in detail, various tools and techniques in the area of finance. ➢ To develop the analytical skills this would facilitate the decision making in Business situations. ➢ Create an awareness about capital structure and theories of capital structure ➢ Make them understand the cost of capital in wide aspects ➢ Provide knowledge about dividend policies and various dividend models. ➢ Enable them to understand working capital management

B.Com Commerce (2020 Regulations)									
Sem	Course Code	Title of the Course	COs	POS					
				PO1	PO2	PO3	PO4	PO5	PO6
I	20110AEC11	Tamil-I	CO:1 Learn the changes occurred in literature since classical period.	*	*				
			CO:2 Make use of vocabulary systematically.	*					
			CO:3Understand how to lead one's life realizing the modernity and its environment/atmosphere.	*	*	*			
	20111AEC11	Advanced English-I	CO:1 Develop vocabulary	*	*				
			CO:2 Learn to edit and do proof reading	*	*				
			CO:3 Read and comprehend literature	*	*	*			
	20111AEC12	English-I	CO:1 Read and comprehend literature	*	*	*			
			CO:2 Appreciate poetry and prose	*	*				
			CO:3 Familiarize students with fiction.	*	*	*			
	20161SEC13	Basic Accounting	CO:1 Understanding the fundamental of financial accounting				*	*	*
			CO:2 Develop the modern market economy				*	*	
			CO:3 prepare the different kinds of financial statement				*	*	*
			CO:4 Acquire conceptual knowledge of basics of accounting				*	*	
			CO:5 Identify and analyze the reasons for the difference between cash book and pass book balances					*	*
			CO:6 Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP				*	*	*

	20161SEC14	Business Environment	CO:1 Discuss the supply and demand theory and its impact on insurance				*	*	
			CO:2 outline an how entity operate in the Business environment			*	*		
			CO:3 Explain the legal frame work that regulate the insurance industry					*	*
			CO:4 Understand relationship between environment and business; Applying the environmental analysis techniques in practice						*
			CO:5 Understand Economic, Socio-Cultural and Technological Environment				*		*
			CO:6 Know state policies Economic legislations and Economic reforms laid by the government						
	20161AEC15	Marketing	CO:1 Understand fundamental marketing concepts, theories and principles in areas of marketing policy				*		*
			CO:2 Apply the knowledge, concepts, tools necessary to understand challenges				*	*	*
			CO:3 Understand the marketing concepts and its evolution				*		*
			CO:4 Analyze the market based on segmentation, targeting and positioning				*	*	*
			CO:5 Know the consumer behavior and their decision making process				*	*	*
			CO:6 Understand the rural markets and the contemporary issues in marketing				*	*	*
			Co:7 Make decisions on product, price , promotion mix and distribution				*		*
	20161AEC16	Business Economics	CO:1 Apply the concept of opportunity cost.				*	*	*
			CO:2 understand the concepts of cost, nature of production and its relationship to Business operations.				*	*	*

			CO:3 Apply Economic theories to business decision				*		*
			CO:4 Use the theoretical concept of demand and supply analysis in practice				*	*	
			CO:5 Understand the cost concepts, theories of profit and business cycles				*	*	*
			CO:6 Use different demand forecasting techniques and apply different pricing techniques in business				*		*
			CO:7 Understand the importance of Fiscal policy				*		*
	201INDCONS	Indian Constitution	CO:1 Analyse Panchayathi Raj institutions as a medium of decentralization			*			
			CO:2 Awareness on Fundamental Rights are established			*			
			CO:3 Learn the functions of union and State Governments		*	*			
			CO:4 In the power and functions of the Judiciary		*	*			
			CO:5 Understand the structure and composition of Indian Constitution		*	*			
			Co:6 Understand and analyse federalism in the Indian contex		*	*			
II	20110AEC21	Tamil II	CO:1 Know what devotion really is.	*	*				
			CO:2 Know the fruitfulness obtained through devotion.	*	*				
			CO:3 Perceive the progress achieved in the society through devotion.	*		*			
	20111AEC21	Advanced English-II	CO:1 Develop technological skill.	*	*	*			
			CO:2 Able to write in a variety of formats	*	*	*			
			CO:3 Read biographies and develop personality	*	*	*			
	20111AEC22	English-II	CO:1 Appreciate different forms of literature		*	*			
			Co:2 Acquire language skills through literature	*		*			
			Co:3 Broadens the horizon of knowledge	*		*			
	20161SEC23	Business Accounting	CO:1 familiarize the concept of Branch account and its system				*	*	*
			CO:2 understand the Scope of departmental accounting				*	*	

			CO:3 Appreciate the need for negotiable instruments and procedure of accounting for bills honoured and dishonoured				*	*	
			CO:4 Differentiate Trade bills from Accommodation Bills				*	*	*
			CO:5 Understand the concept of Consignment and learn the accounting treatment of the various aspects of consignment				*	*	
			CO:6 Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture				*	*	
			CO:7 Understand the meaning and features of Non-Profit Organisations				*	*	*
			CO:8 Learn to prepare Receipts & Payment Account, Income & Expenditure Account and Balance Sheet for Non-Profit Organizations				*	*	*
	20161SEC24	**Ethics in Business**	**CO:1 Understand, and evaluate various organizational influencesaffecting ethical decisions**			*	*		
			CO:2 Present and analyze ethical and moral issues			*	*		
			CO:3 Explore ethical theories			*	*		
			CO:4 Use contemporary and classical frameworks to analyze and suggest resolutions to ethical dilemmas.			*	*		
			CO:5 Identify and address common ethical issues that arise for individuals, managers, and organizations.			*	*		
			CO;6 ognize how individual differences and cognitive barriers can influence ethical judgment.			*	*		
			CO:7 Identify and prioritize personal values and apply those to making ethical decisions.			*	*		
	20161AEC25	**Business Statistics**	**CO:1 Critically evaluate the underlying assumptions of analysis tools**				*	*	
			CO:2 Solve a range of problems using the techniques covered				*	*	

			CO:3 Conduct basic statistical analysis of data.				*	*	
			CO:4 Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data				*	*	
			CO:5 Calculate measures of central tendency, dispersion and asymmetry, correlation and regression analysis				*	*	
			CO:6 Choose a statistical method for solving practical problems				*	*	
	20161AEC26	**Business Organization and Management**	**CO: 1 Understand the dynamics of marketing in business**				*	*	*
			CO:2 ability and confidence to tackle common practical financial problems of business.				*	*	*
			CO:3 Understand the scope of Business, and its importance.				*	*	*
			CO:4 Identify different forms of business organizations viz; Sole Proprietorship, Partnership, Joint Hindu Family Business & Co-operative Organizations.				*	*	
			CO:5 Understand a Joint Stock Company and various formalities to promote a Company				*	*	
			CO:6 Learn various sources Industrial Financial resources and the means to raise them				*	*	*
	20111RLC27	**Research Led seminar**	**CO:1 Know the emerging areas in research**	*	*	*			
			CO:2 learning experiences of students subject to research led teaching			*	*		
			CO:3 The institutional and organisation issues surrounding such learning environments			*	*		
			CO:4 The development of such teaching on the disciplinary (subject-based) requirements of curricula design			*	*		
			CO:5 The opportunity to develop high level transferable skills			*	*		

			CO:6 The possibility of a constructive alignment between the learning, teaching and assessment of the modules			*	*		
III	**20110AEC31**	**Tamil III**	**CO:1 Achieve one's goal by following the ancestral path**		*	*			
			CO:2 Learn to lead life of perfection by realizing the uncertainty in the life		*	*			
			CO:3 Attain happiness through honesty		*	*			
	20111AEC31	**Advanced English-III**	**CO:1 Understand phonetics.**	*	*	*			
			CO:2 Develop writing skill	*	*	*			
			CO:3 Able to develop creative writing	*	*	*			
	20111AEC32	**English-III**	**CO:1 Enable to appreciate different types of prose**	*	*				
			CO:2 Develop the conversational skills through one-act plays	*					
			CO:3 Enhance the skill of making grammatically correct sentences.	*	*	*			
	20161SEC33	**Cost Accounting**	**CO:1 Understand various costing systems and management systems**				*	*	*
			CO:2 Analyse and provide recommendations to improve the operations of organisations				*	*	
			CO:3 Imbibe conceptual knowledge of cost accounting.				*	*	
			CO:4 Understand the significance of cost accounting in the modern economic environment				*	*	
			CO:5 Select the costs according to their impact on business				*	*	*
			CO:6 Apply cost accounting methods to evaluate and project business performance				*	*	*
	20161SEC34	**Banking Theory law and Practices**	**CO:1 Understanding of Banking Channels and Payments**				*	*	
			CO:2 Practices on Banking Technology				*	*	*
			CO:3 Understanding of Core Banking				*	*	*
			CO:4 To gather knowledge on banking and financial system in India				*	*	*

			CO:5 Understand better customer relationship				*	*	*
			CO:6 To create awareness about modern banking services like e-banking, m-banking and internet banking				*	*	*
	20161AEC35	**Business Law for Managers**	**CO:1 Explain the concepts in business laws with respect to foreign trade**			*	*	*	
			CO:2 Apply the global business laws to current business environment				*	*	
			CO:3 Demonstrate an understanding of the Legal Environment of Business.				*	*	
			CO:4 Communicate effectively using standard business and legal terminology.			*	*	*	
			CO:5 Demonstrate recognition of the requirements of the contract agreement			*	*	*	
			CO:6 Identify contract remedies				*	*	
			CO:7 Understand the various provisions of Company Law			*	*	*	
	20161AEC36	**Essentials of Business Communication**	**CO:1 Identify ethical, legal, cultural, and global issues affecting business communication.**			*	*		
			CO:2 Utilize analytical and problem solving skills appropriate to business communication.	*		*	*	*	
			Co:3 Effective business writing	*	*	*			
			CO:4 Research approaches and information collection.			*	*		
			CO:5 Developing and delivering effective presentations			*	*		
			CO:6 Effective interpersonal communications	*		*			
			CO:7 Skills that maximise team effectiveness.			*	*		*
			CO:8 Good time management.					*	*
	20111RMC37	**Research Methodology**	**CO:1 Able to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools.**			*			
			CO:2 familiarize participants with basic of research and the research process.			*	*		

			CO:3 enable the participants in conducting research work and formulating research synopsis and report.			*			
			CO:4 Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.			*			
			CO:5 Have basic knowledge on qualitative research techniques			*			
			CO:6 Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis			*			
			CO:7 Have basic awareness of data analysis-and hypothesis testing procedures			*			
IV	**20110AEC41**	**Tamil IV**	**CO:1 Realize how the ancient people changed their life style according to the ages**		*	*			
			CO:2 Learn how to change one's lifestyle according to the needs of the future		*	*			
			CO:3 Accept the modern trends and its uses		*	*			
	20111AEC41	**Advanced English-IV**	**CO:1 Develop writing skill.**	*	*	*			
			CO:2 Comprehend and describe poems	*	*	*			
			CO:3 Learn interviewing skills	*	*	*			
	20111AEC42	**English-IV**	**CO:1 Improve their ability to read and understand them**	*	*	*			
			CO:2 Know the genius of Shakespeare	*	*	*			
			CO:3 Express in writing their views.	*	*	*			
	20161SEC43	**Partnership Accounting**	**CO:1 Understand the concept of partnership**				*	*	*
			CO:2 Understand the journal entries for the formation of partnership				*	*	*
			CO:3 Familiarize the concept of Branch account and its system				*	*	
			CO:4 Understand the Scope of departmental accounting				*	*	
			CO:5 Introduce the system of Hire Purchasing				*	*	

			CO:6 Understand partnership account from admission to dissolution				*	*	
	20161SEC44	**Advertising and Sales Promotion**	**CO:1 Understand the key principles and tools of integrated marketing communication**				*	*	
			CO:2 Explain the environmental factors which influence consumer and organizational decision				*	*	*
			CO:3 Identify the elements of the communication process between buyers and sellers in business. making process				*	*	*
			CO:4 Identify the marketing mix components in relation to market segmentation				*	*	
			CO:5 Outline a marketing plan				*	*	
			CO:6 Utilize marketing research techniques to resolve into competitive marketing decisions.				*	*	*
	20161AEC45	**Company Law and Secretarial Practices**	**CO:1 Get a basic understanding of different type of meeting of board of directors.**				*	*	
			CO:2 Use international trade terms and concepts when communicating.	*		*	*		
			CO:3 Demonstrate comprehensive knowledge and understanding of social and economic policy considerations arising in this area.				*	*	
			CO:4 Understanding of those areas of company law identified in the indicative syllabus above and form a critical judgement on areas of controversy within the topics studied;				*	*	
			CO:5 Read and study primary and secondary sources of company law, with minimal staff guidance; critically analyse, interpret, evaluate and synthesise information from a variety of sources				*	*	*

			CO:6 Identify sources for research and further develop a strategy for research using standard and electronic research toolsC				*	*	
	201ENVTSTU	**Environmental Studies**	**CO:1 Learn about environmental pollution.**		*	*			
			CO:2 Familiarize with the social issues and the environment		*	*			
			CO:3 will be able to do independent research on human interactions with the environment.		*	*			
			CO:4 To recognize the physical, chemical, and biological components of the earth's systems and show how they function		*	*			
			CO:5 Analyze and evaluate ideological and philosophical approaches used to understand environmental relationships.		*	*			
			CO:6 Carry out an applied research project in the natural sciences.		*	*			
V	**20161SEC51**	**Corporate accounting**	**Co:1 Find out how can a company dissolve.**				*	*	
			CO:2 Understand Mutual funds investments.				*	*	*
			CO:3 Learn about Working format of companies.				*	*	
			CO:4Enabling the students to understand the features of Shares and Debentures				*	*	
			CO:5Develop an understanding about redemption of Shares and Debenture and its type				*	*	*
			CO:6 Exposure to the company final accounts				*	*	*
	20161SEC52	**Financial Management**	**CO:1 Use business finance terms and concepts when communicating.**	*				*	*
			CO:2 Demonstrate a basic understanding of financial management.				*	*	*
			CO:3 Provide introduction to Financial Management				*	*	*
			CO:4 Create an awareness about capital structure and theories of capital structure				*	*	

			CO:5 Make them understand the cost of capital in wide aspects				*	*	
			CO:6 Provide knowledge about dividend policies and various dividend models.				*	*	
			CO:7 Enable them to understand working capital management				*	*	
	20161SEC53	**Financial Services**	**CO:1 Forecast a firm's future financing requirements**				*	*	*
			CO:2 Design an optimal capital structure.				*	*	
			CO:3 Give an idea about fundamentals of financial services and players in financial sectors				*	*	
			CO:4 Create an awareness about merchant banking, issue management, capital markets and role of SEBI				*	*	
			CO:5 Provide knowledge about leasing and hire purchase concepts				*	*	*
			CO:6 Make them understand about different types of insurance and IRDA Act.				*	*	
	20161AEC54	**Computer Application in Business**	**Co1:Study the development of computers and their components in each stage.**						*
			CO2 : Develop an idea of software, programming language and operating system.		*				
			CO3 : Study the concept of developing database and its maintenance using computers in a business Concern				*		*
			CO4 :Analyze the importance of management information system and networking in a business.				*	*	*
			CO5 : Be aware and perform various activities using computers in day to day life.				*	*	*
	20161DSC55A	**Co-operative law and practices**	**CO:1 Know about the company law in the India.**				*	*	
			CO:2 Understand the use of the memorandum of association and article of association in a company, they also learn from this course				*	*	
			CO:3 Develop Professionals in the filed of Co-operation, Co-operative law and Management.				*	*	

			CO:4 Promote qualified, Skilled and professional manpower to manage the affairs of the Cooperative Institutions.				*	*	*
			CO:5 Enhance the Knowledge base of the in-service Personnel on the subject Co-operation, Co-operative law and Co-operative Management.				*	*	*
			CO:6 Enable the in-service personnel to develop skills on Co-operative Management Techniques				*	*	
	20111BRC56	**Participation in Bounded Research**	**CO:1 Do the allotted work in research**			*			
			CO:2 Learn to do review of literature			*			
			CO:3 Demonstrate knowledge of research processes			*			
			CO:4 Perform literature reviews using print and online database			*			
			CO:5 Identify, explain, compare, and prepare the key elements of a research proposal/report			*			
			CO:6 Describe sampling methods, measurement scales and instruments, and appropriate uses of each			*			
VI	**20161SEC61**	**Management Accounting**	**CO:1 Prepare analysis of various special decisions, using relevant costing and benefits**				*	*	*
			CO:2 More effective planning and control systems				*	*	
			CO:3 The students thought and knowledge on management Accounting				*	*	
			CO:4 Helps to give proper idea on financial statement analysis in practical point of view				*	*	*
			CO:5 Introduce the concept of fund flow and cash flow statement				*	*	
			CO:6 Provide knowledge about budget control keeping in mind the scope of the concept				*	*	
			CO:7 Develop the know-how and concept of marginal costing with practical problems				*	*	*
	20161SEC62		**CO:1 Understand the systematic process to select the business ideas.**				*	*	*

		Entrepreneurship and small Business Management	CO:2 Write a business plan		*		*	*	*
			CO:3 Develop students about Entrepreneurship development				*	*	*
			CO:4 Create an awareness on various Entrepreneurship Development Programme				*	*	*
			CO:5 Enable them to understand project formulation				*	*	*
			CO:6 Familiarize the students with EDP schemes				*	*	*
	20161SEC63	Auditing	CO:1 Articulate knowledage of fundamental audit concepts				*	*	
			CO:2 Apply critical thinking skills and slove auditing Problems.				*	*	*
			CO:3 Apply and demonstrate the accounting knowledge and skills in Auditing.				*	*	*
			CO:4 Explain how analytical procedures are used as an audit tool.				*	*	
			CO:5 Illustrate effective internal controls				*	*	
			CO:6 Apply ethical standards to issues in auditing				*	*	
	20161DSC64A	Income Tax Law & Practices	CO:1 File IT Return on individuals basis				*	*	*
			CO:2 Compute the total Income and Define tax complicacies and structure.				*	*	*
			CO:3 In order to familiarize the different know-how and heads of income with its components				*	*	*
			CO:4 It helps to build an idea about income from house property as a concept				*	*	*
			CO:5 It give more idea about the income from business or profession				*	*	*
			CO:6 Make the students familiarizes with the concept of depreciation and its provisions				*	*	*
	20161DSC64B	Cooperation Theory	CO:1 Greater Social support			*	*	*	
			CO:2 More on-task behaviour				*	*	*
			CO:3 Develop Professionals in the filed of Co-operation, Co-operative law and Management.				*	*	*

			CO:4 Promote qualified, Skilled and professional manpower to manage the affairs of the Cooperative Institutions.				*	*	*
			CO:5 Enhance the Knowledge base of the in-service Personnel on the subject Co-operation, Co-operative law and Co-operative Management.				*	*	*
			CO:6 Enable the in-service personnel to develop skills on Co-operative Management Techniques				*	*	*
	20161OEC	**Banking Services**	**CO:1 To help to gather knowledge on banking and financial system in India**						
			CO:2 To provide knowledge about commercial banks and its products				*	*	*
			CO;3 Aim to familiarize banking system in India				*	*	*
			CO:4 To enable them to understand better customer relationship			*	*	*	*
			CO:5 To create awareness about modern banking services like e-banking,m-banking and internet banking, ATM System				*	*	*
			CO:6 To introduce recent trends in banking system				*	*	*
			CO:7 To make the student understand the basic concept of banking and financial institutions and expose various types of risk based by banks				*	*	*
	201PRW66	**Project Work**	**CO:1 Develop plans with relevant people to achieve the project's goals**						
			CO:2 Break work down into tasks and determine handover procedures						
			CO:3 Identify links and dependencies, and schedule to achieve deliverables						
			CO:4 Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources						

			CO:5 Allocate roles with clear lines of responsibility and accountability.						
			CO:6 Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis						

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SEM	Course Code	Title of the Course	COs	POS						
				PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	20110AEC11	Tamil-I	CO:1 Learn the changes occurred in literature since classical period.	*	*					
			CO:2 Make use of vocabulary systematically.	*	*					
			CO:3Understand how to lead one's life realizing the modernity and its environment/atmosphere.	*	*					
	20111AEC11	Advanced English-I	CO:1 Develop vocabulary	*	*					
			CO:2 Learn to edit and do proof reading	*	*					
			CO:3Read and comprehend literature	*	*					
	20111AEC12	English-I	CO:1 Read and comprehend literature	*	*					
			CO:2 Appreciate poetry and prose	*	*					
			CO:3 Familiarize students with fiction.	*	*					

	20198SEC13	Financial Accounting	CO:1 Understanding the fundamental of financial accounting		*	*	*		*	
			CO:2 Develop the modern market economy		*	*	*			
			CO:3 prepare the different kinds of financial statement		*	*	*		*	
			CO:4 Acquire conceptual knowledge of basics of accounting		*	*	*		*	
			CO:5 Identify and analyze the reasons for the difference between cash book and pass book balances		*	*			*	
			CO:6 Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP		*	*			*	
	20198SEC14	Business Management	CO:1 Apply conceptual learning skills in today's business environment.		*	*		*		
			CO:2 Analyze financial performance of an organization.		*	*		*		
			CO:3 Evaluate organizational decisions with consideration of the political, legal and ethical aspects of business.		*	*		*		
			CO:4 Understand relationship between environment and business; Applying the environmental analysis techniques in practice		*	*		*		
			CO:5 Assess strengths, weaknesses, opportunities and threats of the business environment.		*	*		*		

			CO:6 Know state policies Economic legislations and Economic reforms laid by the government		*	*		*		
	20198AEC15	**Information Technology**	**CO:1 Perform end user support including identifying and implementing solutions to user requests.**		*	*		*	*	
			CO:2 Analyze technical requirements to determine resource requirements and the impact the solution will have on an organization.		*	*		*	*	
			CO:3Design, plan, budget and propose an IT project for an identified need within a specific scope.		*	*		*	*	
			CO:4 Install technical hardware and software including network, database and security components.		*	*		*	*	
			CO:5 Perform routine maintenance to maintain the currency of an operating system, network, database and security needs.		*	*		*	*	
			CO:6 Identify and resolve technical problems using trouble-shooting and research techniques.		*	*		*	*	
			Co:7 Analyze and select application and operating system settings to create an optimal user environment.		*	*		*	*	
	20198AEC16	**Operating System**	**CO:1 Describe and explain the fundamental components of a computer operating system. [ABET (a), (i), (j), (k)] Assessment: Students will take midterm exams, final exams, and homework**		*	*		*		

			CO:2 Describe and explain the fundamental components of a computer operating system. [ABET (a), (i), (j), (k)] Assessment: Students will take midterm exams, final exams, and homework.		*	*		*		
			CO:3 Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. [ABET (a), (i), (j), (k)] Assessment: Students will take midterm exams, final exams, and homework.		*	*	*	*		
			CO:4 Describe and extrapolate the interactions among the various components of computing systems. [ABET (a), (i), (j), (k)] Assessment: Students will take midterm exams, final exams, and homework		*	*		*		
			CO:5 Design and construct the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems. [ABET (a), (c), (i), (j), (k)] Assessment: Students will design and implement the above OS components within NACHOS with C++.		*	*	*	*		
			CO:6 Illustrate, construct, compose and design solutions via C/C++ programs, and through NACHOS. [ABET (a), (c), (i), (j), (k)] Assessment: Students will design and implement the above OS components within NACHOS		*	*	*	*		
			CO:7 Measure, evaluate, and compare OS components through instrumentation for		*	*	*	*		

			performance analysis. [ABET (b), (j)] Assessments: (1) Students will run experiments on their own implemented OS components and the components provided by NACHOS and (2) Students will perform scientific analysis on the performance of the components and are asked to submit a short paper on their experimental results.							
	201INDCONS	Indian Constitution	CO:1 Democratic values and citizenship Training are gained.	*	*					
			CO:2 Awareness on Fundamental Rights are established	*	*					
			CO:3 Learn the functions of union and State Governments	*	*					
			CO:4 In the power and functions of the Judiciary	*	*					
			CO:5 Understand the structure and composition of Indian Constitution	*	*					
			Co:6 Understand and analyse federalism in the Indian contex	*	*					
			CO:7 Analyse Panchayathi Raj institutions as a medium of decentralization	*	*					
II	20110AEC21	Tamil II	CO:1 Know what devotion really is.	*	*					
			CO:2 Know the fruitfulness obtained through devotion.	*	*					

			CO:3 Perceive the progress achieved in the society through devotion.	*	*					
	20111AEC21	**Advanced English-II**	**CO:1 Develop technological skill.**	*	*					
			CO:2 Able to write in a variety of formats	*	*					
			CO:3 Read biographies and develop personality	*	*					
	20111AEC22	**English-II**	**CO:1 Appreciate different forms of literature**	*	*					
			Co:2 Acquire language skills through literature	*	*					
			Co:3 Broadens the horizon of knowledge	*	*					
	20198SEC23	**Partnership Accounting**	**CO:1 familiarize the concept of Branch account and its system**		*	*	*		*	
			CO:2 understand the Scope of departmental accounting		*	*	*		*	
			CO:3 Appreciate the need for negotiable instruments and procedure of accounting for bills honoured and dishonoured		*	*	*		*	
			CO:4 Differentiate Trade bills from Accommodation Bills		*	*	*		*	
			CO:5 Understand the concept of Consignment and learn the accounting treatment of the various aspects of consignment		*	*	*		*	
			CO:6 Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture		*	*	*		*	

			CO:7 Understand the meaning and features of Non-Profit Organisations		*	*	*		*	
			CO:8 Learn to prepare Receipts & Payment Account, Income & Expenditure Account and Balance Sheet for Non-Profit Organizations		*	*	*		*	
	20198SEC24	**Business Law**	**CO:1 Explain the concepts in business laws with respect to foreign trade**		*			*		
			CO:2 Apply the global business laws to current business environment		*			*		
			CO:3 Demonstrate an understanding of the Legal Environment of Business.		*			*		
			CO:4 Communicate effectively using standard business and legal terminology.		*			*		
			CO:5 Demonstrate recognition of the requirements of the contract agreement		*			*		
			CO:6 Identify contract remedies		*			*		
			CO:7nderstand the various provisions of Company Law		*			*		
	20198AEC25	**Programming in C**	**CO:1 Understanding a functional hierarchical code organization.**		*			*	*	
			CO:2Ability to define and manage data structures based on problem subject domain.		*			*	*	
			CO:3 Understanding a concept of object thinking within the framework of functional model.		*			*	*	

			CO:4 Understanding a concept of functional hierarchical code organization.		*			*	*	
			CO:5 • Understand operators, expressions and preprocessors.		*			*	*	
			CO:6 Understand arrays , it's declaration and uses.		*			*	*	
	20198AEC26L	Programming in C Lab	CO: 1 Develop their programming skills.		*			*	*	
			CO:2 Declaration of variables and constants		*			*	*	
			CO:3 3. Be familiar with programming environment with C Program structure.		*			*	*	
			CO:4 Ability to work with textual information, characters and strings.		*			*	*	
			CO:5Understanding a defensive programming concept. Ability to handle possible errors during program execution		*			*	*	
	20198RLC27	Research Led seminar	CO:1 Know the emerging areas in research	*	*					
			CO:2 learning experiences of students subject to research led teaching		*				*	
			CO:3 The institutional and organisation issues surrounding such learning environments		*				*	
			CO:4 The development of such teaching on the disciplinary (subject-based) requirements of curricula design		*				*	
			CO:5 The opportunity to develop high level transferable skills		*				*	

			CO:6 The possibility of a constructive alignment between the learning, teaching and assessment of the modules		*				*	
III	**20110AEC31**	**Tamil III**	**CO:1 Achieve one's goal by following the ancestral path**	*	*					
			CO:2 Learn to lead life of perfection by realizing the uncertainty in the life	*	*					
			CO:3 Attain happiness through honesty	*	*					
	20111AEC31	**Advanced English-III**	**CO:1 Understand phonetics.**	*	*					
			CO:2 Develop writing skill	*	*					
			CO:3 Able to develop creative writing	*	*					
	20111AEC32	**English-III**	**CO:1 Enable to appreciate different types of prose**	*	*					
			CO:2 Develop the conversational skills through one-act plays	*	*					
			CO:3 Enhance the skill of making grammatically correct sentences.	*	*					
	20198SEC33	**Cost Accounting**	**CO:1 Understand various costing systems and management systems**		*	*			*	
			CO:2 Analyse and provide recommendations to improve the operations of organisations		*	*			*	
			CO:3 Imbibe conceptual knowledge of cost accounting.		*	*			*	

			CO:4 Understand the significance of cost accounting in the modern economic environment		*	*			*	
			CO:5 Select the costs according to their impact on business		*	*			*	
			CO:6 Apply cost accounting methods to evaluate and project business performance		*	*			*	
	20198SEC34	Banking Theory law and Practices	CO:1 Understanding of Banking Channels and Payments		*	*		*		
			CO:2 Practices on Banking Technology		*	*		*		
			CO:3 Understanding of Core Banking		*	*		*		
			CO:4 To gather knowledge on banking and financial system in India		*	*		*		
			CO:5 Understand better customer relationship		*	*		*		
			CO:6 To create awareness about modern banking services like e-banking, m-banking and internet banking		*	*		*		
	20198AEC35	Programming in C++	CO:1 To know the proper lines of C++, Encapsulation, Inheritance and Polymorphism.		*		*	*		
			CO:2 To explain the various data types, operations and functions of C++.		*		*	*		
			CO:3 To know the concept of constructors and destructors.		*		*	*		

			CO:4 To explain the concept of inheritances, types of inheritance and polymorphism, virtual Functions.		*			*		
			CO:5 To explain the types of streams, format and format of input and output operations.		*			*		
			CO:6 To Known the procedural and object oriented paradigmwith concepts of streams, classes, functions, data and objects.		*		*	*		
	20198AEC36L	Programming in C++ Lab	CO:1 It provides a clear modular structure for programs which makes it good for defining abstract datatypes in which implementation details are hidden.							
			CO:2 More effort is put into the object-oriented analysis and design, which lowers the overall cost of development.		*		*	*		
			Co:3 Able to understand to write the program by using oops.		*		*	*		
			CO:4 Acquire the knowledge about extending the classes and objects.		*		*	*		
			CO:5 Able to develop the inheritance program.		*		*	*		
	20198RMC37	Research Methodology	CO:1 Able to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools.		*				*	
			CO:2 familiarize participants with basic of research and the research process.		*				*	

			CO:3 enable the participants in conducting research work and formulating research synopsis and report.		*				*	
			CO:4 Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.		*				*	
			CO:5 Have basic knowledge on qualitative research techniques		*				*	
			CO:6 Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis		*				*	
			CO:7 Have basic awareness of data analysis-and hypothesis testing procedures		*				*	
IV	20110AEC41	Tamil IV	CO:1 Realize how the ancient people changed their life style according to the ages	*	*					
			CO:2 Learn how to change one's lifestyle according to the needs of the future	*	*					
			CO:3 Accept the modern trends and its uses	*	*					
	20111AEC41	Advanced English-IV	CO:1 Develop writing skill.	*	*					
			CO:2 Comprehend and describe poems	*	*					
			CO:3 Learn interviewing skills	*	*					
	20111AEC42	English-IV	CO:1 Improve their ability to read and understand them	*	*					
			CO:2 Know the genius of Shakespeare	*	*					

			CO:3 Express in writing their views.	*	*					
	20198SEC43	**Auditing**	**CO:1 Articulate knowledage of fundamental audit concepts**		*	*			*	
			CO:2 Apply critical thinking skills and slove auditing Problems.		*	*			*	
			CO:3 Apply and demonstrate the accounting knowledge and skills in Auditing.		*	*			*	
			CO:4 Explain how analytical procedures are used as an audit tool.		*	*			*	
			CO:5 Illustrate effective internal controls		*	*			*	
			CO:6 Apply ethical standards to issues in auditing		*	*			*	
	20198SEC44	**Business Statistics**	**CO:1 Critically evaluate the underlying assumptions of analysis tools**		*				*	
			CO:2 Solve a range of problems using the techniques covered		*				*	
			CO:3 Conduct basic statistical analysis of data.		*				*	
			CO:4 Understand basic statistical concepts such as statistical collection, statistical series, tabular and graphical representation of data		*				*	
			CO:5 Calculate measures of central tendency, dispersion and asymmetry, correlation and regression analysis		*				*	
			CO:6 Choose a statistical method for solving practical problems		*				*	

	20198AEC45	Visual Basic Programming	CO:1 Students code visual programs by using Visual Basic work environment.		*	*		*		
			CO:2 Distinguish and compose events and methods.		*	*		*		
			CO:3 Distinguish and compose events and methods.		*	*		*		
			CO:4 Recognize and arrange control structures.		*	*		*		
			CO:5 Understand development of applications.		*	*		*		
			CO:6 Identify sources for research and further develop a strategy for research using standard and electronic research toolsC		*	*		*		
	20198AEC46	Visual Basic Programming Lab	CO:1 Understand an overview of computers and computer programming.		*	*		*		
			CO:2 Understand Visual Basic applications.		*	*		*		
			CO:3 Understand how to perform operations and store results.		*	*		*		
			CO:4 Understand the concept of data-driven program execution flow control in Visual Basic programming		*	*		*		
			CO:5 Understand additional Visual Basic controls.		*	*		*		
			CO:6 Understand loops to do repetition.		*	*		*		
	201ENVTSTU	Environmental Studies	CO:1 Learn about environmental pollution.		*			*		
			CO:2 Familiarize with the social issues and the environment		*			*		

			CO:3 will be able to do independent research on human interactions with the environment.		*			*		
			CO:4 To recognize the physical, chemical, and biological components of the earth's systems and show how they function		*			*		
			CO:5 Analyze and evaluate ideological and philosophical approaches used to understand environmental relationships.		*			*		
			CO:6 Carry out an applied research project in the natural sciences.		*			*		
V	20198SEC51	Corporate accounting	Co:1 Find out how can a company dissolve.		*	*			*	
			CO:2 Understand Mutual funds investments.		*	*			*	
			CO:3 Learn about Working format of companies.		*	*			*	
			CO:4Enabling the students to understand the features of Shares and Debentures		*	*			*	
			CO:5Develop an understanding about redemption of Shares and Debenture and its type		*	*			*	
			CO:6 Exposure to the company final accounts		*	*			*	
	20198SEC52	Business Economics	CO:1 Apply the concept of opportunity cost.		*				*	
			CO:2 understand the concepts of cost, nature of production and its relationship to Business operations.		*				*	
			CO:3 Apply Economic theories to business decision		*				*	

			CO:4 Use the theoretical concept of demand and supply analysis in practice		*				*	
			CO:5 Understand the cost concepts, theories of profit and business cycles		*				*	
			CO:6 Use different demand forecasting techniques and apply different pricing techniques in business		*				*	
			CO:7 Understand the importance of Fiscal policy		*				*	
	20198SEC53	Financial Management	CO:1 Use business finance terms and concepts when communicating.		*			*	*	
			CO:2 Demonstrate a basic understanding of financial management.		*			*	*	
			CO:3 Provide introduction to Financial Management		*			*	*	
			CO:4 Create an awareness about capital structure and theories of capital structure		*			*	*	
			CO:5 Make them understand the cost of capital in wide aspects		*			*	*	
			CO:6 Provide knowledge about dividend policies and various dividend models.		*			*	*	
	20161AEC54	Software Engineering	Co1:To identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics		*	*			*	
			CO2 : To apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare,		*	*		*		

			as well as global, cultural, social, environmental, and economic factors							
			CO3 : An ability to communicate effectively with a range of audiences		*	*				
			CO4 :Analyze the importance of management information system and networking in a business.		*	*	*			
			CO5 : Be aware and perform various activities using computers in day to day life.		*	*	*			
	20198DSC55A	Investment Management	CO:1 The knowledge and skills to select and employ base level tools for financial analysis.		*	*	*			
			CO:2 The knowledge and skills to analyze companies for investment purposes.		*	*	*			
			CO:3 The knowledge and skills to develop portfolio strategies for individual and institutional investors.		*	*	*			
			CO:4 The knowledge and to operate ethically as investment management professionals.		*	*	*			
			CO:5 Understand the various alternatives available for investment.		*	*	*			
			CO:6 Gain knowledge of the various strategies followed by investment practitioners		*	*	*			
	20111BRC56	Participation in Bounded Research	CO:1 Do the allotted work in research		*				*	
			CO:2 Learn to do review of literature		*				*	

			CO:3 Demonstrate knowledge of research processes		*				*	
			CO:4 Perform literature reviews using print and online database		*				*	
			CO:5 Identify, explain, compare, and prepare the key elements of a research proposal/report		*				*	
			CO:6 Describe sampling methods, measurement scales and instruments, and appropriate uses of each		*	*			*	
VI	20161SEC61	Management Accounting	CO:1 Prepare analysis of various special decisions, using relevant costing and benefits		*		*		*	
			CO:2 More effective planning and control systems		*		*		*	
			CO:3 The students thought and knowledge on management Accounting		*		*		*	
			CO:4 Helps to give proper idea on financial statement analysis in practical point of view		*		*		*	
			CO:5 Introduce the concept of fund flow and cash flow statement		*		*		*	
			CO:6 Provide knowledge about budget control keeping in mind the scope of the concept		*		*		*	
			CO:7 Develop the know-how and concept of marginal costing with practical problems		*		*		*	
	20198SEC62	Income Tax Law & Practices	CO:1 File IT Return on individuals basis		*		*		*	
			CO:2 Compute the total Income and Define tax complicacies and structure.		*		*		*	

			CO:3 In order to familiarize the different know-how and heads of income with its components		*		*		*	
			CO:4 It helps to build an idea about income from house property as a concept		*		*		*	
			CO:5 It give more idea about the income from business or profession		*		*		*	
			CO:6 Make the students familiarizes with the concept of depreciation and its provisions		*		*		*	
	20198SEC63	Database Management System	CO:1 Understand database concepts and structures and query language		*	*		*		
			CO:2 Understand the E R model and relational model		*	*		*		
			CO:3 Understand Functional Dependency and Functional Decomposition.		*	*		*		
			CO:4 Apply various Normalization techniques		*	*		*		
			CO:5 Understand query processing and techniques involved in query optimization.		*	*		*		
			CO:6 Understand the principles of storage structure and recovery management.		*	*		*		
	20198DSC64A	E-Commerce	CO:1 Demonstrate an understanding of the foundations and importance of E-commerce		*		*			
			CO:2 Analyze the impact of E-commerce on business models and strategy		*		*			
			CO:3 Describe the infrastructure for E-commerce		*		*			

			CO:4 Discuss legal issues and privacy in E-Commerce		*		*			
			CO:5 Assess electronic payment systems		*		*			
			CO:6 Recognize and discuss global E-commerce issues		*		*			
	20198OEC	Banking Services	CO:1 To help to gather knowledge on banking and financial system in India		*		*			
			CO:2 To provide knowledge about commercial banks and its products		*		*			
			CO;3 Aim to familiarize banking system in India		*		*			
			CO:4 To enable them to understand better customer relationship		*		*			
			CO:5 To create awareness about modern banking services like e-banking,m-banking and internet banking, ATM System		*		*			
			CO:6 To introduce recent trends in banking system		*		*			
			CO:7 To make the student understand the basic concept of banking and financial institutions and expose various types of risk based by banks		*		*			
	20198PRW66	Project Work	CO:1 Develop plans with relevant people to achieve the project's goals		*				*	
			CO:2 Break work down into tasks and determine handover procedures		*				*	
			CO:3 Identify links and dependencies, and schedule to achieve deliverables		*				*	

			CO:4 Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources		*				*	
			CO:5 Allocate roles with clear lines of responsibility and accountability.		*				*	
			CO:6 Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis		*				*	
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Sem	**Course Code**	**Title of the Course**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
I	20261SEC11	Marketing Research and Consumer Behaviour	CO:1 This specialization lays the neccessary groundwork for an overall successful marketing strategy	*	*				*	
			CO:2knowledge required to understand the state of your product before approaching the market strategy	*	*				*	
			CO:3Interpret development of marketing research	*	*				*	
			CO:4 Identify the major influences in Consumer Behaviour	*	*				*	
			CO:5theory of Consumer behaviour and relates it to the practice of marketing.	*	*				*	
			CO: 6 Demonstrate how knowledge of consumer behaviour can be applied to marketing.	*	*				*	

	20261SEC12	Human Resource Management	CO:1 Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes	*	*			*		
			CO:2Develop, implement, and evaluate employee orientation, training, and development programs.	*	*			*		
			CO:3Understanding of the basic concepts, functions and processes of HRM	*	*			*		
			CO:4 develop a selection and interviewing program	*	*			*		
			CO:5 know formalize, Design and evaluate various Recruitment and Placement policies.	*	*			*		
			CO:6 Use methods of of collecting job analysis information.	*	*			*		
	20261SEC13	Services Marketing	CO:1 Focuses on services, service design, and service innovation, with the aim of developing empathy for customers and understanding the customer experience	*	*			*	*	
			CO:2 strategies that support broader marketing decisions.	*	*			*		
			CO:3 Develop an understanding of the role of relationship marketing and customer service	*	*			*		
			CO:4 Demonstrate a knowledge of the extended marketing mix for services.	*	*			*	*	
			CO:5 Exhibit the capability to work effectively within a team environment.	*	*			*		

			CO:6Develop and Justify marketing planning and Control Systems.	*	*			*		
	20261SEC14	Advanced Cost Management	CO:1 Study of decision making and performance evaluation techniques in management accounting	*	*					
			CO:2 Understand decision making and performance evaluation techniques in management accounting.	*	*	*	*			
			CO:3 In modern competitive business environment, suitable business decision making is very crucial	*	*	*				
			CO:4 Identify relevant information for decision making purposes in order to produce financial analyses for a range of decisions such as product-mix, pricing, outsourcing and special orders.	*	*	*	*			
			CO:5 Use standard costs to prepare budgets for planning and control purposes.	*	*	*	*			
			CO:6 Understand the principles of standard costing.	*	*	*	*			
	20261DSC15B	Organizational Behaviour	CO:1xamine the differences and similarities between leadership, power, and management	*	*			*		
			CO:2 impact that a company's structure and design can have on its organizational behavior	*	*			*		
			CO:3 impact of culture on organizational behavior	*	*			*		
			CO:4 Analyze management issues as related to organizational behavior	*	*			*		
			CO:5Examine challenges of effective organizational communication	*	*			*		

			CO:6 Evaluate ethical issues as related to organizational behavior	*	*			*		
	20261RLS16	Research Led Seminar	CO:1 Develop skills in data collection and complex analysis					*		
			CO:2 Clarify terminology and approaches to different facets of research-based teaching	*	*					
			CO:3 Explore good practices in institution-driven, strategic approaches on how to integrate research and education missions	*	*					
			CO:4 Generate ideas on how to build the capacity of faculty members to implement research based teaching	*	*					
			CO:5 create a research-based learning environment	*	*					
			CO:6 Analyse national frameworks, policies and funding	*	*					
ii	20261SEC21	Quantitative Techniques for Decision Making	CO:1 Employ basic statistical methods to decision making	*	*					
			CO:2 Understand how to apply basic models and theories in business	*	*		*			
			CO:3 Solve management problems effectively	*	*		*			
			CO:4 Use software tools to model decision problems.	*	*					
			CO:5 Clearly identify an otherwise unstructured business problem and its components	*	*		*			

			CO:6 Employ effective techniques for addressing the major challenges presented	*	*					
			CO:7 Provide a solution to the decision process	*	*		*			
	20261SEC22	**Total Quality Management**	**CO:1 Given a product or a service type, the student manager will be able to enumerate and justify the dimensions of product quality or service quality for the same**	*	*			*		
			CO:2 Given the quality gurus (Deming/ Juran/ Taguchi/ Crosby), the student manager will be able to justify their philosophies/ contributions in Quality Management.	*	*			*		
			CO:3 Given a quality problem/ failure mode, the student manager will be able to identify causes and sub causes of the effect/ problem draw and justify Ishikawa Diagram.	*	*			*		
			CO:4 For a given type of organization, the student manager will be able to enlist and justify the four levels of benchmarking and/ or enlist and brief seven step benchmarking model	*	*			*		
			CO:5 The student manager will be able to differentiate between common and special cause of variation and/ or differentiate between attributes and variables and/ or construct and write formulae for control charts for variables and attributes.	*	*			*		
			CO:6 Critically appraise the organisational, communication and teamwork requirements for effective quality management	*	*			*		

	20261SEC23	Advanced Management Accounting	CO:1 Activity based approaches to management and cost analysis	*	*	*	*			
			CO:2 Analysis of common costs in manufacturing and service industry	*	*	*	*			
			CO:3 Techniques for profit improvement, cost reduction, and value analysis	*	*	*	*			
			CO:4 Throughput accounting	*	*	*				
			CO:5 Target costing; cost ascertainment and pricing of products and services	*	*	*	*			
			CO:6 Pricing Decisions	*	*	*	*			
			CO:7 Budgets and Budgetary Control	*	*	*	*			
			CO:8 Evolution of standards, continuous - improvement; keeping standards meaningful and relevant; variance analysis	*	*	*	*			
			CO:6 Distinguish Joint Venture and Partnership and to learn the methods of maintaining records under Joint Venture	*	*	*	*			
			CO:7 Understand the meaning and features of Non-Profit Organisations	*	*	*				
			CO:8 Learn to prepare Receipts & Payment Account, Income & Expenditure Account and Balance Sheet for Non-Profit Organizations	*	*	*	*			
	20261SEC24B	Retail Management	CO:1 The role that retailing plays in the distribution component of the marketing mix	*	*			*		

			CO:2 Understanding of the concept of social responsibility and the role it plays in retailin	*	*			*		
			CO:3 Aware of the moral and ethical dilemmas that face the retailing industry in today's business environment	*	*			*		
			CO:4 Development and understanding of implementing a retail strategy.	*	*			*		
			CO: 5 Understanding of the increased use of technology in the field of retailing	*	*			*		
			CO:6 Identify key roles within retail businesses	*	*			*		
	20261RMC25	**Research Methodology**	**CO:1 Demonstrate knowledge of research processes (reading, evaluating, and developing)**	*	*		*			
			CO:2 Perform literature reviews using print and online databases	*	*		*			
			CO:3 Identify, explain, compare, and prepare the key elements of a research proposal/report	*	*		*			
			CO:4 Select and define appropriate research problem and parameters	*	*		*			
			CO:5 Prepare a project proposal (to undertake a project)	*	*		*			
			CO:6 Understand some basic concepts of research and its methodologies	*	*		*			
	20261BRC26	**Participation in Bounded Research**	**CO:1 Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.**	*	*		*			

			CO:2 Have basic knowledge on qualitative research techniques	*	*		*			
			CO:3Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis	*	*		*			
			CO:4 Have basic awareness of data analysis-and hypothesis testing procedures	*	*		*			
			CO:5 knowledge for enabling students to develop data analytics skills and meaningful interpretation to the data sets so as to solve the business/Research problem.	*	*		*			
			CO:6 Describe sampling methods, measurement scales and instruments, and appropriate uses of each	*	*		*			
III	**20261SEC31**	**Project planning and Control**	**CO:1 Understand the How Subcontract Administration and Control are practiced in the Industry.**	*	*			*		
			CO:2 Understand the contract management, Project Procurement, Service level Agreements and productivity	*	*			*		
			CO:3 Apply the risk management plan and analyse the role of stakeholders.	*	*			*		
			CO:4 Analyze the learning and understand techniques for Project planning, scheduling and Execution Control.	*	*		*			

			CO:5 Understand the conceptual clarity about project organization	*	*			*		
			CO:6 Understand project characteristics and various stages of a project	*	*		*			
	20261SEC32	**Advanced Corporate Accounting**	**CO:1 Critically analyse both older and newer MA methods and their effects in organisations**	*	*	*	*			
			CO:2 knowledge and understanding about MA issues, including its problems and difficulties	*	*	*	*			
			CO:3 Part in the design and use of the management accounting system in organisations	*	*	*	*			
			CO:4 Updated concerning the more recent development in MA and the emergence of new methods	*	*	*	*			
			CO:5 More advanced level compared to the basic knowledge acquired on the Bachelor level	*	*	*	*			
			CO:6 Exposure to the company final accounts	*	*	*	*			
	20261DSC34B	**Indian Financial System**	**CO:1 Knowledge, understanding and skills in the area of international financial relations and tolls for its implementation**	*	*	*			*	
			CO:2 Knowledge and understanding of characteristics, activities, principles and specifics of international financial relations	*	*				*	
			CO:3 Ability to summarize and critically evaluate results obtained by researchers in the field of international financial relations	*	*				*	

			CO:4 Ability to analyse and use various sources of information and data in the field and make assessment	*	*				*	
			CO:5 Use methods in the field of international finance in practice;	*	*				*	
			CO:6 Economic essence and currency classifications: the concept of currency and its basic classification; characteristics of currencies.	*	*				*	
	20261OEC	**Financial Services**	**CO:1 To introduces meaning and functions of Financial Intermediaries**	*	*	*				
			CO:2 To understand the role of merchant bank qnd its services	*	*	*				
			CO:3 To provide information regarding management of mutual funds and Regulations	*	*	*				
			CO:4 To understand the role and functions of financial services Marketing	*	*	*			*	
			CO:5 To know the structure and types of debt Instruments	*	*	*				
			CO:6 To realize Foreign Exchange Market	*	*	*			*	
	20261SRC36	**Scaffold Research (Societal Project)**	**CO:1 to help students manage individual or team projects.**	*	*			*		
			CO:2 Begin project-planning with a specific audience with a specific and pressing concern	*	*			*		
			CO:3 Let students design their own projects. Or require that projects iterate or counter existing	*	*			*		

			cultural trends and patterns or that address compelling social concerns (e.g.technology addiction).							
			CO:4 Use concept-mapping before, during, and after the project is completed.	*	*			*		
			CO:5Give students the opportunities to use their specific gifts, skills, and backgrounds in completing the project.	*	*			*		
			CO:6 Help students brainstorm the opportunities for creative risk-taking at the beginning of a project.	*	*			*		
IV	20261SEC41	Income Tax Law and Tax Planning	CO:1 File IT Return on individuals basis	*	*		*			
			CO:2 Compute the total Income and Define tax complicacies and structure.	*	*		*			
			CO:3 In order to familiarize the different know-how and heads of income with its components	*	*		*			
			CO:4 It helps to build an idea about income from house property as a concept	*	*		*			
			CO:5 It give more idea about the income from business or profession	*	*		*			
			CO:6 Make the students familiarizes with the concept of depreciation and its provisions	*	*		*			
	20261SEC42	International Business	CO:1 Have developed an understanding of major issues related to international Business	*	*				*	

			CO:2 Have developed skills in researching and analyzing trends in global markets and in modern marketing practice	*	*				*	
			CO:3 An organization's ability to enter and compete in international markets.	*	*				*	
			CO:4 Develop skills in researching and analyzing international Business opportunities	*	*				*	
			CO:5 Develop a high level of analytical skills and critical thinking in an international Business contex	*	*				*	
			CO:6 Explain the main institutions that shape the global marketplace;	*	*				*	
	20261SEC43	**Co- Operation in India and Abroad**	**CO:1 Know about the company law in the Abroad.**	*	*				*	
			CO:2 Understand the use of the memorandum of association and article of association in a company, they also learn from this course	*	*			*		
			CO:3 Develop Professionals in the filed of Co-operation, Co-operative law and Management.	*	*			*		
			CO:4 Promote qualified, Skilled and professional manpower to manage the affairs of the Cooperative Institutions.	*	*					
			CO:5 Enhance the Knowledge base of the in-service Personnel on the subject Co-operation, Co-operative law and Co-operative Management.	*	*			*		
			CO:6 Enable the in-service personnel to develop skills on Co-operative Management Techniques	*	*			*		

	20261DSC44B	International Financial Management	CO:1 Understand international capital and foreign exchange market.	*	*		*		*	
			CO:2 Identify and appraise investment opportunities in the international environment.	*	*				*	
			CO:3 Identify risk relating to exchange rate fluctuations and develop strategies to deal with them	*	*				*	
			CO:4 Identify and evaluate foreign direct investment and international acquisition opportunities	*	*				*	
			CO:5 Develop strategies to deal with other types of country risks associated with foreign operations	*	*				*	
			CO:6 Express well considered opinion on issues relating to international financial management.	*	*	*			*	
	20261PRW45	Project Work	CO:1 Develop plans with relevant people to achieve the project's goals	*	*		*			
			CO:2 Break work down into tasks and determine handover procedures	*	*		*			
			CO:3 Identify links and dependencies, and schedule to achieve deliverables	*	*		*			
			CO:4 Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources	*	*		*			
			CO:5 Allocate roles with clear lines of responsibility and accountability.	*	*		*			

			CO:6 Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis	*	*		*				

2020

Sem	Course Code	Title of the Course	COs	POS						
				PO1	PO2	PO3	PO4	PO5	PO6	PO7
I	203RMG11	Research Methodology	Able to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools.	*	*	*		*		*
			Familiarize participants with basic of research and the research process.	*		*		*	*	*
			Enable the participants in conducting research work and formulating research synopsis and report.	*		*		*	*	*
			Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.	*		*	*	*	*	*
			Have basic knowledge on qualitative research techniques	*		*	*		*	*
			Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis	*		*	*		*	*
			Have basic awareness of data analysis-and hypothesis testing procedures	*		*		*		*
	203COC12	Advanced Functional Management	To help the students gain understanding of the functions and responsibilities of managers.	*	*	*	*	*	*	*
			To know various tools from accounting and cost accounting this would facilitate the decision making	*	*	*		*	*	

			To explore the economics of information and network industries and to equip students with an understanding of how economics affect the business strategy of companies in these industries.	*	*	*	*	*	*	*
			To provide the students with an understanding of fundamental legal issues pertaining to the business world to enhance their ability to manage businesses effectively.	*	*	*	*	*	*	*
			To use statistical techniques for analysis of research data	*	*	*	*	*	*	*
			To gain a solid understanding of human behavior in the workplace from an individual, group, and organizational perspective.	*	*	*	*	*		
			To learn to study and design HRM system	*	*	*	*	*	*	*
			To understand the relationship between Operations & SCM and other business functions, such as Marketing, Finance, Accounting, and Human Resources.	*	*	*	*	*	*	*
	203COC13	**Marketing Management**	**To introduce the concept of Marketing Mix as a framework for Marketing Decision making.**	*	*	*	*	*		*
			To emphasize the need, importance and process of Marketing Planning and Control.	*	*	*	*	*	*	*
			To sensitize the students to the dynamic nature of Marketing Function.	*	*	*	*	*	*	*
			Understand fundamental marketing concepts, theories and principles in areas of marketing policy	*	*	*	*	*	*	*
			Apply the knowledge, concepts, tools necessary to understand challenges	*	*	*	*	*	*	*
			Understand the marketing concepts and its evolution	*	*	*	*	*	*	*

			The course helped the students to know the principles and Practices of Marketing Mix and Marketing Research.	*	*	*	*	*	*	*
	2023COC13	**Human Resource Management**	**To understand the role of HRM in an organization**	*	*	*	*	*	*	*
			To learn to gain competitive advantage through people	*	*	*	*	*		*
			To learn to study and design HRM system	*	*	*	*	*	*	*
			Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes	*	*	*	*	*	*	*
			Develop, implement, and evaluate employee orientation, training, and development programs.	*	*	*	*	*	*	*
			Understanding of the basic concepts, functions and processes of HRM	*	*	*	*	*	*	*
	203RPE14	**Financial Management**	**To understand various concepts related to financial management.**	*	*	*	*	*	*	*
			To study in detail, various tools and techniques in the area of finance.	*	*	*	*	*	*	*
			To develop the analytical skills this would facilitate the decision making in Business situations.	*	*	*	*	*	*	*
			Create an awareness about capital structure and theories of capital structure	*	*	*	*	*		*
			Make them understand the cost of capital in wide aspects	*	*	*	*	*	*	*
			Provide knowledge about dividend policies and various dividend models.	*	*	*	*	*	*	*
			Enable them to understand working capital management	*	*	*	*	*	*	*

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

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme Specific Outcomes(PSOs) and Course Outcomes(COs) of the Programmes offered by the University (2UGBTGE)

Program Outcomes and Course outcomes of

Department of Management

REGULATION – 2020

LOCAL	
REGIONAL	
NATIONAL	
GLOBAL	

SCHOOL OF COMMERCE AND MANAGEMENT
DEPARTMENT OF MANAGEMENT

Programmed Offer

1	BBA	YES
2	MBA	YES

PROGRAM EDUCATIONAL OBJECTIVES

- Graduates will be expertise in the area of leadership, interpersonal skills, entrepreneurship, andmarketing.
- Graduate will competent the global competitive world more professionally.
- Graduate be a responsible citizen and lead the business with moral and ethical value.

PROGRAM OUTCOMES

- Acquiring Conceptual Clarity of Various Functional Areas
- Ability to analyze various functional issues affecting the organization
- Demonstrating ability to evolve strategies for organizational benefits
- Analysis and interpretation of the data which is used in Decision Making
- Demonstrate Ability to work in Groups
- Demonstrate understanding of social cues and contexts in social interaction
- Develop Ethical Practices and Imbibe Values for Better Corporate Governance.
- Understand ethical challenges and choices in a business setting
- Demonstrate understanding of sustainability related concerns in varied areas
- Analyze Global Environment and its Impact on Business
- Understand the ecosystem of start up in the country
- Demonstrate the ability to create business plans

PROGRAM SPECIFIC OUTCOMES

- An Understanding of Business Functions
- Providing Global Perspectives
- Developing Critical and Analytical Thinking Abilities
- Interpersonal Skill Development
- Creating Social Sensitivity and Understanding CSR, Ethical and Sustainable Business Practices
- Demonstrate sensitivity to social, ethical and sustainability issues
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  Developing Entrepreneurship Acumen
  Demonstrate the ability to develop models / frameworks to reflect critically on specific business contexts
- Demonstrate Effectively Oral and Written Communication

BBA 2020 REGULATION CO&PO MAPPING

Sem	Course Code	Title of the Course	COs
I	20110AEC11	Tamil I	CO:1 Learn the changes occurred in literature since classical period.
			CO:2 Make use of vocabulary systematically.
			CO:3Understand how to lead one's life realizing the modernity and its environment/atmosphere.
	20111AEC12	English I	CO:1 Develop vocabulary
			CO:2 zarLearn to edit and do proof reading
			CO:3Read and comprehend literature
	20160SEC13	Principles of Management	CO:1 Understanding the fundamental of financial accounting
			CO:2 Develop the modern market economy
			CO:3 prepare the different kinds of financial statement
	20160SEC14	Managerial Economics	CO:1 Discuss the supply and demand theory and its impact on insurance
			CO:2 outline an how entity operate in the Business environment
			CO:3 Explain the legal frame work that regulate the insurance industry
	20160AEC15	Business Communication	CO:1 Understand fundamental marketing concepts, theories and principles in areas of marketing policy
			CO:2 Apply the knowledge, concepts, tools necessary to understand challenges
			CO:3 Understand the marketing concepts and its evolution
	20160AEC16	Business Mathematics and Statistics	CO:1 Apply the concept of opportunity cost.
			CO:2 understand the concepts of cost, nature of production and its relationship to Business operations.
			CO:3 Apply Economic theories to business decision
	201LSCIC	Indian Constitution	CO:1 Know the consumer behavior and their decision making process
			CO:2 Understand the rural markets and the contemporary issues in marketing
			Co:3 Make decisions on product, price , promotion mix and distribution
	201LSCUV	Universal Human Values	CO:1 Discuss the supply and demand theory and its impact on insurance
			CO:2 outline an how entity operate in the Business environment
			CO:3 Explain the legal frame work that regulate the insurance industry

II	20110AEC21	Tamil II	CO:1 Know what devotion really is. CO:2 Know the fruitfulness obtained through devotion. CO:3 Perceive the progress achieved in the society through devotion.
	20111AEC22	English II	CO:1 Develop technological skill. CO:2 Able to write in a variety of formats CO:3 Read biographies and develop personality
	20160SEC23	Financial Accounting	CO:1 Appreciate different forms of literature Co:2 Acquire language skills through literature Co:3 Broadens the horizon of knowledge
	20160SEC24	Organizational Behaviour	CO:1 familiarize the concept of Branch account and its system CO:2 understand the Scope of departmental accounting CO:3 Appreciate the need for negotiable instruments and procedure of accounting for bills honoured and dishonoured
	20160AEC25	Business Environment	CO:1 Understand, and evaluate various organizational influencesaffecting ethical decisions CO:2 Present and analyze ethical and moral issues CO:3 Explore ethical theories
	20160AEC26	Management Information System	CO:1 Critically evaluate the underlying assumptions of analysis tools CO:2 Solve a range of problems using the techniques covered CO:3 Conduct basic statistical analysis of data.
	20160RLC27	Research Led Seminar	CO: 1 Understand the dynamics of marketing in business CO:2 ability and confidence to tackle common practical financial problems of business. CO:3 Understand the scope of Business, and its importance.
	201SSCBE	Basic Behavioral Etiquette	CO:1. Identify the names and functions of the **PowerPoint** interface. CO:2. Create, edit, save, and print presentations. CO:3. Format presentations.
	201LSCCS	Communication Skills	1. Recognize when to use each of the Microsoft Office programs to create professional and academic documents. 2. Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards. 3. Apply skills and concepts for basic use of computer hardware, software, networks, and the Internet in the workplace and in future coursework as identified by the internationally accepted Internet and Computing Core (IC3) standards.
III	20110AEC31	Tamil III	CO:1 Achieve one's goal by following the ancestral path CO:2 Learn to lead life of perfection by realizing the uncertainty in the life CO:3 Attain happiness through honesty
	20111AEC32	English III	CO:1 Understand phonetics. CO:2 Develop writing skill CO:3 Able to develop creative writing
	20160SEC33	Management Accounting	CO:1 Enable to appreciate different types of prose CO:2 Develop the conversational skills through one-act plays CO:3 Enhance the skill of making grammatically correct sentences.
	20160SEC34	Marketing Management	CO:1 Understand various costing systems and management systems CO:2 Analyse and provide recommendations to improve the operations of organisations CO:3 Imbibe conceptual knowledge of cost accounting.
	20160AEC35	Business Law	CO:1 Understanding of Banking Channels and Payments CO:2 Practices on Banking Technology CO:3 Understanding of Core Banking

	20160AEC36	Human Resource Management	CO:1 Explain the concepts in business laws with respect to foreign trade
			CO:2 Apply the global business laws to current business environment
			CO:3 Demonstrate an understanding of the Legal Environment of Business.
	20160RMC37	Research Methodology	CO:1 Identify ethical, legal, cultural, and global issues affecting business communication.
			CO:2 Utilize analytical and problem solving skills appropriate to business communication.
			Co:3 Effective **business** writing
	201LSCOA	Office automation	CO:1 Able to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools.
			CO:2 familiarize participants with basic of research and the research process.
			CO:3 enable the participants in conducting research work and formulating research synopsis and report.
IV	20110AEC41	Tamil IV	CO:1 Realize how the ancient people changed their life style according to the ages
			CO:2 Learn how to change one's lifestyle according to the needs of the future
			CO:3 Accept the modern trends and its uses
	20111AEC42	English IV	CO:1 Develop writing skill.
			CO:2 Comprehend and describe poems
			CO:3 Learn interviewing skills
	20160SEC43	Total Quality Management	CO:1 Improve their ability to read and understand them
			CO:2 Know the genius of Shakespeare
			CO:3 Express in writing their views.
	20160SEC44	Cost Accounting	CO:1 Understand the concept of partnership
			CO:2 Understand the journal entries for the formation of partnership
			CO:3 Familiarize the concept of Branch account and its system
	20160AEC45	Retail Management	CO:1 Understand the key principles and tools of integrated marketing communication
			CO:2 Explain the environmental factors which influence consumer and organizational decision
			CO:3 Identify the elements of the communication process between buyers and sellers in business. making process
	20160AEC46	Industrial Relations and Labour Law	CO:1 Get a basic understanding of different type of meeting of board of directors.
			CO:2 Use international trade terms and concepts when communicating.
			CO:3 Demonstrate comprehensive knowledge and understanding of social and economic policy considerations arising in this area.
	201SSCAQ	General Aptitude and Personality Development Lab	CO:1 Examine database concepts and explore the Microsoft Office Access environment.
			CO:2. Design a simple database.
			CO:3. Build a new database with related tables.
	201LSCLS	Leadership and Management Skills	CO:1 Understand the concept of partnership
			CO:2 Understand the journal entries for the formation of partnership
			CO:3 Familiarize the concept of Branch account and its system
	201ENSTU45	Environmental Studies	CO:1 Learn about environmental pollution.
			CO:2 Familiarize with the social issues and the environment
			CO:3 will be able to do independent research on human interactions with the environment.
V	20160SEC51	Financial Management	Co:1 Find out how can a company dissolve.
			CO:2 Understand Mutual funds investments.

			CO:3 Learn about Working format of companies.
	20160SEC52	Services Marketing	CO:1 Use business finance terms and concepts when communicating. CO:2 Demonstrate a basic understanding of financial management. CO:3 Provide introduction to Financial Management
	20160SEC53	Production and Operations Management	CO:1 Forecast a firm's future financing requirements CO:2 Design an optimal capital structure. CO:3 Give an idea about fundamentals of financial services and players in financial sectors
	20160SEC54	Global Business Management	Co1:Study the development of computers and their components in each stage. CO2 : Develop an idea of software, programming language and operating system. CO3 : Study the concept of developing database and its maintenance using computers in a business Concern
	20160DSC55A	Advertising and salesmanship	CO:1 Know about the company law in the India. CO:2 Understand the use of the memorandum of association and article of association in a company, they also learn from this course CO:3 Develop Professionals in the filed of Co-operation, Co-operative law and Management.
	20160DSC55B	Investment Management	CO:1 Do the allotted work in research CO:2 Learn to do review of literature CO:3 Demonstrate knowledge of research processes
	20160BRC56	Participation Bounded Research	CO:1 Perform literature reviews using print and online database CO:2 Identify, explain, compare, and prepare the key elements of a research proposal/report CO:3Describe sampling methods, measurement scales and instruments, and appropriate uses of each
	201ACLSPSL	Professional Skills	CO:1 work with the Photoshop workspace CO:2. navigate images CO:3. resize and crop images
VI	20160SEC61	Business Policy and Strategic Management	CO:1 Prepare analysis of various special decisions, using relevant costing and benefits CO:2 More effective planning and control systems CO:3 The students thought and knowledge on management Accounting
	20160SEC62	Entrepreneurial Development	CO:1 Understand the systematic process to select the business ideas. CO:2 Write a business plan CO:3 Develop students about Entrepreneurship development
	20160SEC63	Logistics and Supply Chain Management	CO:1 Articulate knowledge of fundamental audit concepts CO:2 Apply critical thinking skills and slove auditing Problems. CO:3 Apply and demonstrate the accounting knowledge and skills in Auditing.
	20160DSC64A	Customer Relationship Management	Co:1 Find out how can a company dissolve. CO:2 Understand Mutual funds investments. CO:3 Learn about Working format of companies.
	20160DSC64B	Financial Services	CO:1 Develop plans with relevant people to achieve the project's goals CO:2 Break work down into tasks and determine handover procedures CO:3 Identify links and dependencies, and schedule to achieve deliverables
	20160PRW66	Project Work	CO:1 To help to gather knowledge on banking and financial system in India CO:2 To provide knowledge about commercial banks and its products

			CO;3 Aim to familiarize banking system in India
	201SSCIM	Interview Skills Training and MockTest	CO:1. Learn to create animated graphics add sound and interactivity.
			CO:2. Can develop Website
			CO:3. CD based presentations
	201SSCIM	Community Engagement	CO:1 Develop writing skill.
			CO:2 Comprehend and describe poems
			CO:3 Learn interviewing skills
	201TERP9	Tally ERP 9	Co:1 Find out how can a company dissolve.
			CO:2 Understand Mutual funds investments.
			CO:3 Learn about Working format of companies.
	20160PEE	Programme Exit Examination	CO:1 Develop plans with relevant people to achieve the project's goals
			CO:2 Break work down into tasks and determine handover procedures

Skill Based Elective Courses

Course Code	Course Title	COS
20120SEC01A	Fundamentals of Computers	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.
20160SEC01B	Soft Skills – I	To provide an overview of theories and practices in organizational behavior in individual, group and organizational level.
20120SEC02A	Ms office PackagesLab	To acquaint the students with the fundamental principles of financial, cost & Management Accounting. Enable the students to take decisions using management accounting tools and to exposes the students to various concepts and principles of accounting for making efficient decisions.
20160SEC02B	Soft Skills- II	To make the students aware of the various economic theories and principles - To equip them with the required tools and techniques for improving their decisionmaking skills.
20120SEC03A	Writing and Presentation SkillsLab	To create the knowledge of Legal perspective and its practices to improvise the business.
20160SEC03B	Soft Skills – III	This course mainly deals with the use of Statistical concepts in the resolution of managerial decision problems. As such the course will deal not only with some of the theoretical concepts in Statistics but will also be concerned with their application.
20120SEC04A	General Aptitude and Personality Development Lab	Facilitate student to understand the operational nuances of a Finance Manager Comprehend the technique of making decisions related to finance function
20160SEC04B	Soft Skills – IV	To provide knowledge about management issues related to staffing, training, performance, compensation, human factors consideration and compliance with human resource requirements.
20120SEC05A	Photoshop Lab	To understand fundamental concepts of Marketing in Modern Marketing Practices
20160SEC05B	Soft Skills – V	To provide a broad introduction to the field production and operations management and explain the concepts, strategies, tools and techniques for managing the transformation process that can lead to competitive advantage.

PROGRAM OUTCOMES

- Acquiring Conceptual Clarity of Various Functional Areas
- Ability to analyze various functional issues affecting the organization
- Demonstrating ability to evolve strategies for organizational benefits
- Analysis and interpretation of the data which is used in Decision Making
- Demonstrate Ability to work in Groups
- Demonstrate understanding of social cues and contexts in social interaction
- Develop Ethical Practices and Imbibe Values for Better Corporate Governance.
- Understand ethical challenges and choices in a business setting
- Demonstrate understanding of sustainability related concerns in varied areas
- Analyze Global Environment and its Impact on Business
- Understand the ecosystem of start up in the country
- Demonstrate the ability to create business plans

PROGRAM SPECIFIC OUTCOMES

- An Understanding of Business Functions
- Providing Global Perspectives
- Developing Critical and Analytical Thinking Abilities
- Interpersonal Skill Development
- Creating Social Sensitivity and Understanding CSR, Ethical and Sustainable Business Practices
- Demonstrate sensitivity to social, ethical and sustainability issues
- Developing Entrepreneurship Acumen
- Demonstrate the ability to develop models / frameworks to reflect critically on specific business contexts
- Demonstrate Effectively Oral and Written Communication

Sem	Course Code	Title of the Course	COs
I	20260SEC11	Management Concepts	CO:1 This specialization lays the neccessary groundwork for an overall successful marketing strategy
			CO:2knowledge required to understand the state of your product before approaching the market strategy
			CO:3Interpret development of marketing research
	20260SEC12	Organizational Behaviour	CO:1 Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes
			CO:2Develop, implement, and evaluate employeeorientation, training, and development programs.
			CO:3Understanding of the basic concepts,functions and processes of HRM
	20260SEC13	Accounting for Managers	CO:1 Focuses on services, service design, and service innovation, with the aim of developing empathy for customers and understanding the customer experience
			CO:2 strategies that support broader marketing decisions.
			CO:3 Develop an understanding of the role of relationship marketing and customer service
	20260SEC14	Economics for Managers	CO:1 Study of decision making and performance evaluation techniques in management accounting
			CO:2 Understand decision making and performance evaluation techniques in management accounting.
			CO:3 In modern competitive business environment, suitable business decision making is very crucial
	20260SEC15	Legal Aspects of Business	CO:1xamine the differences and similarities between leadership, power, and management
			CO:2 impact that a company's structure and design can have on its organizational behavior
			CO:3 impact of culture on organizational behavior
	20260SEC16	Statistics for Managers	CO:1 Develop skills in data collection and complex analysis
			CO:2 Clarify terminology and approaches to different facets of research-based teaching
			CO:3 Explore good practices in institution-driven, strategicapproaches on how to integrate research and education missions
	20220SEC01	Mana gerial Skill Develo pment - Lab	CO:1 Employ basic statistical methods to decision making
			CO:2 Understand how to apply basic models and theories in business
			CO:3 Solve management problems effectively
	20260RLC18	Research Led Seminar	CO:1 Given a product or a service type, the student manager

			will be able to enumerate and justify the dimensions of product quality or service quality for the same
			CO:2 Given the quality gurus (Deming/ Juran/ Taguchi/ Crosby), the student manager will be able to justify their philosophies/ contributions in Quality Management.
			CO:3 Given a quality problem/ failure mode, the student manager will be able to identify causes and sub causes of the effect/ problem draw and justify Ishikawa Diagram.
II	20260SEC21	Financial Management	CO:1 Activity based approaches to management and cost analysis
			CO:2 Analysis of common costs in manufacturing and service industry
			CO:3 Techniques for profit improvement, cost reduction, and value analysis
	20260SEC22	Human Resources Management	CO:1 The role that retailing plays in the distribution component of the marketing mix
			CO:2 Understanding of the concept of social responsibility and the role it plays in retailin
			CO:3 Aware of the moral and ethical dilemmas that face the retailing industry in today's business environment
	20260SEC23	Marketing Management	CO:1 Demonstrate knowledge of research processes (reading, evaluating, and developing)
			CO:2 Perform literature reviews using print and online databases
			CO:3 Identify, explain, compare, and prepare the key elements of a research proposal/report
	20260SEC24	Production & Operations Management	CO:1 Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.
			CO:2 Have basic knowledge on qualitative research techniques
			CO:3Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis
	20260RMC25	Research Methodology	CO:1 Understand the How Subcontract Administration and Control are practiced in the Industry.
			CO:2 Understand the contract management, Project Procurement, Service level Agreements and productivity
			CO:3 Apply the risk management plan and analyse the role of stakeholders.
	20260SEC26	Strategic Management	CO:1 Critically analyse both older and newer MA methods and their effects in organisations
			CO:2 knowledge and understanding about MA issues, including its problems and difficulties
			CO:3 Part in the design and use of the management accounting system in organisations
	202SSCAS	Technical, General Aptitude and Skill set Development	CO:1 Knowledge, understanding and skills in the area of international financial relations and tolls for its implementation
			CO:2 Knowledge and understanding of characteristics, activities, principles and specifics of international financial relations
			CO:3 Ability to summarize and critically evaluate results obtained by researchers in the field of international financial relations
	20260BRC28	Participation in Bounded Research	CO:1 To introduces meaning and functions of Financial Intermediaries
			CO:2 To understand the role of merchant bank qnd its services

			CO:3 To provide information regarding management of mutual funds and Regulations
III	20260SEC31	International Business Environment	CO:1 to help students manage individual or team projects.
			CO:2 Begin project-planning with a specific audience with a specific and pressing concern
			CO:3 Let students design their own projects. Or require that projects iterate or counter existing cultural trends and patterns or that address compelling social concerns (e.g.technology addiction).
	20260SEC32	Operations Research	CO:1 File IT Return on individuals basis
			CO:2 Compute the total Income and Define tax complicacies and structure.
			CO:3 In order to familiarize the different know-how and heads of income with its components
	20260SRC33	Design/Socio-Technical Project	CO:1 Have developed an understanding of major issues related to international Business
			CO:2 Have developed skills in researching and analyzing trends in global markets and in modern marketing practice
			CO:3 An organization's ability to enter and compete in international markets.
IV	20260SEC41	Entrepreneurial Development	CO:1 Know about the company in the Abroad.
			CO:2 Understand the use of the memorandum of association and article of association in a company, they also learn from this course
			CO:3 Develop Professionals in the filed of Project
	20260PRW44	Project Work	CO:1 Have developed an understanding of major issues related to international Business
			CO:2 Have developed skills in researching and analyzing trends in global markets and in modern marketing practice
			CO:3 An organization's ability to enter and compete in international markets.
	202SSCIM	Interview Skills Training and Mock Test	CO:1 Have developed an understanding of major issues related to international Business
			CO:2 Have developed skills in researching and analyzing trends in global markets and in modern marketing practice
			CO:3 An organization's ability to enter and compete in international markets.
	20260PEE	Programme Exit Exam	CO:1. Learn to create animated graphics add sound and interactivity.
			CO:2. Can develop Website
			CO:3. CD based presentations
ELECTIVES COURSE OUTCOMES			
Marketing			**COs**
III	20260EA33	Consumer Behavior	
	20260EA34	Integrated Marketing Communication	The basic objective of this course is to develop an understanding about the consumer decision making process and its applications in marketing function of firms.

	20260EA35	Brand Management	Due to ever increasing business dealings the subject of International Marketing has gained utmost importance in recent times. The world these days, indeed has shrunk and foreign markets have particularly become important especially for a developing country like India. The major objective of this course is to provide an exposure to the area of Marketing in the International perspective.
	20260EA36	Retail Management	The objective of this course is to introduce students to the basic scope, benefits and types of brands; and understand the steps involved in designing an appropriate brand for the organization.
	20260EA37	Sales Management	The objective of this course is to introduce students to the basic scope, benefits and types of retailers; and understand the steps involved in designing an appropriate retail organization structure.
	20260EA38	Services Marketing	The purpose of this paper is to acquaint the student with the concepts which are helpful in developing a sound sales policy and in organizing and managing sales force and marketing channels and to impart the knowledge about sales management procedure, and activities.
	20260EA39	Industrial Marketing	The objective of the course is to develop an understanding of services and service marketing with emphasis on various aspects of service marketing which make it different from goods marketing.
IV	20260EA42	Customer Relationship Management	A broad range of job profiles are available for individuals with a degree in industrial marketing courses, and many top companies provide various job offers for students engaged in this course degree. A Market Analyst helps companies and organizations in decision making of products and services.
	20260EA43	International Marketing	The paper is designed to impart the skill based knowledge of Customer Relationship Management. The purpose of the syllabus is to not just make the students aware of the concepts and practices of CRM in modern businesses but also enable them to design suitable practices and programs for the company they would be working.
	20260EA44	Rural Marketing	The course has been developed so as to acquaint the students with environment, procedural, institutional and decisional aspects of International Marketing.
			COs
Human Resource			
III	20260EB33	Knowledge Management	The goal of the course is to prepare studentso become familiar with the current theories, practices, tools and techniques in knowledge management (KM), and to assist students in pursuing a career in the information sector for profit and not for profit organizations. In addition, students will learn to determine the infrastructure requirements to manage the intellectual capital in organizations.
	20260EB34	Organizational Development & Change management	The objective of this paper is to prepare students as organizational change facilitators using the knowledge and techniques of behavioral science.

	20260EB35	Performance Management	The objective of this course is to help the students gain understanding of the functions of performance management system in the organization and provide them tools and techniques to be used in appraising the performance of the employees.
	20260EB36	Labour Legislations	This course will help the student to get exposure on Industrial Law. Understand the relations ship between the employee, employer, union and government and to have awareness of various industrial laws relating to employees.
	20260EB37	Compensation Reward Management	The course is designed to promote understanding of issues related to the compensation and rewarding human resources in the organizations and to impart skills in designing analyzing and restructuring reward management systems, policies and strategies.
	20260EB38	Cross Culture Management	The objective of this course is to develop a diagnostic and conceptual understanding of the cultural and related behavioral variables in the management of global organizations.
	20260EB39	Conflict and Negotiation Management	The course plan to develop an understanding of conflict dynamics and the art and science of negotiation. On the completion of syllabus, students will be in a position to answer the role that can be played by conflict resolution techniques such as mediation.
IV	20260EB42	Industrial Relation	This course will help the student to get exposure on Industrial Relations. Understand the relations ship between the employee, employer, union and government
	20260EB43	Training & Development	The objective of this course is to help the students gain understanding of the objectives of training in the organization and provide them tools and techniques to be used in training the employees. This paper will attempt to orient the students to tailor themselves to meet the specific needs of the organizations in training and development activities.
	20260EB44	Talent Management	This course will help the student to get exposure on Talent management. Understand the how to acquire talent employees and how to retain such employees in the organization for effective performance and achievement of goals.
			COs
Finance			
III	20260EC33	Security Analysis and Portfolio Management	The objective of this course is to impart knowledge +D477:D486to students regarding the theory and practice of Security Analysis and to give the students an in-depth knowledge of the theory and practice of Portfolio Management.
	20260EC34	Derivatives Management	To give an in-depth knowledge of the functioning of derivative securities market.
	20260EC35	Project Finance	

	20260EC36	Financial Services and Institutions	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.
	20260EC37	International Finance	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.
	20260EC38	Insurance and Risk Management	To give the students an overall view of the international financial system – instruments and markets.
	20260EC39	Corporate Finance	To provide the basics of insurance contracts and to explain the various types of insurance policies.
IV	20260EC42	Micro Finance	Student will acquire Nuances involved in short term corporate financing, Good ethical practices
	20260EC43	Strategic Financial Management	To enable the students to understand the principles, practices and application in Micro Finance.
	20260EC44	Merchant Banking and Financial Services	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.
			COs
Logistics and Supply chain			
III	20260EE33	Purchasing and Procurement Management	The objective of this course is to impart knowledge to students regarding the theory and practice of Security Analysis and to give the students an in-depth knowledge of the theory and practice of Portfolio Management.
	20260EE34	Material Management	To give an in-depth knowledge of the functioning of derivative securities market.
	20260EE35	Inventory Management	
	20260EE36	Supply Chain Management	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.
	20260EE37	Logistics Management	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.
	20260EE38	Custom House Practice And Legalities	To give the students an overall view of the international financial system – instruments and markets.
	20260EE39	Export Trade And Documentation	To provide the basics of insurance contracts and to explain the various types of insurance policies.
IV	20260EE42	Quality Management	Student will acquire Nuances involved in short term corporate financing, Good ethical practices
	20260EE43	Air Cargo Logistics Management	To enable the students to understand the principles, practices and application in Micro Finance.

	20260EE44	Shipping And Ocean Freight Logistics Management	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.
			COs
Hospital Management			
III	20260EH33	Management Of Hospital Services	To enable the students gain insights into various aspects like importance, functions, policies and procedures, equipping, controlling, co-ordination, communication, staffing, reporting and documentation of both clinical and non clinical services in a hospital.
	20260EH34	Operations Management In Health Care	To give an in-depth knowledge of the functioning of derivative securities market.
	20260EH35	Marketing Management Of Hospital And Health Care Services	
	20260EH36	Community Health and Management of National Health Programmes	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.
	20260EH37	Management of Clinical and Super Specialty Services in Hospitals	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.
	20260EH38	Patient Care Management	To give the students an overall view of the international financial system – instruments and markets.
	20260EH39	Health Related Laws and Ethics	To provide the basics of insurance contracts and to explain the various types of insurance policies.
IV	20260EH42	Medical Tourism	Student will acquire Nuances involved in short term corporate financing, Good ethical practices
	20260EH43	Hospital Architecture, Planning, Design and Maintenance	To enable the students to understand the principles, practices and application in Micro Finance.
	20260EH43	Hospital Waste Management	The Objective of the Course is to familiarize the learner with the importance, techniques and the procedures involved in the management of Hospital Waste.
			COs
Productions and Operations			
III	20260ED33	Project Management	This course focuses on project management methodology that will increase the ability of students to initiate and manage projects more efficiently and effectively. Also they will learn key project management phases through an innovative model.
	20260ED34	Planning and control of operations	This course is designed to acquaint the student with the methods of planning and control
	20260ED35	Technology Management	This course helps to understand the dynamics of technological innovation and be familiar with how to formulate technology strategies

	20260ED36	Logistics Management	The objective of this course is to get the exposure of logistics management and to understand the relationship between the logistics and packaging.
	20260ED37	Supply Chain Management	The objective of this course is to get the exposure of supply chain management and to understand the relationship between the procurement and supply chain management
	20260ED38	Business Process Reengineering	The objectives of this course are to acquaint the student with understanding process orientation in business management and develop skills and abilities in re-engineering and business process for optimum performance.
IV	20260ED39	Material Management	To understand the working of a materials management department, Aspects of Stores management, Warehousing management and material requirement planning.
	20260ED43	Service and Operation Management	To enable the students to understand the principles, practices and applications in Maintenance Management.
	20260ED44	Product Design	To help understand how service performance can be improved by studying services operations management
	20260ED42	Maintenance Management	To help Understand the application of structured methods to develop a product. Student gains knowledge on how a product is designed based on the needs of a customer
			COs
International Business			
III	20260EF33	International Marketing	The objective of this course is to impart knowledge to students regarding the theory and practice of Security Analysis and to give the students an in-depth knowledge of the theory and practice of Portfolio Management.
	20260EF34	International Human Resource Management	To give an in-depth knowledge of the functioning of derivative securities market.
	20260EF36	Global Logistics and Supply Chain Management	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.
	20260EF37	International Trade Procedures and Documentation	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.
	20260EF38	International Strategic Management	To give the students an overall view of the international financial system – instruments and markets.
	20260EF39	Global Business Ethics and Corporate Governance	To provide the basics of insurance contracts and to explain the various types of insurance policies.
IV	20260EF42	Management Of International Developmental Organizations	To give the students an overall view of the international financial system – instruments and markets.
	20260EF43	Merger and Acquisitions	To enable the students to understand the principles, practices and application in Micro Finance.

	19260EF44	International Financial Management	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.
	20260EF35	Cross Cultural Management	The course is to sensitize the students to issues pertaining to sustainable development and business ethics and enable development and business ethics and enable them to understand the implications of various statutory and policy guidelines concerning corporate governance for actual business decision making.
			COs
Systems			
III	20260EG33	Software Engineering	This course aims to understand the software engineering and apply the knowledge of a disciplined approach to the development of software and to the management of the software product lifecycle.
	20260EG34	Software Project Management	To give an in-depth knowledge of the functioning of derivative securities market.
	20260EG35	Relational Database Management Systems	
	20260EG36	E- Business Technology Management	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.
	20260EG37	Data Warehousing & Data Mining	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.
	20260EG38	Knowledge Management	To give the students an overall view of the international financial system – instruments and markets.
	20260EG39	Enterprise Resource Planning	To provide the basics of insurance contracts and to explain the various types of insurance policies.
IV	20260EG42	Information Storage & Management	Student will acquire Nuances involved in short term corporate financing, Good ethical practices
	20260EG43	Cloud Computing	To enable the students to understand the principles, practices and application in Micro Finance.
	20260EG44	Decision Support System And Intelligent Systems	To understand the components of DSS and IS. To know the appropriate model to be used for a problem
			COs
Tourism			
III	20260EI33	Tourism Principles, Policies and Practices	To realize the potential of tourism industry in India. To understand the various elements of Tourism Management and familiarize with the Tourism policies in the national and international context**.**
	20260EI33	Tourism Products of India	To give an in-depth knowledge of the functioning of derivative securities market.
	20260EI35	Destination Planning and development	

	20260EI36	Travel agency and Tour operations	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.
	20260EI37	Hospitality Management	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.
	20260EI38	Indian culture and Heritage	To give the students an overall view of the international financial system – instruments and markets.
	20260EI39	Tourism Marketing	To provide the basics of insurance contracts and to explain the various types of insurance policies.
IV	20260EI42	Ecotourism	Student will acquire Nuances involved in short term corporate financing, Good ethical practices
	20260EI43	Event Management	To enable the students to understand the principles, practices and application in Micro Finance.
	20260EI44	E- Tourism	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.
			COs
Agribusiness			
III	20260EJ33	Agribusiness Environment and Policy	To realize the potential of tourism industry in India. To understand the various elements of Tourism Management and familiarize with the Tourism policies in the national and international context**.**
	20260EJ34	Agricultural Marketing Management	To give an in-depth knowledge of the functioning of derivative securities market.
	20260EJ35	Farm Business Management	
	20260EJ36	Management of Agribusiness Cooperatives	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.
	20260EJ37	Food Retail Management	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.
	20260EJ38	Management of Agricultural Input Marketing	To give the students an overall view of the international financial system – instruments and markets.
	20260EJ39	Agri Supply Chain Management	To provide the basics of insurance contracts and to explain the various types of insurance policies.
IV	20260EJ42	Agriculture Economics	Student will acquire Nuances involved in short term corporate financing, Good ethical practices
	20260EJ43	Agricultural and Micro-Finance	To enable the students to understand the principles, practices and application in Micro Finance.

	20260EJ44	New Trends and Development in Agri-Sector	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.

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BBA 2020 REGULATION CO&PO MAPPING

Sem	Course Code	Title of the Course	COs	POS					
				PO1	PO2	PO3	PO4	PO5	PO6
I	20110AEC11	Tamil I	CO:1 Learn the changes occurred in literature since classical period.	*	*				
			CO:2 Make use of vocabulary systematically.	*					
			CO:3Understand how to lead one's life realizing the modernity and its environment/atmosphere.	*	*	*			
	20111AEC12	English I	CO:1 Develop vocabulary	*	*				
			CO:2 zarLearn to edit and do proof reading	*	*				
			CO:3Read and comprehend literature	*	*	*			
	20160SEC13	Principles of Management	CO:1 Understanding the fundamental of financial accounting				*	*	*
			CO:2 Develop the modern market economy				*	*	
			CO:3 prepare the different kinds of financial statement				*	*	*
	20160SEC14	Managerial Economics	CO:1 Discuss the supply and demand theory and its impact on insurance				*	*	
			CO:2 outline an how entity operate in the Business environment			*	*		
			CO:3 Explain the legal frame work that regulate the insurance industry					*	*
	20160AEC15	Business Communication	CO:1 Understand fundamental marketing concepts, theories and principles in areas of marketing policy				*		*
			CO:2 Apply the knowledge, concepts, tools necessary to understand challenges				*	*	*
			CO:3 Understand the marketing concepts and its evolution				*		*

	20160AEC16	Business Mathematics and Statistics	CO:1 Apply the concept of opportunity cost.				*	*	*
			CO:2 understand the concepts of cost, nature of production and its relationship to Business operations.				*	*	*
			CO:3 Apply Economic theories to business decision				*		*
	201LSCIC	Indian Constitution	CO:1 Know the consumer behavior and their decision making process				*	*	*
			CO:2 Understand the rural markets and the contemporary issues in marketing				*	*	*
			Co:3 Make decisions on product, price , promotion mix and distribution				*		*
	201LSCUV	Universal Human Values	CO:1 Discuss the supply and demand theory and its impact on insurance				*	*	
			CO:2 outline an how entity operate in the Business environment			*	*		
			CO:3 Explain the legal frame work that regulate the insurance industry					*	*
II	20110AEC21	Tamil II	CO:1 Know what devotion really is.	*	*				
			CO:2 Know the fruitfulness obtained through devotion.	*	*				
			CO:3 Perceive the progress achieved in the society through devotion.	*		*			
	20111AEC22	English II	CO:1 Develop technological skill.	*	*	*			
			CO:2 Able to write in a variety of formats	*	*	*			
			CO:3 Read biographies and develop personality	*	*	*			
	20160SEC23	Financial Accounting	CO:1 Appreciate different forms of literature		*	*			
			Co:2 Acquire language skills through literature	*		*			
			Co:3 Broadens the horizon of knowledge	*		*			
	20160SEC24	Organizational Behaviour	CO:1 familiarize the concept of Branch account and its system				*	*	*
			CO:2 understand the Scope of departmental accounting				*	*	
			CO:3 Appreciate the need for negotiable instruments and procedure of accounting for bills honoured and dishonoured				*	*	
	20160AEC25	Business Environment	CO:1 Understand, and evaluate various organizational influencesaffecting ethical decisions			*	*		
			CO:2 Present and analyze ethical and moral issues			*	*		
			CO:3 Explore ethical theories			*	*		
	20160AEC26	Management Information System	CO:1 Critically evaluate the underlying assumptions of analysis tools				*	*	

			CO:2 Solve a range of problems using the techniques covered				*	*	
			CO:3 Conduct basic statistical analysis of data.				*	*	
	20160RLC27	Research Led Seminar	CO: 1 Understand the dynamics of marketing in business				*	*	*
			CO:2 ability and confidence to tackle common practical financial problems of business.				*	*	*
			CO:3 Understand the scope of Business, and its importance.				*	*	*
	201SSCBE	Basic Behavioral Etiquette	CO:1. Identify the names and functions of the **PowerPoint** interface.		*	*			
			CO:2. Create, edit, save, and print presentations.		*	*			
			CO:3. Format presentations.		*	*			
	201LSCCS	Communication Skills	1. Recognize when to use each of the Microsoft Office programs to create professional and academic documents.						*
			2. Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.					*	*
			3. Apply skills and concepts for basic use of computer hardware, software, networks, and the Internet in the workplace and in future coursework as identified by the internationally accepted Internet and Computing Core (IC3) standards.					*	*
III	20110AEC31	Tamil III	CO:1 Achieve one's goal by following the ancestral path		*	*			
			CO:2 Learn to lead life of perfection by realizing the uncertainty in the life		*	*			
			CO:3 Attain happiness through honesty		*	*			
	20111AEC32	English III	CO:1 Understand phonetics.	*	*	*			
			CO:2 Develop writing skill	*	*	*			
			CO:3 Able to develop creative writing	*	*	*			
	20160SEC33	Management Accounting	CO:1 Enable to appreciate different types of prose	*	*				
			CO:2 Develop the conversational skills through one-act plays	*					
			CO:3 Enhance the skill of making grammatically correct sentences.	*	*	*			
	20160SEC34	Marketing Management	CO:1 Understand various costing systems and management systems				*	*	*
			CO:2 Analyse and provide recommendations to improve the operations of organisations				*	*	
			CO:3 Imbibe conceptual knowledge of cost accounting.				*	*	

	20160AEC35	Business Law	CO:1 Understanding of Banking Channels and Payments				*	*	
			CO:2 Practices on Banking Technology				*	*	*
			CO:3 Understanding of Core Banking				*	*	*
	20160AEC36	Human Resource Management	CO:1 Explain the concepts in business laws with respect to foreign trade			*	*	*	
			CO:2 Apply the global business laws to current business environment				*	*	
			CO:3 Demonstrate an understanding of the Legal Environment of Business.				*	*	
	20160RMC37	Research Methodology	CO:1 Identify ethical, legal, cultural, and global issues affecting business communication.			*	*		
			CO:2 Utilize analytical and problem solving skills appropriate to business communication.	*		*	*	*	
			Co:3 Effective **business** writing	*	*	*			
	201LSCOA	Office automation	CO:1 Able to carry out independent literature survey corresponding to the specific publication type and assess basic literary research tools.			*			
			CO:2 familiarize participants with basic of research and the research process.			*	*		
			CO:3 enable the participants in conducting research work and formulating research synopsis and report.			*			
IV	20110AEC41	Tamil IV	CO:1 Realize how the ancient people changed their life style according to the ages		*	*			
			CO:2 Learn how to change one's lifestyle according to the needs of the future		*	*			
			CO:3 Accept the modern trends and its uses		*	*			
	20111AEC42	English IV	CO:1 Develop writing skill.	*	*	*			
			CO:2 Comprehend and describe poems	*	*	*			
			CO:3 Learn interviewing skills	*	*	*			
	20160SEC43	Total Quality Management	CO:1 Improve their ability to read and understand them	*	*	*			
			CO:2 Know the genius of Shakespeare	*	*	*			
			CO:3 Express in writing their views.	*	*	*			
	20160SEC44	Cost Accounting	CO:1 Understand the concept of partnership				*	*	*
			CO:2 Understand the journal entries for the formation of partnership				*	*	*

			CO:3 Familiarize the concept of Branch account and its system				*	*	
	20160AEC45	Retail Management	CO:1 Understand the key principles and tools of integrated marketing communication				*	*	
			CO:2 Explain the environmental factors which influence consumer and organizational decision				*	*	*
			CO:3 Identify the elements of the communication process between buyers and sellers in business. making process				*	*	*
	20160AEC46	Industrial Relations and Labour Law	CO:1 Get a basic understanding of different type of meeting of board of directors.				*	*	
			CO:2 Use international trade terms and concepts when communicating.	*		*	*		
			CO:3 Demonstrate comprehensive knowledge and understanding of social and economic policy considerations arising in this area.				*	*	
	201SSCAQ	General Aptitude and Personality Development Lab	CO:1 Examine database concepts and explore the Microsoft Office Access environment.		*				
			CO:2. Design a simple database.		*				
			CO:3. Build a new database with related tables.		*				
	201LSCLS	Leadership and Management Skills	CO:1 Understand the concept of partnership				*	*	*
			CO:2 Understand the journal entries for the formation of partnership				*	*	*
			CO:3 Familiarize the concept of Branch account and its system				*	*	
	201ENSTU45	Environmental Studies	CO:1 Learn about environmental pollution.		*	*			
			CO:2 Familiarize with the social issues and the environment		*	*			
			CO:3 will be able to do independent research on human interactions with the environment.		*	*			
V	20160SEC51	Financial Management	Co:1 Find out how can a company dissolve.				*	*	
			CO:2 Understand Mutual funds investments.				*	*	*
			CO:3 Learn about Working format of companies.				*	*	
	20160SEC52	Services Marketing	CO:1 Use business finance terms and concepts when communicating.	*				*	*
			CO:2 Demonstrate a basic understanding of financial management.				*	*	*
			CO:3 Provide introduction to Financial Management				*	*	*
	20160SEC53		CO:1 Forecast a firm’s future financing requirements				*	*	*

		Production and Operations Management	CO:2 Design an optimal capital structure.				*	*	
			CO:3 Give an idea about fundamentals of financial services and players in financial sectors				*	*	
	20160SEC54	Global Business Management	Co1:Study the development of computers and their components in each stage.						*
			CO2 : Develop an idea of software, programming language and operating system.		*				
			CO3 : Study the concept of developing database and its maintenance using computers in a business Concern				*		*
	20160DSC55A	Advertising and salesmanship	CO:1 Know about the company law in the India.				*	*	
			CO:2 Understand the use of the memorandum of association and article of association in a company, they also learn from this course				*	*	
			CO:3 Develop Professionals in the filed of Co-operation, Co-operative law and Management.				*	*	
	20160DSC55B	Investment Management	CO:1 Do the allotted work in research			*			
			CO:2 Learn to do review of literature			*			
			CO:3 Demonstrate knowledge of research processes			*			
	20160BRC56	Participation Bounded Research	CO:1 Perform literature reviews using print and online database			*			
			CO:2 Identify, explain, compare, and prepare the key elements of a research proposal/report			*			
			CO:3Describe sampling methods, measurement scales and instruments, and appropriate uses of each			*			
	201ACLSPSL	Professional Skills	CO:1 work with the Photoshop workspace		*				
			CO:2. navigate images		*				
			CO:3. resize and crop images		*				
VI	20160SEC61	Business Policy and Strategic Management	CO:1 Prepare analysis of various special decisions, using relevant costing and benefits				*	*	*
			CO:2 More effective planning and control systems				*	*	
			CO:3 The students thought and knowledge on management Accounting				*	*	
	20160SEC62	Entrepreneurial Development	CO:1 Understand the systematic process to select the business ideas.				*	*	*
			CO:2 Write a business plan		*		*	*	*

			CO:3 Develop students about Entrepreneurship development				*	*	*
	20160SEC63	Logistics and Supply Chain Management	CO:1 Articulate knowledage of fundamental audit concepts				*	*	
			CO:2 Apply critical thinking skills and slove auditing Problems.				*	*	*
			CO:3 Apply and demonstrate the accounting knowledge and skills in Auditing.				*	*	*
	20160DSC64A	Customer Relationship Management	Co:1 Find out how can a company dissolve.				*	*	
			CO:2 Understand Mutual funds investments.				*	*	*
			CO:3 Learn about Working format of companies.				*	*	
	20160DSC64B	Financial Services	CO:1 Develop plans with relevant people to achieve the project's goals			*	*	*	*
			CO:2 Break work down into tasks and determine handover procedures				*	*	*
			CO:3 Identify links and dependencies, and schedule to achieve deliverables				*	*	*
	20160PRW66	Project Work	CO:1 To help to gather knowledge on banking and financial system in India						
			CO:2 To provide knowledge about commercial banks and its products				*	*	*
			CO;3 Aim to familiarize banking system in India				*	*	*
	201SSCIM	Interview Skills Training and Mock Test	CO:1. Learn to create animated graphics add sound and interactivity.		*				
			CO:2. Can develop Website		*				
			CO:3. CD based presentations		*				
	201SSCIM	Community Engagement	CO:1 Develop writing skill.	*	*	*			
			CO:2 Comprehend and describe poems	*	*	*			
			CO:3 Learn interviewing skills	*	*	*			
	201TERP9	Tally ERP 9	Co:1 Find out how can a company dissolve.				*	*	
			CO:2 Understand Mutual funds investments.				*	*	*
			CO:3 Learn about Working format of companies.				*	*	
	20160PEE	Programme Exit Examination	CO:1 Develop plans with relevant people to achieve the project's goals			*	*	*	*
			CO:2 Break work down into tasks and determine handover procedures				*	*	*

Skill Based Elective Courses

Course Code	Course Title	COS	POS					
			PO1	PO2	PO3	PO4	PO5	PO6
20120SEC01A	Fundamentals of Computers	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.						
20160SEC01B	Soft Skills – I	To provide an overview of theories and practices in organizational behavior in individual, group and organizational level.	*	*				
20120SEC02A	Ms office Packages Lab	To acquaint the students with the fundamental principles of financial, cost & Management Accounting. Enable the students to take decisions using management accounting tools and to exposes the students to various concepts and principles of accounting for making efficient decisions.	*					
20160SEC02B	Soft Skills- II	To make the students aware of the various economic theories and principles - To equip them with the required tools and techniques for improving their decisionmaking skills.	*	*	*			
20120SEC03A	Writing and Presentation Skills Lab	To create the knowledge of Legal perspective and its practices to improvise the business.	*	*				
20160SEC03B	Soft Skills – III	This course mainly deals with the use of Statistical concepts in the resolution of managerial decision problems. As such the course will deal not only with some of the theoretical concepts in Statistics but will also be concerned with their application.	*	*				
20120SEC04A	General Aptitude and Personality Development Lab	Facilitate student to understand the operational nuances of a Finance Manager Comprehend the technique of making decisions related to finance function	*	*	*			

20160SEC04B	Soft Skills – IV	To provide knowledge about management issues related to staffing, training, performance, compensation, human factors consideration and compliance with human resource requirements.	*	*	*			
20120SEC05A	Photoshop Lab	To understand fundamental concepts of Marketing in Modern Marketing Practices	*	*				
20160SEC05B	Soft Skills – V	To provide a broad introduction to the field production and operations management and explain the concepts, strategies, tools and techniques for managing the transformation process that can lead to competitive advantage.	*	*	*			

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Sem	**Course Code**	**Title of the Course**	**COs**	**POS**					
				PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
I	20260SEC11	Management Concepts	CO:1 This specialization lays the neccessary groundwork for an overall successful marketing strategy	*	*				*
			CO:2knowledge required to understand the state of your product before approaching the market strategy	*	*				*
			CO:3Interpret development of marketing research	*	*				*
	20260SEC12	Organizational Behaviour	CO:1 Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes	*	*			*	
			CO:2Develop, implement, and evaluate employee orientation, training, and development programs.	*	*			*	
			CO:3Understanding of the basic concepts,functions and processes of HRM	*	*			*	
	20260SEC13	Accounting for Managers	CO:1 Focuses on services, service design, and service innovation, with the aim of developing empathy for customers and understanding the customer experience	*	*			*	*
			CO:2 strategies that support broader marketing decisions.	*	*			*	
			CO:3 Develop an understanding of the role of relationship marketing and customer service	*	*			*	
	20260SEC14	Economics for Managers	CO:1 Study of decision making and performance evaluation techniques in management accounting	*	*				
			CO:2 Understand decision making and performance evaluation techniques in management accounting.	*	*	*	*		

			CO:3 In modern competitive business environment, suitable business decision making is very crucial	*	*	*			
	20260SEC15	Legal Aspects of Business	CO:1xamine the differences and similarities between leadership, power, and management	*	*			*	
			CO:2 impact that a company's structure and design can have on its organizational behavior	*	*			*	
			CO:3 impact of culture on organizational behavior	*	*			*	
	20260SEC16	Statistics for Managers	CO:1 Develop skills in data collection and complex analysis					*	
			CO:2 Clarify terminology and approaches to different facets of research-based teaching	*	*				
			CO:3 Explore good practices in institution-driven, strategic approaches on how to integrate research and education missions	*	*				
	20220SEC01	Managerial Skill Development - Lab	CO:1 Employ basic statistical methods to decision making	*	*				
			CO:2 Understand how to apply basic models and theories in business	*	*		*		
			CO:3 Solve management problems effectively	*	*		*		
	20260RLC18	Research Led Seminar	CO:1 Given a product or a service type, the student manager will be able to enumerate and justify the dimensions of product quality or service quality for the same	*	*			*	
			CO:2 Given the quality gurus (Deming/ Juran/ Taguchi/ Crosby), the student manager will be able to justify their philosophies/ contributions in Quality Management.	*	*			*	
			CO:3 Given a quality problem/ failure mode, the student manager will be able to identify causes and sub causes of the effect/ problem draw and justify Ishikawa Diagram.	*	*			*	
II	20260SEC21	Financial Management	CO:1 Activity based approaches to management and cost analysis	*	*	*	*		
			CO:2 Analysis of common costs in manufacturing and service industry	*	*	*	*		
			CO:3 Techniques for profit improvement, cost reduction, and value analysis	*	*	*	*		
	20260SEC22	Human Resources Management	CO:1 The role that retailing plays in the distribution component of the marketing mix	*	*			*	
			CO:2 Understanding of the concept of social responsibility and the role it plays in retailin	*	*			*	
			CO:3 Aware of the moral and ethical dilemmas that face the retailing industry in today’s business environment	*	*			*	

	20260SEC23	Marketing Management	CO:1 Demonstrate knowledge of research processes (reading, evaluating, and developing)	*	*		*		
			CO:2 Perform literature reviews using print and online databases	*	*		*		
			CO:3 Identify, explain, compare, and prepare the key elements of a research proposal/report	*	*		*		
	20260SEC24	Production & Operations Management	CO:1 Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.	*	*		*		
			CO:2 Have basic knowledge on qualitative research techniques	*	*		*		
			CO:3Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis	*	*		*		
	20260RMC25	Research Methodology	CO:1 Understand the How Subcontract Administration and Control are practiced in the Industry.	*	*			*	
			CO:2 Understand the contract management, Project Procurement, Service level Agreements and productivity	*	*			*	
			CO:3 Apply the risk management plan and analyse the role of stakeholders.	*	*			*	
	20260SEC26	Strategic Management	CO:1 Critically analyse both older and newer MA methods and their effects in organisations	*	*	*	*		
			CO:2 knowledge and understanding about MA issues, including its problems and difficulties	*	*	*	*		
			CO:3 Part in the design and use of the management accounting system in organisations	*	*	*	*		
	202SSCAS	Technical, General Aptitude and Skill set Development	CO:1 Knowledge, understanding and skills in the area of international financial relations and tolls for its implementation	*	*	*			*
			CO:2 Knowledge and understanding of characteristics, activities, principles and specifics of international financial relations	*	*				*
			CO:3 Ability to summarize and critically evaluate results obtained by researchers in the field of international financial relations	*	*				*
	20260BRC28	Participation in Bounded Research	CO:1 To introduces meaning and functions of Financial Intermediaries	*	*	*			
			CO:2 To understand the role of merchant bank qnd its services	*	*	*			

			CO:3 To provide information regarding management of mutual funds and Regulations	*	*	*			
III	20260SEC31	International Business Environment	CO:1 to help students manage individual or team projects.	*	*			*	
			CO:2 Begin project-planning with a specific audience with a specific and pressing concern	*	*			*	
			CO:3 Let students design their own projects. Or require that projects iterate or counter existing cultural trends and patterns or that address compelling social concerns (e.g.technology addiction).	*	*			*	
	20260SEC32	Operations Research	CO:1 File IT Return on individuals basis	*	*		*		
			CO:2 Compute the total Income and Define tax complicacies and structure.	*	*		*		
			CO:3 In order to familiarize the different know-how and heads of income with its components	*	*		*		
	20260SRC33	Design/Socio-Technical Project	CO:1 Have developed an understanding of major issues related to international Business	*	*				*
			CO:2 Have developed skills in researching and analyzing trends in global markets and in modern marketing practice	*	*				*
			CO:3 An organization's ability to enter and compete in international markets.	*	*				*
IV	20260SEC41	Entrepreneurial Development	CO:1 Know about the company in the Abroad.	*	*				*
			CO:2 Understand the use of the memorandum of association and article of association in a company, they also learn from this course	*	*			*	
			CO:3 Develop Professionals in the filed of Project	*	*			*	
	20260PRW44	Project Work	CO:1 Have developed an understanding of major issues related to international Business	*	*				*
			CO:2 Have developed skills in researching and analyzing trends in global markets and in modern marketing practice	*	*				*
			CO:3 An organization's ability to enter and compete in international markets.	*	*				*
	202SSCIM	Interview Skills Training and Mock Test	CO:1 Have developed an understanding of major issues related to international Business	*	*				*
			CO:2 Have developed skills in researching and analyzing trends in global markets and in modern marketing practice	*	*				*
			CO:3 An organization's ability to enter and compete in international markets.	*	*				*

	20260PEE	Programme Exit Exam	CO:1. Learn to create animated graphics add sound and interactivity.		*				
			CO:2. Can develop Website		*				
			CO:3. CD based presentations		*				

ELECTIVES COURSE OUTCOMES

Marketing			**COs**	**POS**					
III	20260EA33	Consumer Behavior		**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
	20260EA34	Integrated Marketing Communication	The basic objective of this course is to develop an understanding about the consumer decision making process and its applications in marketing function of firms.	*	*			*	
	20260EA35	Brand Management	Due to ever increasing business dealings the subject of International Marketing has gained utmost importance in recent times. The world these days, indeed has shrunk and foreign markets have particularly become important especially for a developing country like India. The major objective of this course is to provide an exposure to the area of Marketing in the International perspective.	*	*			*	
	20260EA36	Retail Management	The objective of this course is to introduce students to the basic scope, benefits and types of brands; and understand the steps involved in designing an appropriate brand for the organization.	*	*			*	
	20260EA37	Sales Management	The objective of this course is to introduce students to the basic scope, benefits and types of retailers; and understand the steps involved in designing an appropriate retail organization structure.	*	*		*		
	20260EA38	Services Marketing	The purpose of this paper is to acquaint the student with the concepts which are helpful in developing a sound sales policy and in organizing and managing sales force and marketing channels and to impart the knowledge about sales management procedure, and activities.	*	*		*		

	20260EA39	Industrial Marketing	The objective of the course is to develop an understanding of services and service marketing with emphasis on various aspects of service marketing which make it different from goods marketing.	*	*		*		
IV	20260EA42	Customer Relationship Management	A broad range of job profiles are available for individuals with a degree in industrial marketing courses, and many top companies provide various job offers for students engaged in this course degree. A Market Analyst helps companies and organizations in decision making of products and services.	*	*		*		
	20260EA43	International Marketing	The paper is designed to impart the skill based knowledge of Customer Relationship Management. The purpose of the syllabus is to not just make the students aware of the concepts and practices of CRM in modern businesses but also enable them to design suitable practices and programs for the company they would be working.	*	*		*		
	20260EA44	Rural Marketing	The course has been developed so as to acquaint the students with environment, procedural, institutional and decisional aspects of International Marketing.	*	*		*		
			COs	**POS**					
Human Resource				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
III	20260EB33	Knowledge Management	The goal of the course is to prepare studentso become familiar with the current theories, practices, tools and techniques in knowledge management (KM), and to assist students in pursuing a career in the information sector for profit and not for profit organizations. In addition, students will learn to determine the infrastructure requirements to manage the intellectual capital in organizations.	*	*			*	
	20260EB34	Organizational Development & Change management	The objective of this paper is to prepare students as organizational change facilitators using the knowledge and techniques of behavioral science.	*	*			*	

	20260EB35	Performance Management	The objective of this course is to help the students gain understanding of the functions of performance management system in the organization and provide them tools and techniques to be used in appraising the performance of the employees.	*	*			*	
	20260EB36	Labour Legislations	This course will help the student to get exposure on Industrial Law. Understand the relations ship between the employee, employer, union and government and to have awareness of various industrial laws relating to employees.	*	*		*		
	20260EB37	Compensation Reward Management	The course is designed to promote understanding of issues related to the compensation and rewarding human resources in the organizations and to impart skills in designing analyzing and restructuring reward management systems, policies and strategies.	*	*		*		
	20260EB38	Cross Culture Management	The objective of this course is to develop a diagnostic and conceptual understanding of the cultural and related behavioral variables in the management of global organizations.	*	*		*		
	20260EB39	Conflict and Negotiation Management	The course plan to develop an understanding of conflict dynamics and the art and science of negotiation. On the completion of syllabus, students will be in a position to answer the role that can be played by conflict resolution techniques such as mediation.	*	*		*		
IV	20260EB42	Industrial Relation	This course will help the student to get exposure on Industrial Relations. Understand the relations ship between the employee, employer, union and government	*	*		*		
	20260EB43	Training & Development	The objective of this course is to help the students gain understanding of the objectives of training in the organization and provide them tools and techniques to be used in training the employees. This paper will attempt to orient the students to tailor themselves to meet the specific needs of the organizations in training and development activities.	*	*		*		

	20260EB44	Talent Management	This course will help the student to get exposure on Talent management. Understand the how to acquire talent employees and how to retain such employees in the organization for effective performance and achievement of goals.	*	*				*
			COs	**POS**					
Finance				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
III	20260EC33	Security Analysis and Portfolio Management	The objective of this course is to impart knowledge +D477:D486to students regarding the theory and practice of Security Analysis and to give the students an in-depth knowledge of the theory and practice of Portfolio Management.	*	*			*	
	20260EC34	Derivatives Management	To give an in-depth knowledge of the functioning of derivative securities market.	*	*			*	
	20260EC35	Project Finance		*	*			*	
	20260EC36	Financial Services and Institutions	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.	*	*		*		
	20260EC37	International Finance	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.	*	*		*		
	20260EC38	Insurance and Risk Management	To give the students an overall view of the international financial system – instruments and markets.	*	*		*		
	20260EC39	Corporate Finance	To provide the basics of insurance contracts and to explain the various types of insurance policies.	*	*		*		
IV	20260EC42	Micro Finance	Student will acquire Nuances involved in short term corporate financing, Good ethical practices	*	*		*		
	20260EC43	Strategic Financial Management	To enable the students to understand the principles, practices and application in Micro Finance.	*	*		*		

	20260EC44	Merchant Banking and Financial Services	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.	*	*				*
			COs	**POS**					
Logistics and Supply chain				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
III	20260EE33	Purchasing and Procurement Management	The objective of this course is to impart knowledge to students regarding the theory and practice of Security Analysis and to give the students an in-depth knowledge of the theory and practice of Portfolio Management.	*	*			*	
	20260EE34	Material Management	To give an in-depth knowledge of the functioning of derivative securities market.	*	*			*	
	20260EE35	Inventory Management		*	*			*	
	20260EE36	Supply Chain Management	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.				*	*	*
	20260EE37	Logistics Management	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.				*	*	*
	20260EE38	Custom House Practice And Legalities	To give the students an overall view of the international financial system – instruments and markets.			*	*	*	
	20260EE39	Export Trade And Documentation	To provide the basics of insurance contracts and to explain the various types of insurance policies.				*	*	*
IV	20260EE42	Quality Management	Student will acquire Nuances involved in short term corporate financing, Good ethical practices				*	*	*
	20260EE43	Air Cargo Logistics Management	To enable the students to understand the principles, practices and application in Micro Finance.				*	*	*
	20260EE44	Shipping And Ocean Freight Logistics Management	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.				*	*	*
			COs	**POS**					

Hospital Management				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
III	20260EH33	Management Of Hospital Services	To enable the students gain insights into various aspects like importance, functions, policies and procedures, equipping, controlling, co-ordination, communication, staffing, reporting and documentation of both clinical and non clinical services in a hospital.	*	*			*	
	20260EH34	Operations Management In Health Care	To give an in-depth knowledge of the functioning of derivative securities market.				*	*	*
	20260EH35	Marketing Management Of Hospital And Health Care Services					*	*	*
	20260EH36	Community Health and Management of National Health Programmes	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.			*	*	*	
	20260EH37	Management of Clinical and Super Specialty Services in Hospitals	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.				*	*	*
	20260EH38	Patient Care Management	To give the students an overall view of the international financial system – instruments and markets.				*	*	*
	20260EH39	Health Related Laws and Ethics	To provide the basics of insurance contracts and to explain the various types of insurance policies.				*	*	*
IV	20260EH42	Medical Tourism	Student will acquire Nuances involved in short term corporate financing, Good ethical practices				*	*	*
	20260EH43	Hospital Architecture, Planning, Design and Maintenance	To enable the students to understand the principles, practices and application in Micro Finance.				*	*	*
	20260EH43	Hospital Waste Management	The Objective of the Course is to familiarize the learner with the importance, techniques and the procedures involved in the management of Hospital Waste.						
			COs	**POS**					

Productions and Operations				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
III	20260ED33	Project Management	This course focuses on project management methodology that will increase the ability of students to initiate and manage projects more efficiently and effectively. Also they will learn key project management phases through an innovative model.	*	*			*	
	20260ED34	Planning and control of operations	This course is designed to acquaint the student with the methods of planning and control	*	*			*	
	20260ED35	Technology Management	This course helps to understand the dynamics of technological innovation and be familiar with how to formulate technology strategies	*	*			*	
	20260ED36	Logistics Management	The objective of this course is to get the exposure of logistics management and to understand the relationship between the logistics and packaging.	*	*		*		
	20260ED37	Supply Chain Management	The objective of this course is to get the exposure of supply chain management and to understand the relationship between the procurement and supply chain management	*	*		*		
	20260ED38	Business Process Reengineering	The objectives of this course are to acquaint the student with understanding process orientation in business management and develop skills and abilities in re-engineering and business process for optimum performance.	*	*		*		
	20260ED39	Material Management	To understand the working of a materials management department, Aspects of Stores management, Warehousing management and material requirement planning.	*	*		*		
IV				*	*		*		
	20260ED43	Service and Operation Management	To enable the students to understand the principles, practices and applications in Maintenance Management.	*	*		*		
	20260ED44	Product Design	To help understand how service performance can be improved by studying services operations management	*	*				*
	20260ED42	Maintenance Management	To help Understand the application of structured methods to develop a product. Student gains knowledge on how a product is designed based on the needs of a customer	*	*				*
			COs	**POS**					
International Business				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**

III	20260EF33	International Marketing	The objective of this course is to impart knowledge to students regarding the theory and practice of Security Analysis and to give the students an in-depth knowledge of the theory and practice of Portfolio Management.	*	*			*	
	20260EF34	International Human Resource Management	To give an in-depth knowledge of the functioning of derivative securities market.	*	*			*	
				*	*			*	
	20260EF36	Global Logistics and Supply Chain Management	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.				*	*	*
	20260EF37	International Trade Procedures and Documentation	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.				*	*	*
	20260EF38	International Strategic Management	To give the students an overall view of the international financial system – instruments and markets.			*	*	*	
	20260EF39	Global Business Ethics and Corporate Governance	To provide the basics of insurance contracts and to explain the various types of insurance policies.				*	*	*
IV	20260EF42	Management Of International Developmental Organizations	To give the students an overall view of the international financial system – instruments and markets.				*	*	*
	20260EF43	Merger and Acquisitions	To enable the students to understand the principles, practices and application in Micro Finance.				*	*	*
	19260EF44	International Financial Management	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.				*	*	*

	20260EF35	Cross Cultural Management	The course is to sensitize the students to issues pertaining to sustainable development and business ethics and enable development and business ethics and enable them to understand the implications of various statutory and policy guidelines concerning corporate governance for actual business decision making.				*	*	*
			COs	**POS**					
Systems				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
III	20260EG33	Software Engineering	This course aims to understand the software engineering and apply the knowledge of a disciplined approach to the development of software and to the management of the software product lifecycle.				*	*	*
	20260EG34	Software Project Management	To give an in-depth knowledge of the functioning of derivative securities market.				*	*	*
	20260EG35	Relational Database Management Systems				*	*	*	
	20260EG36	E- Business Technology Management	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.				*	*	*
	20260EG37	Data Warehousing & Data Mining	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.				*	*	*
	20260EG38	Knowledge Management	To give the students an overall view of the international financial system – instruments and markets.				*	*	*
	20260EG39	Enterprise Resource Planning	To provide the basics of insurance contracts and to explain the various types of insurance policies.				*	*	*
IV	20260EG42	Information Storage & Management	Student will acquire Nuances involved in short term corporate financing, Good ethical practices				*	*	*
	20260EG43	Cloud Computing	To enable the students to understand the principles, practices and application in Micro Finance.						

	20260EG44	Decision Support System And Intelligent Systems	To understand the components of DSS and IS. To know the appropriate model to be used for a problem				*	*	*
			COs	**POS**					
Tourism				**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
III	20260EI33	Tourism Principles, Policies and Practices	To realize the potential of tourism industry in India. To understand the various elements of Tourism Management and familiarize with the Tourism policies in the national and international context**.**	*	*			*	
	20260EI33	Tourism Products of India	To give an in-depth knowledge of the functioning of derivative securities market.	*	*			*	
	20260EI35	Destination Planning and development		*	*			*	
	20260EI36	Travel agency and Tour operations	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.				*	*	*
	20260EI37	Hospitality Management	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.				*	*	*
	20260EI38	Indian culture and Heritage	To give the students an overall view of the international financial system – instruments and markets.			*	*	*	
	20260EI39	Tourism Marketing	To provide the basics of insurance contracts and to explain the various types of insurance policies.				*	*	*
IV	20260EI42	Ecotourism	Student will acquire Nuances involved in short term corporate financing, Good ethical practices				*	*	*
	20260EI43	Event Management	To enable the students to understand the principles, practices and application in Micro Finance.				*	*	*
	20260EI44	E- Tourism	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.				*	*	*
			COs	**POS**					

Agribusiness				PO1	PO2	PO3	PO4	PO5	PO6
III	20260EJ33	Agribusiness Environment and Policy	To realize the potential of tourism industry in India. To understand the various elements of Tourism Management and familiarize with the Tourism policies in the national and international context**.**				*	*	*
	20260EJ34	Agricultural Marketing Management	To give an in-depth knowledge of the functioning of derivative securities market.				*	*	*
	20260EJ35	Farm Business Management				*	*	*	
	20260EJ36	Management of Agribusiness Cooperatives	The objective of the course is to provide to the students a specialized knowledge of the techniques of evaluating proposed investments and to acquaint them with the problems encountered in the decisional process pertaining to capital investments of the project.				*	*	*
	20260EJ37	Food Retail Management	This course provides an understanding of the following fund-based and fee-based financial services offered by financial intermediaries such as non-banking finance companies, banks and financial institutions. This course will also focus on issues concerning the financial management of financial intermediaries.				*	*	*
	20260EJ38	Management of Agricultural Input Marketing	To give the students an overall view of the international financial system – instruments and markets.				*	*	*
	20260EJ39	Agri Supply Chain Management	To provide the basics of insurance contracts and to explain the various types of insurance policies.				*	*	*
IV	20260EJ42	Agriculture Economics	Student will acquire Nuances involved in short term corporate financing, Good ethical practices				*	*	*
	20260EJ43	Agricultural and Micro-Finance	To enable the students to understand the principles, practices and application in Micro Finance.						
	20260EJ44	New Trends and Development in Agri-Sector	To equip the students with necessary strategic knowledge and skills received to evaluate discussions or capital restructuring, mergers and acquisitions.				*	*	*

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

DEPARTMENT OF COMPUTER SCIENCE

2020 REGULATION

Local need	
Regional need	
National need	
Global need	

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UNIVERSITY
NAAC ACCREDITED
THANJAVUR – 613 403 - TAMIL NADU

SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

Bachelor of Computer Application (B.C.A)

PROGRAMME OUTCOMES	
PO1	Able to design and develop reliable software applications for social needs and Excel in IT enabled services.
PO2	Able to analyze and identify the customer requirements in multidisciplinary domains, create high level design and implement robust software applications using latest technological skills.
PO3	Proficient in successfully designing innovative solutions for solving real life business problems and addressing business development issues with a passion for quality, competency and holistic approach
PO4	Perform professionally with social, cultural and ethical responsibility as an individual as well as in multifaceted teams with positive attitude
PO5	Capable of adapting to new technologies and constantly upgrade their skills with An attitude towards independent and lifelong learning.
PO6	Develop various real time applications using latest technologies and programming languages
PROGRAM SPECIFIC OUTCOME	
PSO1	Professional Skills: Attain the ability to design and develop computer applications, evaluate and recognize potential risks and provide innovative solutions.
PSO2	Successful Career and Entrepreneurship: Explore technical knowledge in diverse areas of Computer Applications and experience an environment conducive in Cultivating skills for successful career, entrepreneurship and higher studies.
PSO3	To formulate and develop mathematical arguments in a logical manner.
PSO4	To acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses.
PSO5	To understand, formulate and use quantitative models arising in social science, Business and other contexts.
PROGRAM EDUCATIONAL OBJECTIVES	
PEO1	Evolve as globally competent computer professionals possessing leadership skills

BCA

Sem	Course code	Course title	CO's
I	20110AEC11	Tamil- I	➢ Learn the changes occurred in literature since classical period.
			➢ Obtaining More information about one's ➢ culture and tradition
			➢ Encourage creative writing and developing self-confidence.
	20132AEC11	Hindi-I	➢ Enables other state students to continue their learning phase without any disruptions.
			➢ Through this language they can learn spirituality.
			➢ Students can learn social discrimination
			➢ Students can learn grammar techniques
	20111AEC11	Advanced English-I	➢ Academic skills in preparation for tertiary study.
			➢ Presentation and participation skills.
			➢ Learning strategies and research skills
			➢ Academic essay and report writing skills
	20135AEC11	French-I	➢ Focus on all four modalities of the language: speaking, listening, reading and writing
			➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking

			➢ Students can compare and contrast cultural practices as they relate to French and American culture.
	20111AEC12	**English-I**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing
			➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking
			➢ Students can compare and contrast cultural practices as they relate to French and American culture.
			➢ Improves their proficiency in English language.
			➢ Develops functional communicative aspect of language through a series of real life tasks
	20122SEC13	**Programming in C with C++**	➢ To understand the principles of Python and acquire skills in programming in python ➢ To develop the emerging applications of relevant field using Python
			➢ Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
	20112AEC15B	**CLASSICAL ALGIBRA**	➢ Understand the theory of, and be able to solve problems in Caylee Hamilton Theorem, and finding the Eigen values & Eigen vectors

			➢ Able to manipulate relation between root and coefficients, symmetric functions of the roots in terms of the coefficients and transformation of equation
			➢ be able to calculate summation related to Binomial,
			➢ be able to calculate summation related to Binomial, Exponential and Logarithmic series
	20112AEC16B	**Numerical And Statistical Methods**	➢ Apply numerical methods to find the solution of algebraic equations using different method and numerical
			➢ Apply various interpolation methods and finite difference concepts.
			➢ Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.
			➢ Solve a differential equation using an appropriate numerical method
	20122SEC14L	**Programming in C with C++ Lab**	➢ To implement the python programming features in practical applications
			➢ To implement Python programs with conditionals and loops

			➢ Represent compound data using Python lists, tuples, dictionaries, turtles, Files and modules
			➢ Use functions for structuring Python programs.
	20120SEC01A	**Skill Based Elective -I**	➢ To make the students understand about the Democratic Rule and Parliamentarian administration.
			➢ To appreciate the salient features of the Indian Constitution
	20111SEC01L	**Communicative English Lab-I**	➢ Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
			➢ From case studies of lives of great and successful people who followed and practiced human values and achieved self-actualization.
			➢ Realize their potential as human beings and conduct themselves properly in the ways of the world.
	201INDCONS	**Indian Constitution**	➢ Democratic values and citizenship Training are gained.
			➢ Awareness on Fundamental Rights are established

			➢ Learn the functions of union and State Governments
			➢ Learn the power and functions of the Judiciary
II	**20110AEC21**	**Tamil- II**	➢ Know what devotion really is. ➢ Know the fruitfulness obtained through devotion
			➢ Perceive the progress achieved in the society through devotion
			➢ Obtaining More information about one's ➢ culture and tradition
			➢ Encourage creative writing and developing self-confidence.
			➢ Aiming at enriching human excellence
	20132AEC21	**Hindi-II**	➢ Enables other state students to continue their learning phase without any disruptions
			➢ Through this language the can learn spirituality ➢ Students can learn grammar techniques. ➢ Enables them to enhance their language skills. ➢ Enables them to develop creative writing.
			➢ Students can learn social discrimination.D18

	20111AEC21	**Advanced English-II**	➢ Communicate effectively in most daily practical and social situations at both concrete and abstract levels
			➢ Participate in formal and informal conversations involving problem solving and decision making
			➢ Speak on familiar concrete topics at a descriptive level and present a detailed analysis or comparison
			➢ Demonstrate an increased ability to respond appropriately to the formality level of a social interaction
	20135AEC21	**French-II**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing.
			➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking.
			➢ Students can compare and contrast cultural practices as they relate to French and American culture
	20111AEC22	**English-II**	➢ Read and appreciate literature
			➢ Know more about Mahatma Gandhi, Mother Teresa, and Martin Luther King.

			➢ Describe Daffodils, beauty of Byron‘s Maid, ➢ Painful account of apple- pickers
			➢ Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary
			➢ Gain vocabulary through reading. Acquire fluency in English language.
	20122SEC23	**Data Structure and Algorithms**	➢ To understand the core principles of the Java Language
			➢ To study about Graphics programming using java Language
	20112AEC25B	**Discrete Mathematics**	➢ Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives
	20112AEC26B	**Operations Research**	➢ Identify and develop operational research models from the verbal description of the real system
			➢ Use mathematical software to solve the proposed models.
			➢ Develop a report that describes the model ➢ And the solving technique, analyses the results and propose recommendations in language
			➢ Understand variety of problems such as assignment, transportation, travelling

			salesman etc.
	20122SEC24L	**Data Structure and Algorithms Lab**	➢ Implement the concept of data structures through ADT including List, Stack, and Queues.
			➢ create a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT) & Swings
			➢ apply event handling on AWT and Swing components
			➢ Learn to access database through Java programs, using Java Data Base Connectivity (JDBC)
	20120SEC02A	**Skill Based Elective-II**	➢ Indicate the names and functions of the Excel interface components. ➢ Enter and edit data.
	20122RLC27	**Research Led Seminar**	➢ Learning to communicate through the digital media .By the end of this program participants should have a clear understanding of what good

			➢ Understand the importance of empathetic listening
			➢ Explore communication beyond language.
			➢ Communication skills are and what they can do to improve their abilities. ➢ Understand role of communication in teaching-learning process
	20111SEC02L	**Communicative English Lab-II**	➢ Improves comprehension and retention. ➢ Develop speaking and writing skills
			➢ Builds confidence in handling English language. ➢ Develops ideas with coherence and cohesion.
	IIII 20110AEC31	**Tamil-III**	➢ Achieve one's goal by following the ancestral path. ➢ Obtaining More information about one's culture and tradition;
			➢ They will expose themselves into many question and answer session in research stations through which they can mould themselves for their better subject knowledge.
	20132AEC31	**Hindi-III**	➢ Enables other state students to continue their learning phase without any

			disruptions.
			➢ Through this language they can learn spirituality.
			➢ Students can learn social discrimination.D18.
	20111AEC31	**Advanced English-III**	➢ Follow main ideas, key words, and important details in an authentic 2-3 page text on a familiar and partially predictable topic.
			➢ Read in English for information, to learn the language and to develop reading skills.
			➢ Write coherent paragraphs on familiar topics with clear main ideas and some supporting details. Develop a sense of audience.
	20135AEC31	**French-III**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing.
			➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking.

			➢ Students can compare and contrast cultural practices as they relate to French and American culture.
			➢ Students can demonstrate critical thinking and Collaborative problem-solving through advanced task-based language activities.
	20111AEC32	**English-III**	➢ Gain vocabulary through reading. Acquire fluency in English language
			➢ Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary
			➢ Describe Daffodils, beauty of Byron‘s Maid, painful account of apple- pickers
			➢ Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary
	20122SEC33	**Internet and Java Programming**	➢ Students list the visual programming concepts. ➢ Explain basic concepts and definitions. ➢ Express constants and arithmetic operations.
			➢ The students can learn in selection of suitable farm equipment for tillage to harvest based on field and crop conditions.

			➢ The students can able to estimate the cost of farm equipment operation, coverage and power requirements
			➢ · Students prepare various projects by helping visual programming.
	20122SEC34L	**Internet and Java Programming Lab**	➢ Cognitive abilities and skills relating to solution of problems in Physics and Physics Related Disciplines
			➢ Practical skills relating to the conduct of laboratory and industrial work in General skills relating to non-subject specific competencies, communication, ICT knowledge, interpersonal, organization skills and ethical standards.
	20161SEC35	**Financial Accounting**	➢ To understand arithmetic operations ➢ Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP
			➢ To understand string and matrix operations
	20113AEC36C	**Applied physics Lab-I**	➢ An ability to apply knowledge of mathematics, science, and engineering. Graduates should transform knowledge of mathematics, Physics, chemistry, Engineering Mechanics, probability and statistics, and engineering drawing in solving a wide range of civil engineering problems.

			➢ An ability to design, implement, evaluate a system and conduct experiments, as well as to analyze and interpret data. Graduates should show that they can make decisions regarding type, and number of data points to be collected, duration of the experiment
			➢ data points to be collected, duration of the experiment to obtain intended results, and demonstrate an understanding of accuracy and precision of data
			➢ An ability to design, implement and evaluate a system, or process to meet desired needs Graduates should be able to identify the project goal;
III	**20122RMC37**	**Research Methodology**	➢ Students who complete this course will be able to understand and comprehend the basics in research methodology and applying them in research/ project work.
			➢ This course will help them to select an appropriate research design.
			➢ The course will also enable them to collect the data, edit it properly and analyses it accordingly. Thus, it will facilitate students' prosperity in higher education.
			➢ With the help of this course, students will be able to take up and implement a research project/ study.

	20120SEC03A	**Skill Based Elective –III**	➢ Recognize when to use each of the Microsoft Office programs to create professional and academic documents.
			➢ Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.
	20111SEC03L	**Communicative English Lab-III**	➢ Learns to analyze unfamiliar words by understanding the structure of the English language.
IV	**20110AEC41**	**Tamil-IV**	➢ Realize how the ancient people changed their life style according to the ages
			➢ Learn how to change one's lifestyle according to the needs of the future
			➢ Obtaining More information about one's ➢ culture and tradition; ➢ Encourage creative writing and developing self-confidence.
	20132AEC41	**Hindi-IV**	➢ Enables other state students to continue their learning phase without any disruptions.
			➢ Through this language they can learn spirituality.

			➢ Students can learn social discrimination.D18.
	20111AEC41	**Advanced English-IV**	➢ Make oral presentations effectively for academic purposes by using appropriate discourse markers, transitions and conjunctions.
			➢ Respond to spoken discourse in their content courses and academic presentations.
			➢ Follow oral instructions, identify details, and evaluate the speakers' viewpoints and attitudes
	20135AEC41	**French-IV**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing. ➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical
			➢ Students can compare and contrast cultural practices as they relate to French and American culture.
	20111AEC42	**English-IV**	➢ Know about genius of Shakespeare, Martin Luther King, Mahatma Gandhi, and Mother Teresa.

			➢ Describe Daffodils, beauty of Byron‘s Maid, Painful account of apple- pickers.
			➢ Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary
	20122SEC43	**Visual Programming**	➢ Learners will be able to design web applications using ASP.NET
			➢ Learners will be able to use ASP.NET controls in web applications
	20122SEC44L	**Visual Programming Lab**	➢ Write Visual Basic programs using object-oriented programming techniques including classes, objects, methods, instance variables, composition, and inheritance, and polymorphism
			➢ Create one and two dimensional arrays for sorting, calculating and displaying of data.
	20113AEC45C	**Allied Physics –II Digital Electronics**	➢ Effectively use and critically evaluate current technical/scientific research literature, online information, as well as information related to scientific issues in the mass media
			➢ Integrate and relate scientific knowledge learned from classroom with real life situations.

			➢ Students acquire knowledge about the plant and host relationship and their management
			➢ They get knowledge about the integrated management of plant diseases and pest.
	20120SEC04A	**Skill Based Elective-IV**	➢ Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
			➢ Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.
			➢ Demonstrate proficiency in quantitative methods, qualitative analysis, critical thinking, and written and oral communication needed to conduct high-level work as interdisciplinary scholars and/or practitioners.
			➢ Analyze the ecosystem and able to understand the different types of pollutions in country. Learn about environmental pollution.
	20111SEC04L	**Communicative English Lab-IV**	➢ Learners will be able to design web applications using ASP.NET

			➢ Learners will be able to create database driven ASP.NET web applications and web services ➢ demonstrate advanced knowledge of programming for network communications
	201ENVTSTU	**Environmental Studies**	➢ Effectively use and critically evaluate current technical/scientific research literature, online information, as well as information related to scientific issues in the mass media
			➢ Integrate and relate scientific knowledge learned from classroom with real life situations.
V	**20122SEC51**	**Relational Database Management Systems**	➢ Help students to develop essential skills to influence and motivate others
			➢ Nurture a creative and entrepreneurial mindset
			➢ Make students understand the personal values and apply ethical principles in professional
	20122SEC52	**NET Programming**	➢ Identify the components required to build different types of networks.
			➢ Another node. Identify the components required to build different types of networks

			➢ · Learning all farm activities field management and to gain maximum knowledge about crops of a particular season
	20122SEC53	**Designing and supporting Computer Networks**	➢ Design various Scheduling algorithms.
			➢ Compare and contrast various memory management schemes.
			➢ Design and Implement a prototype file systems.
	20122SEC54L	**Oracle Lab**	➢ Design and implement programs on 8086 microprocessor.
			➢ Design and implement 8051 microcontroller based systems
	20122SEC55L	**.NET Programming Lab**	➢ Identify the architecture, infrastructure and delivery models of cloud computing
			➢ Address the core issues of cloud computing such as security, privacy and interoperability
			➢ · The students will be able to undertake commercial cultivation of flower crop, medicinal and aromatic plants.
			➢ · Students will gain knowledge to establish different type's garden in various

			locations.
	20122DSC56A	**Computer Organization and Architecture**	➢ Understand Distributed systems design and implementation
			➢ Use Middleware to Build Distributed Applications
	20122DSC56B	**E-learning**	➢ Make basic use of Enterprise software, and its role in integrating business functions
			➢ Analyze the strategic options for ERP identification and adoption.
			➢ Design the ERP implementation strategies.
			➢ Create reengineered business processes for successful ERP implementation.
	20122BRC57	**Participation in Bounded Research**	➢ Design and implement programs on 8085 microprocessor.
			➢ Design and implement 8051 microcontroller based systems
			➢ · The student will learn the types of Intellectual Property and legislations covering IPR in India: Patents, Copyrights, Trademark, Industrial design, Geographical indications, Integrated

			circuits, and Trade secrets.
	20120SEC05A	**Skill Based Elective-V**	➢ Execute the Unix Shell programming on the given system configuration.
			➢ Studying the concepts and applications of remote sensing and image processing in agriculture
			➢ Understanding the concepts of nanotechnology
			➢ Students know about the economic and environmental feasibility of the precision farming technology.
	20111SEC05L	**Communicative English Lab-V**	➢ Prepare their resume in an appropriate template without grammatical and other errors and
			➢ Actively participate in group discussions towards gainful employment
			➢ Enlist the common errors generally made by candidates in an interview
	VI 20122SEC61	**Advanced Web Technology**	➢ Create web-based distributed applications using ASP.NET, SQL Server and ADO.NET
			➢ Utilize DirectX libraries inthe.NET environment to implement 2D and 3D ➢ Animations and game-related

			graphic displays and audio.
			➢ Understand the key protocols which support ➢ The internet.
	20122SEC62	**Operating System**	➢ Demonstrate the basic elements of a relational database management system.
			➢ Design entity relationship and convert entity relationship diagrams into RDBMS and formulate
			➢ summarization forms and determine data mining functionalities
			➢ Students learn to use the natural farm resources produced within the farm
	20122DSC65A	**Software Project Management**	➢ Assess raw input data, and process it to provide suitable input for a range of data mining algorithms.
			➢ Students will be equipped with management concepts and management of common resources.
			➢ Evaluate and select appropriate data-mining algorithms and apply, and interpret and
	20122DSC65B	**Object Oriented Analysis and Design**	➢ Contrast and compare major elements of the ➢ .NET Framework and explain how C# fits

			into the .NET platform.
			➢ Analyze the basic structure of a C# application and be able to document, debug, compile, and run a simple application.
			➢ Create methods (functions and subroutines) that can return values and take parameters.
			➢ Use common statements to implement flow control, looping, and exception handling.
	20110OEC	**Tamil Ilakkiya Varalaru**	➢ Summarization forms and determine data mining functionalities.
			➢ · They have been familiarized with methods of food preservation and the fundamentals of human Nutrition.
			➢ Brief knowledge about SQL Fundamentals
	20111OEC	**Journalism**	➢ Develop mathematical thinking and problem solving skills associated with research and writing proofs.
			➢ Get exposure to a wide variety of mathematical concepts used in computer science discipline like probability.

			➢ Understand the mathematical fundamentals that are prerequisites for a variety of courses like Data Mining, Network protocols, analysis of Web traffic, Computer security, Bioinformatics and Machine Learning.
	20112OEC	**Development of Mathematical Skills**	➢ To understand and analyses Information security threats & countermeasures
			➢ To understand penetration and security testing issues
			➢ To understand issues relating to ethical hacking
	20113OEC	**Instrumentation**	➢ To understand and analyses Information security threats & countermeasures
			➢ To understand issues relating to ethical hacking
			➢ Develop and maintain problem-solving skills. ➢ Use mathematical ideas to model real-world problems
	20114OEC	**Food and Adulteration**	➢ know and demonstrate understanding of the concepts from the five branches of mathematics (Operations Research, Set Theory, statistics, Matrices and Business

			mathematics)
			➢ use appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations including those in real- life contexts
	20116OEC	**Wildlife Conservation**	➢ To use the techniques and skills for electrical projects.
			➢ Design a system, component or process to meet desired needs in electrical engineering.
			➢ Measurement of R,L,C ,Voltage, Current, Power factor , Power, Energy
			➢ · Ability to measure strain, displacement, Velocity, Angular Velocity, temperature, Pressure, Vacuum, and Flow.
	20120OEC	**E-Learning**	➢ Ability to apply principles of food engineering in industry
			➢ Related to food industry and ability to find an appropriate solution for the same.
	20161OEC	**Banking Service**	➢ Maintenance of rare species in protected areas such as national parks, sentries etc.,
			➢ Maintenance of rare species in protected areas such as national parks, sentries etc.,

			➢ Protection of wild life through legislation such as banning hunting etc.,
			➢ Imposing specific restrictions on export of endangered plants and animals or their products
	20120SEC06A	**Skill Based Elective –VI**	➢ Acquire knowledge about functionalities of world wide web
			➢ Explore markup languages features and create interactive web pages using them
			➢ Able to design front end web page and connect to the back end databases.
			➢ Acquire knowledge about Open source Java ,Script libraries
	20111SEC06L	**Communicative English Lab-VI**	➢ To help to gather knowledge on banking and ➢ Financial system in India.
			➢ various types of risk based by banks
	20122EXACT	**Extension Activities**	➢ Learn to create animated graphics and sound and interactivity
			➢ CD based presentations
			➢ Add and Manage Tweens.

	20122PEE	**Program Exit Examination**	➢ Increases confidence in their ability to read comprehends organize and retain written information.
			➢ Increases Vocabulary through the study of word parts, use of context clues and Practice with a dictionary.
	201LSCIC	**Indian Constitution**	➢ Concept of various organizations, approaches, thoughts of Political Science
			➢ Ability to understand basic foundation of Political Science
			➢ Applying this knowledge in understanding legal studies and political discourse
	201LSCCS	**Communication Skills**	➢ Develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively with others.
			➢ Understand and practice different techniques of communication.
			➢ Practice and adhere to the 7Cs of Communication.

	201SSCBE	**Basic Behavioral Etiquette**	➢ Network effectively, including making introductions, shaking hands, and using business cards appropriately
			➢ Develop an extra edge to establish trust and credibility
			➢ To perform documentation
			➢ To perform accounting operations
	201LSCOA	**Office Automation**	➢ To perform presentation skills
			➢ To perform accounting operations
	201LSCLS	**Leadership and Management Skills**	➢ Identify different leadership styles;
			➢ Communicate effectively by saying no, delegating, and promoting others' growth;
	201SSCAQ	**General Aptitude and Quantitative Ability**	➢ Students will communicate effectively & appropriately in real life situation.
			➢ Students will be able to prepare for various public and private sector exams & placement drives.
	201LSCPS	**Professional Skills**	➢ To Develop Coherence, Cohesion and Competence in Oral Discourse through Intelligible Pronunciation.

			➢ Develop and Expand Writing Skills through Controlled and Guided Activities
	201LSCCE	**Community Engagement**	➢ Demonstrate an ability to engage respectfully with others in a diverse society.
			➢ Demonstrate an ability to engage respectfully with others in a diverse society.
	201SSCIM	**Interview Skills Training and Mock Test**	➢ understand how to decide between the different types of interview

B.Sc. Computer Science

PROGRAMME OUTCOMES	
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.
PROGRAM SPECIFIC OUTCOME	
PSO1	Understand the impact of the professional solutions in societal and environmental Contexts, and demonstrate the knowledge of, and need for sustainable development.
PSO2	Apply problem-solving skills and the knowledge of computer science to solve real world problems.
PSO3	Use software development tools, software systems, and modern computing platforms
PSO4	Communicate computer science concepts, designs, and solutions effectively and professionally
PROGRAM EDUCATIONAL OBJECTIVES	
PEO1	To study about I/O management, storage management
PEO2	To know the methods of connecting them to the peripheral devices.
PEO3	To learn Software design and Implementation
PEO4	To learn the basic principles of database and database design
PEO5	To understand computational development of graphics with mathematics

Sem	Course code	Course title	CO's
I	20110AEC11	Tamil- I	➢ Learn the changes occurred in literature since classical period.
			➢ Obtaining More information about one's ➢ culture and tradition
			➢ Encourage creative writing and developing self-confidence.
	20132AEC11	Hindi-I	➢ Enables other state students to continue their learning phase without any disruptions.
			➢ Through this language they can learn spirituality.
			➢ Students can learn social discrimination
			➢ Students can learn grammar techniques
	20111AEC11	Advanced English-I	➢ Academic skills in preparation for tertiary study.
			➢ Presentation and participation skills.

			➢ Learning strategies and research skills
			➢ Academic essay and report writing skills
	20135AEC11	**French-I**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing
			➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking
			➢ Students can compare and contrast cultural practices as they relate to French and American culture.
			➢ Improves their proficiency in English language.
			➢ Develops functional communicative aspect of language through a series of real life tasks
	20111AEC12	**English-I**	➢ Read and comprehend literature
			➢ Understand how to lead one's life realizing the modernity and its environment/atmosphere.
			➢ Improves their proficiency in English language.

			➢ Develops effective writing skills.
			➢ Develops functional communicative aspect of language through a series of real life tasks.
	20120SEC13	**Programming in C with C++**	➢ Design C Programs for problems.
			➢ Able to understand and design the solution to a problem using object-oriented programming concepts.
	20120SEC16L	**Programming in C with C++ Lab**	➢ Read understand and trace the execution of programs written in C language.
			➢ Implement programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.
	20112AEC14B	**CLASSICAL ALGIBRA**	➢ Understand the theory of, and be able to solve problems in Caylee Hamilton Theorem, and finding the Eigen values & Eigen vectors
			➢ Able to manipulate relation between root and coefficients, symmetric functions of the roots

			in terms of the coefficients and transformation of equation
			➢ able to calculate summation related to Binomial, Algebra.
			➢ able to calculate summation related to Binomial, Exponential and Logarithmic series
	20112AEC15B	**Numerical And Statistical Methods**	➢ Apply numerical methods to find the solution of algebraic equations using d ifferent method and numerical
			➢ Apply various interpolation methods and finite difference concepts.
			➢ Work out numerical different iation and integration whenever and wherever routine methods are not applicable.
			➢ Solve a differential equation using an appropriate numerical method
	201LSCIC	**Indian Constitution**	➢ Understand how Constitutions embody certain ideals.

			➢ Learn why there is a need for limits on power in a democratic form of government.
			➢ Understand the difference between monarchy, dictatorship and democracy.
			➢ Describe the importance of Preamble of the Indian Constitution and its significance.
	201LSCUV	**Universal Human Values**	➢ Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.
			➢ From case studies of lives of great and successful people who followed and practiced human values and achieved self-actualization.
			➢ Realize their potential as human beings and conduct themselves properly in the ways of the world.

II	**20110AEC21**	**Tamil- II**	➢ Know what devotion really is. ➢ Know the fruitfulness obtained through devotion
			➢ Perceive the progress achieved in the society through devotion
			➢ Obtaining More information about one's culture and tradition
			➢ Encourage creative writing and developing self-confidence.
			➢ Aiming at enriching human excellence
	20111AEC21	**Hindi-II**	➢ Enables other state students to continue their learning phase without any disruptions
			➢ Through this language the can learn spirituality ➢ Students can learn grammar techniques. ➢ Enables them to enhance their language skills. ➢ Enables them to develop creative writing.
			➢ Students can learn social discrimination.D18
	20111AEC21	**Advanced English-II**	➢ Communicate effectively in most daily practical and social situations at both concrete and abstract levels

			➢ Participate in formal and informal conversations involving problem solving and decision making
			➢ Speak on familiar concrete topics at a descriptive level and present a detailed analysis or comparison
			➢ Demonstrate an increased ability to respond appropriately to the formality level of a social interaction
	20135AEC21	**French-II**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing.
			➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking.
			➢ Students can compare and contrast cultural practices as they relate to French and American culture
			➢ Read and appreciate literature
			➢ Know more about Mahatma Gandhi, Mother Teresa, and Martin Luther King.

			➢ Describe Daffodils, beauty of Byron‘s Maid, ➢ Painful account of apple- pickers
			➢ Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary
			➢ Gain vocabulary through reading. Acquire fluency in English language.
	20120SEC23	**Internet and Java Programming**	➢ Understand development of JAVA applets vs. JAVA applications.
			➢ Understand object inheritance and its use.
	20120SEC26L	**Internet and Java Programming Lab**	➢ To develop software applications using Java programming language.
			➢ Write modular, multithreading and event driven programming.
	20112AEC24B	**Discrete Mathematics**	➢ Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives

	20112AEC25B	**Operations Research**	➢ Identify and develop operational research models from the verbal description of the real system
			➢ Use mathematical software to solve the proposed models.
			➢ Develop a report that describes the model ➢ And the solving technique, analyses the results and propose recommendations in language
			➢ Understand variety of problems such as assignment, transportation, travelling salesman etc.
	20120RLC27	**Research Led Seminar**	➢ This course provides an experience in leading and participating in a discussion about a scientific paper.
	201LSCCS	**Communication Skill**	➢ Develop speaking and writing skills ➢ .
			➢ Identifying strengths and weaknesses of contributions and expanding a discussion beyond the paper content.

			➢ Improves their ability to read and spell words through an analysis of structure of the English language.
	201SSCBE	**Basic Behavioral Etiquette**	➢ Business etiquette training, a key part of soft skills & communication, facilitated by Momentum enlightens participants on the accepted behaviour patterns and manners key to their profession.
			➢ It emphasises on a set of practices used and accepted in a multi-national work environment. ➢ .
	IIII **20110AEC31**	**Tamil-III**	➢ Achieve one's goal by following the ancestral path.
			➢ They will expose themselves into many question and answer session in research stations through which they can mould themselves for their better subject knowledge.
	20132AEC31	**Hindi-III**	➢ Enables other state students to continue their learning phase without any disruptions.

			➢ Through this language they can learn spirituality.
			➢ Students can learn social discrimination.D18.
	20111AEC31	**Advanced English-III**	➢ Follow main ideas, key words, and important details in an authentic 2-3 page text on a familiar and partially predictable topic.
			➢ Read in English for information, to learn the language and to develop reading skills.
			➢ Write coherent paragraphs on familiar topics with clear main ideas and some supporting details. Develop a sense of audience.
	20135AEC31	**French-III**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing.
			➢ As well as knowledge of Francophone cultures and the skills of collaboration and

			critical thinking.
			➢ Students can compare and contrast cultural practices as they relate to French and American culture.
			➢ Students can demonstrate critical thinking and Collaborative problem-solving through advanced task-based language activities.
	20111AEC32	**English III**	➢ Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary.
			➢ Know more about Mahatma Gandhi, Mother Teresa, and Martin Luther King.
	20120SEC33	**Visual Programming**	➢ Design, create, build, and debug Visual Basic applications.
			➢ Explore Visual Basic's Integrated Development Environment (IDE).
			➢ Write Windows applications using forms, controls, and events

			➢ Write and apply decision structures for determining different operations.
	20120SEC35L	**Visual Programming Lab**	➢ Apply arithmetic operations for displaying numeric output.
			➢ Apply decision structures for determining different operations.
	20113AEC34A	**Applied physics –I**	➢ Demonstrate a working knowledge of the basic concepts and theories of physics.
			➢ Formulate hypotheses and devise and perform experiments to test a hypothesis as individuals and in a team. ➢ Cognitive abilities and skills relating to solution of problems in Physics and Physics Related Disciplines
	20113AEC36AL	**Applied physics Lab-I**	➢ An ability to apply knowledge of mathematics, science, and engineering. Graduates should transform knowledge of mathematics, Physics, chemistry,

			Engineering Mechanics, probability and statistics, and engineering drawing in solving a wide range of civil engineering problems.
			➢ An ability to design, implement, evaluate a system and conduct experiments, as well as to analyze and interpret data. Graduates should show that they can make decisions regarding type, and number of data points to be collected, duration of the experiment
			➢ data points to be collected, duration of the experiment to obtain intended results, and demonstrate an understanding of accuracy and precision of data
			➢ An ability to design, implement and evaluate a system, or process to meet desired needs Graduates should be able to identify the project goal;
III	**20120RMC37**	**Research Methodology**	➢ Students who complete this course will be able to understand and comprehend the basics in research methodology and applying them in research/ project work.

			➢ This course will help them to select an appropriate research design.
			➢ The course will also enable them to collect the data, edit it properly and analyses it accordingly. Thus, it will facilitate students' prosperity in higher education.
			➢ With the help of this course, students will be able to take up and implement a research project/ study.
	201LSCOAN	**OFFICE AUTOMATION**	➢ Recognize when to use each of the Microsoft Office programs to create professional and academic documents.
			➢ Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.
IV	**20110AEC41**	**Tamil-IV**	➢ Realize how the ancient people changed their life style according to the ages

			➢ Learn how to change one's lifestyle according to the needs of the future
			➢ Obtaining More information about one's ➢ culture and tradition; ➢ Encourage creative writing and developing self-confidence.
	20132AEC41	**Hindi-IV**	➢ Enables other state students to continue their learning phase without any disruptions.
			➢ Through this language they can learn spirituality.
			➢ Students can learn social discrimination.D18.
	20111AEC41	**Advanced English-IV**	➢ Make oral presentations effectively for academic purposes by using appropriate discourse markers, transitions and conjunctions.
			➢ Respond to spoken discourse in their content courses and academic presentations.

			➢ Follow oral instructions, identify details, and evaluate the speakers' viewpoints and attitudes
	19135AEC41	**French-IV**	➢ Focus on all four modalities of the language: speaking, listening, reading and writing. ➢ As well as knowledge of Francophone cultures and the skills of collaboration and critical
			➢ Students can compare and contrast cultural practices as they relate to French and American culture.
	20111AEC42	**English-IV**	➢ Know about genius of Shakespeare, Martin Luther King, Mahatma Gandhi, and Mother Teresa.
			➢ Describe Daffodils, beauty of Byron's Maid, Painful account of apple- pickers.
			➢ Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary
	20120SEC43	**Active Server Programming**	➢ Learners will be able to design web applications using

			ASP.NET
			➢ Learners will be able to use ASP.NET controls in web applications
	20120SEC46L	**Active Server Page Lab**	➢ Analyze the basic structure of a C# application and be able to document, debug, compile, and run a simple application.
			➢ Integrate and relate scientific knowledge learned from classroom with real life situations.
			➢ Use common statements to implement flow control, looping, and exception handling.
			➢ They get knowledge about the integrated management of plant diseases and pest.
	20113AEC44A	**Applied physics –II**	➢ Demonstrate a working knowledge of the basic concepts and theories of physics.
			➢ The Applied Physics program will produce intellectually engaged graduates accomplished in application of fundamental

			physics principles, and prepared for direct entry into the workplace or continuing professional development.
			➢ Demonstrate a working knowledge of the basic concepts and theories of physics.
	20113AEC47AL	**Applied physics Lab–II**	➢ Integrate and relate scientific knowledge learned from classroom with real life situations.
			➢ Effectively use and critically evaluate current technical/scientific research literature, online information, as well as information related to scientific issues in the mass media.
	22113AEC44AZ	**Applied physics lab II**	➢ Nurture a creative and entrepreneurial mindset
			➢ Maintain life-long learning in the sciences and incorporate new information into the existing body of knowledge.
	201ACLSLMS	**Leadership and Management Skills**	➢ Help students to develop

			essential skills to influence and motivate others
			➢ Nurture a creative and entrepreneurial mindset
			➢ Make students understand the personal values and apply ethical principles in professional
	201ACSSAQA	**General Aptitude and Quantitative Ability**	➢ The student will be able to • Use their logical thinking and analytical abilities to solve Quantitative aptitude questions from company specific and other competitive tests.
			➢ Effort has been made to accommodate fundamental, mathematical aspects to instill confidence among students.
			➢ This course consists of practice exercises for Quantitative or Numerical and Verbal Ability. Prepare for Aptitude Tests for Entrance Exams like GATE, CAT, Bank PO, SAT, GMAT, GRE, UPSC and RRB.
	V 20120SEC51	**Data Communication and Networking**	➢ Choose the required functionality at each layer for given

			application
			➢ Trace the flow of information from one node to another node in the network
			➢ Use data communication vocabulary appropriately when discussing issues with other networking professionals.
	20120SEC52	**Operating System**	➢ Compare and contrast various memory management schemes.
			➢ Design and Implement a prototype file systems.
	20120SEC53	**Microprocessor and its Applications**	➢ Design Memory Interfacing circuits.
			➢ Understand the implementation of Buses
			➢ Design and implement programs on 8086 microprocessor.
			➢ Design and implement 8051 microcontroller based systems

	20120SEC55L	**Microprocessor lab**	➢ Develop testing and experimental procedures on Microprocessor and Microcontroller analyze their operation under different cases.
			➢ Prepare professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.
	20120SEC56L	**Operating System Lab**	➢ Use UNIX/Linux command line (shell) commands to navigate and manage the UNIX/Linux file system, customize the user shell environment,
			➢ Install a Linux operating system with a custom partitioning scheme and log into and out of a UNIX/Linux computer system using graphical and command line environments.
			➢ Use file name globing and regular expressions to find files and text in the system.
			➢ To Manage user and group

			accounts and permissions.
	20120DSC56A	**Cloud Computing**	➢ Identify the architecture, infrastructure and delivery models of cloud computing
			➢ Address the core issues of cloud computing such as security, privacy and interoperability
			. ➢ Apply suitable virtualization concept.
	20120DSC56B	**Middleware Technology**	➢ To study how it helps to incorporate application portability, distributed application component interoperability and integration.
			➢ Understand Distributed systems design and implementation
			➢ Understand existing Distributed Technologies
			➢ Understand Web services architectures
	20120DSC56C	**Enterprise Resource Planning**	➢ To aim at preparing the students

			technological competitive and make them ready to self-upgrade with the higher technical skills.
			➢ Actively participate in group discussions towards gainful employment
			➢ Enlist the common errors generally made by candidates in an interview
	20120BRC57	**Participation in Bounded Research**	➢ Familiar with how to write a good introduction to an educationa; research study and the components that comprise such an introduction.
			➢ To understood a general definition of research design
			➢ Improves their ability to read and spell words through an analysis of structure of the English language
	201ACLSPSL	**Professional Skills**	➢ Develop effective presentation skills. Conduct effective business correspondence and prepare business reports which produce

			results. Conduct effective business correspondence and prepare business reports which produce results.
			➢ By the end of the soft skills training program, the students should be able to: Develop effective communication skills (spoken and written).
			➢ summarization forms and determine data mining functionalities
			➢ · Students learn to use the natural farm resources produced within the farm
	VI **20120SEC61**	**NET Programming**	➢ Utilize the .NET environment to create Web Service-based applications and components.
			➢ Demonstrate advanced knowledge of programming for network communications.
			➢ Utilize DirectX libraries in the .NET environment to implement 2D and 3D animations and game-related graphic displays

			and audio.
	20120SEC62	**Relational Data Base Management System**	➢ Apply security concepts to databases.
			➢ Apply concurrency control and recovery mechanisms for practical problems.
			➢ Use the Relational model, ER diagrams.
			➢ Design Databases for applications.
	20120SEC64L	**NET Programming Lab**	➢ Use common statements to implement flow control, looping, and exception handling.
			➢ Contrast and compare major elements of the .NET Framework and explain how C# fits into the .NET platform.
			➢ Analyze the basic structure of a C# application and be able to document, debug, compile, and run a simple application.

	20120SEC65L	**Oracle Lab**	➢ Unary and Binary table Operations.
			➢ Handling online Transactions.
			➢ Database Connectivity with front-end.
	20120DSC65A	**Data Mining**	➢ Assess raw input data, and process it to provide suitable input for a range of data mining algorithms.
			➢ Characterize and discriminate data summarization forms and determine data mining functionalities.
			➢ Evaluate and select appropriate data-mining algorithms and apply, and interpret and report the output appropriately.
	20120DSC65B	**Artificial Intelligence and Expert Systems**	➢ Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundation.
			➢ Apply basic principles of aim solutions that require problem

			solving, inference, perception, knowledge representation, and learning.
			➢ Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.
			➢ Formalize a given problem in the language/framework of different AI methods.
	20120DSC65C	**Ethical Hacking**	➢ Plan a vulnerability assessment and penetration test for a network.
			➢ Execute a penetration test using standard hacking tools in an ethical manner.
			➢ Report on the strengths and vulnerabilities of the tested network.
			➢ Identify legal and ethical issues related to vulnerability and penetration testing.
	201TAOEC	**Tamil IlakkiyaVaralaru**	➢ Realize how the ancient people changed their life style according

			to the ages
			➢ Obtaining More information about one's culture and tradition;
	201TAOEC	**Development of Mathematical Skill**	➢ Aiming at enriching human excellence;
			. ➢ Select and apply general rules correctly to solve problems including those in real-life contexts. ➢ Write and understand basic proofs.
			➢ Develop and maintain problem-solving skills.
			➢ Use mathematical ideas to model real-world problems.
	201PHOEC	**Instrumentation**	➢ Measurement of R,L,C ,Voltage, Current, Power factor , Power, Energy
			➢ Ability to balance Bridges to find unknown values.

			➢ Ability to use Digital voltmeters
			➢ Ability to measure strain, displacement, Velocity, Angular Velocity, temperature, Pressure , Vacuum, and Flow.
	201CHOEC	**Food and Adulteration**	➢ Understand, identify and analyze a problem related to food industry and ability to find an appropriate solution for the same.
			➢ Design, implement and evaluate a research based project to meet demands of the society. ➢ Use appropriate techniques, skills, and modern tools in the food industry and in academic profession.
			➢ Understanding of professional, ethical, legal, security and social issues and responsibilities for entrepreneurship skills.
			➢ Use appropriate techniques, skills, and modern tools in the food industry and in academic profession.

	201MBOEC	**Wildlife Conservation**	➢ Understand the factors affecting the need to find sustainable practices for production of food, feed and fiber crops and how to implement them.
			➢ Competent in basic forest management principles and evaluation of forest stands for health, wildlife habitat and lumber use.
	22120PRW66	**E-Learning**	➢ Students will be able to write a well formed / valid XML document.
			➢ Students will be able to connect a java program to a DBMS and perform insert, update and delete operations on DBMS table
	201CMOEC	**Banking Service**	➢ Understand the ability to use accounting concepts, principles, and frameworks to analyze and effectively communicate information to a variety of audiences.
			➢ Apply the ability to use accounting information to solve

			a variety of business problems.
	20120PRW66	**Project Work**	➢ For a selected research topic, student manager will be able to compile the relevant literature and frame hypotheses for research as applicable
			➢ For a selected research topic, student manager will be able to plan a project.
	201SSCIM	**Interview Skills Training and Mock Test**	➢ Help candidates reduce their stress and anxiety before a real job interview.
			➢ Provide you with useful feedback in a low-stress environment.
	201LSCCE	**Community Engagement**	➢ Experience the personal benefits of forming reciprocal relationships in one's community, including joy, fulfillment, and well-being.

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SCHOOL OF ARTS AND SCIENCE

2022 REGULATION

MCA

Sem	Course code	Course title	CO's
I	**20220SEC11**	**J2EE programming**	➢ Understand the format and use of objects.
			➢ Understand basic input/output methods and their use.
			➢ Understand development of JAVA applets vs. JAVA applications.
	20220SEC12	**Relational Data Base Management System**	➢ Design a database using ER diagrams and map ER into Relations and normalize the relations.
			➢ Acquire the knowledge of query evaluation to monitor the performance of the DBMS.
			➢ Identify what students will know and be able to do if they master the material.
			➢ Identify what students will know and be able to do if they master the material.
	20222SEC13	Routing and Switching in LAN	➢ Students develop PERT and CPM networks and finding the shortest path
			➢ Understand the concept of sequencing problems and game theory
			➢ Students gets the knowledge about inventory theory
			➢ Extend knowledge to Non Linear Programming Problems

	20212SEC14	**Discrete Mathematics**	➢ The common 2-year sequence works well for many disciplines.
			➢ Topics can be introduced ""just-in-time"" for many disciplines.
			➢ Ability study of mathematical structures that are countable or otherwise distinct and separable.
			➢ Examples of structures that are discrete are combinations, graphs, and logical statements. Discrete structures can be finite or infinite.
	20220SEC15L	**J2EE programming Lab**	➢ The students able to Design and develop GUI applications using Abstract Windowing Toolkit (AWT)
			➢ Programmer training by creating standardized, reusable modular components and by enabling the tier to handle many aspects of programming automatically.
			➢ Swing and Event Handling
			➢ Web applications and Designing
			➢ Enterprise based applications for business logic
	20220SEC16L	**RDBMS Lab**	➢ Can Declare and enforce integrity constraints on a database using a state-of-the-art.
			➢ Programming PL/SQL including stored Procedures.

	20222DSC17A	Mobile Computing	➢ Analyze processor Performance improvement using instruction level parallelism.
			➢ Learn the function of each element of a memory hierarchy.
			➢ Articulate design issues in the development of processor or other components that satisfy design requirements and objectives.
	20222DSC17B -	Knowledge based decision support system	➢ Analyze processor Performance improvement using instruction level parallelism.
			➢ Study various data transfer techniques in digital computer.
	20222RLC18	Research Led Seminar	➢ The exam is supposed to measure the learning outputs of the program as a whole not a individual course.
			➢ The primary purpose of the exit exams is to assess students' educational achievement in the courses in their major area of program study.
	20220SEC21	**Python Programming**	➢ To implement the python programming features in practical applications
			➢ To implement Python programs with conditionals and loops
			➢ Represent compound data using Python lists, tuples, dictionaries, turtles, Files and modules
			➢ Use functions for structuring Python programs.

	20220SEC22	**Cryptography & Network Security**	➢ Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.
			➢ Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.
	20220SEC23	Open Source programming	➢ Graduates of the program are expected to demonstrate the problem
			➢ An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
			➢ To Explain methods of capturing, specifying, visualizing and analyzing software requirements.
	20220SEC25L	**Python Programming Lab**	➢ Able to determine the methods to create and manipulate Python programs.
			➢ By utilizing the data structures like lists, dictionaries, tupelos and sets.
			➢ Identify the commonly used operations involving file systems and regular expressions
			➢ Duck typing and huge standard library
			➢ Presence of third-party modules.
	20220SEC24	Web Service	➢ To introduce Basic Unix general purpose Commands

			➢ To learn C programming in Unix editor environment. ➢ To learn shell script and sed concepts.
	20222SEC26L	Open Source programming Lab	➢ To impart basic proficiency in representing difficult real life problems in a state space representation so as to solve them using AI techniques like searching and game playing ➢ To introduce advanced topics of AI such as planning, Bayes networks, ➢ Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them. ➢ Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing
	20222DSC27A	Game Programming	➢ To understand the main components of an OS & their functions. ➢ To study the process management and scheduling. ➢ To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC.
	20222DSC27B	Multimedia and Graphics	➢ Develop open source programming products which are normally free to download, although it does incur running costs such as storage and computing power. ➢ Even those rare paid-for open source products still tend to be far cheaper than closed source alternatives

			➢ Understand process of executing a PHP-based script on a webserver.
			➢ Be able to develop a form containing several fields and be able to process the data provided on the form by a user in a PHP-based script.
			➢ Understand basic PHP syntax for variable use, and standard language constructs, such as conditionals and loops
	20222DSC27C	Middleware Technology	➢ To demonstrate advanced knowledge of networking understands the key protocols which support the Internet.
			➢ Be familiar with several common programming interfaces for network communication.
	20222RMC28	Research Methodology	➢ These students able to develop efficient open source programmers for rapidly developing network world
	20222BRC29	Participation in Bounded Research	➢ The students are able to develop programs using C# based on object oriented concepts
			➢ Write the ROBUST, EXTENSIBLE and EFFICIENT programs by using c# code and ASP.Net
			➢ Create dynamic web pages for further development.
			➢ It provides re-usability.
	IIII 20222SEC31	Data mining and warehousing	➢ Ability to estimate if a system takes distributed system characteristic into account in a reasonable way.
			➢ Knowing the basic structures (e.g. client-server) and knowing the existing middleware frameworks.
			➢ Ability to estimate framework suitability for different applications.
			➢ Ability to implement a simple distributed software laboratory work with socket and RMI interfaces.

	20222SEC32	Grid and Cloud Computing.	➢ These students able to understand and develop wireless communication and its infrastructure. ➢ Understand design considerations for wireless communication networks
			➢ Understand the fundamentals of wireless networks.
			➢ Learn and analyze the different wireless technologies.
			➢ These students able to understand and develop wireless communication and its infrastructure.
	20222SEC33	.NET Programming	➢ It provides re-usability.
			➢ Create web-based distributed applications using ASP.NET, SQL Server and ADO.NET
	20222SEC34	Object Oriented System Design	➢ Develop menu based program for text manipulation.
			➢ Utilize the .NET environment to create Web Service-based applications and components.
			➢ Less Coding and Increased Reuse of Code: This framework works on object-oriented programming which eliminates unnecessary codes and involves less coding for the developers.
	20222SEC35L	.NET Programming Lab.	➢ Securing confidential information.
			➢ Protection from malicious attacks on your network.

			➢ Develop an understanding of security policies.
	20222DSC 36A	Information Security	➢ Deletion and/or guaranteeing malicious elements within a preexisting network.
			➢ Prevents users from unauthorized access to the network.
			➢ Upon completion of the course, the student should be able to
			➢ Analyze various protocols for It Security based orientation.
	20222DSC36B	Internet of Things	➢ Develop web services to access/control IoT devices.
			➢ Design a portable IoT using Rasperry Pi
			➢ Deploy an IoT application and connect to the cloud.
			➢ Analyze applications of IoT in real time scenario
	20222DSC36C	M-Marketing	➢ Upon Completion of the course, the students should be able to Business techinques
			➢ Analyze various mobile marketing strategies.
	20222SRC37	Societal project (Mini Project)	➢ To understand and implement automated software testing techniques for Web testing, Performance testing, and GUI testing.

			➢ To develop, implement, and demonstrate the learning through a project that meet stated specifications.
	20222SEC41	**Human Computer Interaction**	➢ 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 Websites.
	20222SEC42	Software Project Management	➢ An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.
			➢ An understanding of the content of learning materials available from e-skills UK and how these can be used with learners to develop multimedia products
			➢ To work with learners to plan and create a multimedia product that includes animation, audio and video
			➢ An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.
	20222SEC43	Big Data	➢ In Business it helps streamline processes and improve efficiency in terms of organization.
			➢ It facilitates communication between the system.
	20222PRW44	Project work	➢ Can be able to develop plans with relevant people to achieve the project's goals.
			➢ Break work down into tasks and determine handover procedures.

			➢ Identify links and dependencies, and schedule to achieve deliver able handover
	20222PEE	Program Exit Examination	➢ The exam is supposed to measure the learning outputs of the program as a whole not a individual course.
			➢ The primary purpose of the exit exams is to assess students' educational achievement in the courses in their major area of program study.
			➢ The exam is supposed to measures the learning outputs of the program as a whole not the individual courses.

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT ON COMPUTER SCIENCE

MSC CS

Sem	Course code	Course title	CO's
I	**20220SEC11**	**J2EE programming**	➢ Understand the format and use of objects.
			➢ Understand basic input/output methods and their use.
			➢ Understand development of JAVA applets vs. JAVA applications.
	20220SEC12	**Relational Data Base Management System**	➢ Design a database using ER diagrams and map ER into Relations and normalize the relations.
			➢ Acquire the knowledge of query evaluation to monitor the performance of the DBMS.
			➢ Identify what students will know and be able to do if they master the material.
			➢ Identify what students will know and be able to do if they master the material.
	20212SEC13	**Discrete Mathematics**	➢ The common 2-year sequence works well for many disciplines.
			➢ Topics can be introduced ""just-in-time"" for many disciplines.

			➢ Ability study of mathematical structures that are countable or otherwise distinct and separable.
			➢ Examples of structures that are discrete are combinations, graphs, and logical statements. Discrete structures can be finite or infinite.
	20220SEC14L	**J2EE programming Lab**	➢ The students able to Design and develop GUI applications using Abstract Windowing Toolkit (AWT)
			➢ Programmer training by creating standardized, reusable modular components and by enabling the tier to handle many aspects of programming automatically.
			➢ Swing and Event Handling
			➢ Web applications and Designing
			➢ Enterprise based applications for business logic
	20220SEC15L	**RDBMS Lab**	➢ Can Declare and enforce integrity constraints on a database using a state-of-the-art.
			➢ Programming PL/SQL including stored Procedures.
	20220DSC16A	**WAP and XML**	➢ Analyze processor Performance improvement using instruction level parallelism.
			➢ Learn the function of each element of a memory hierarchy.

			➢ Articulate design issues in the development of processor or other components that satisfy design requirements and objectives.
			➢ Analyze processor Performance improvement using instruction level parallelism
	20220DSC16B	**Advanced Computer Architecture**	➢ Analyze processor Performance improvement using instruction level parallelism.
			➢ Study various data transfer techniques in digital computer.
			➢ Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.
			➢ Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.
	20220SEC21	**Python Programming**	➢ To implement the python programming features in practical applications
			➢ To implement Python programs with conditionals and loops
			➢ Represent compound data using Python lists, tuples, dictionaries, turtles, Files and modules
			➢ Use functions for structuring Python programs.
	20220SEC22	**Cryptography & Network Security**	➢ Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.

			➢ Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.
	20220SEC23	**Software Engineering**	➢ Graduates of the program are expected to demonstrate the problem
			➢ An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
			➢ To explain methods of capturing, specifying, visualizing and analyzing software requirements.
	20220SEC24L	**Python Programming Lab**	➢ Able to determine the methods to create and manipulate Python programs.
			➢ By utilizing the data structures like lists, dictionaries, tupelos and sets.
			➢ Identify the commonly used operations involving file systems and regular expressions
			➢ Duck typing and huge standard library
			➢ Presence of third-party modules.
	20220SEC25L	**UNIX Lab**	➢ To introduce Basic Unix general purpose Commands
			➢ To learn C programming in Unix editor environment.
			➢ To learn shell script and sed concepts.

	20220DSC26A	**Artificial Intelligence**	➢ To impart basic proficiency in representing difficult real life problems in a state space representation so as to solve them using AI techniques like searching and game playing
			➢ To introduce advanced topics of AI such as planning, Bayes networks,
			➢ Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
			➢ Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing
	20220DSC26B -	**Distributed Operating System**	➢ To understand the main components of an OS & their functions.
			➢ To study the process management and scheduling.
			➢ To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC.
	20220SEC31	**Open Source programming**	➢ Develop open source programming products which are normally free to download, although it does incur running costs such as storage and computing power.
			➢ Even those rare paid-for open source products still tend to be far cheaper than closed source alternatives
			➢ Understand process of executing a PHP-based script on a webserver.
			➢ Be able to develop a form containing several fields and be able to process the data provided on the form by a user in a PHP-based script.

			➢ Understand basic PHP syntax for variable use, and standard language constructs, such as conditionals and loops
	20220SEC32	**.Net Programming**	➢ To demonstrate advanced knowledge of networking understands the key protocols which support the Internet.
			➢ Be familiar with several common programming interfaces for network communication.
	20220SEC33L	**Open Source programming Lab**	➢ These students able to develop efficient open source programmers for rapidly developing network world
	20220SEC34L	.Net Programming Lab	➢ The students are able to develop programs using C# based on object oriented concepts
			➢ Write the ROBUST, EXTENSIBLE and EFFICIENT programs by using c# code and ASP.Net
			➢ Create dynamic web pages for further development.
			➢ It provides re-usability.
	20220DSC35A	Real Time Operating Systems	➢ Ability to estimate if a system takes distributed system characteristic into account in a reasonable way.
			➢ Knowing the basic structures (e.g. client-server) and knowing the existing middleware frameworks.
			➢ Ability to estimate framework suitability for different applications.
			➢ Ability to implement a simple distributed software laboratory work with socket and RMI interfaces.
	20220DSC35B	Wireless Communication Network	➢ These students able to understand and develop wireless communication and its infrastructure. ➢ Understand design considerations for wireless communication networks

			➢ Understand the fundamentals of wireless networks.
			➢ Learn and analyze the different wireless technologies.
			➢ These students able to understand and develop wireless communication and its infrastructure.
	202ENOEC	Writing for the Media	➢ To understand and implement automated software testing techniques for Web testing, Performance testing, and GUI testing.
			➢ To develop, implement, and demonstrate the learning through a project that meet stated specifications.
	202MAOEC	Applicable Mathematics Techniques	➢ Design effective dialog for HCI.
			➢ Design effective HCI for individuals and persons with disabilities.
			➢ Assess the importance of user feedback.
	202PHOEC	Bio-medical Instrumentation	➢ Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Websites.
			➢ Analyze processor Performance improvement using instruction level parallelism.
			➢ Learn the function of each element of a memory hierarchy.
	202CHOE	Green Chemistry	➢ Study various data transfer techniques in digital computer.
			➢ Articulate design issues in the development of processor or other components that satisfy design requirements and objectives.

			➢ Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.
			➢ Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.
	202BCOEC	Herbal Medicines	➢ Compare various Cryptographic Techniques
			➢ Design Secure applications
			➢ Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.
			➢ Formulate and solve problems with uncertain information using Bayesian approaches.
	202CMOEC	Financial Service	➢ To understand the main components of an OS & their functions.
			➢ To study the process management and scheduling.
	IV 20220SEC41	Software Testing	➢ To understand and implement automated software testing techniques for Web testing, Performance testing, and GUI testing.
			➢ To develop, implement, and demonstrate the learning through a project that meet stated specifications.
	20220SEC42	Human Computer Interaction	➢ 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 Websites.
	20220DSC43A	Multimedia and its application	➢ An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.
			➢ An understanding of the content of learning materials available from e-skills UK and how these can be used with learners to develop multimedia products
			➢ To work with learners to plan and create a multimedia product that includes animation, audio and video
			➢ An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.
	20220DSC43B	Middleware Technology	➢ In Business it helps streamline processes and improve efficiency in terms of organization.
			➢ It facilitates communication between the systems.
	20220PRW44	Project work	➢ Can be able to develop plans with relevant people to achieve the project's goals.
			➢ Break work down into tasks and determine handover procedures.
			➢ Identify links and dependencies, and schedule to achieve deliverablehandoverE
	20220PEE	Programme Exit Examination	➢ The exam is supposed to measure the learning outputs of the program as a whole not a individual course.

			➢ The primary purpose of the exit exams is to assess students' educational achievement in the courses in their major area of program study. ➢ The exam is supposed to measures the learning outputs of the program as a whole not the individual courses.

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SCHOOL OF ARTS AND SCIENCE

DEPARTMENT OF COMPUTER SCIENCE

M.Phil

Sem	Course code	Course title	CO's
I	2 203CSC11	Research Methodology	➢ Systematic approach to hierarchical network that support voice, video, and data.
			➢ Idea on VLAN, VTP, STP and Inter-VLAN Routing.
			➢ Components of a wireless LAN and its operations.
	203CSC12	Advanced Technologies in Computer Science	➢ You will also learn how to configure the router and the switch for remote access.
			➢ small business router in order to provide network connectivity in a small LAN environment.
			➢ Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.
			➢ Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
	203CSC13_	Advanced Networking Big Data	➢ Systematic approach to hierarchical network that support voice, video, and data.
			➢ Idea on VLAN, VTP, STP and Inter-VLAN Routing.
			➢ Components of a wireless LAN and its operations.

			➢ You will also learn how to configure the router and the switch for remote access.
	CPE_RPE	**Research and Publication Ethic**	➢ Small business router in order to provide network connectivity in a small LAN environment.
			➢ Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.
			➢ Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
			➢ Systematic approach to hierarchical network that support voice, video, and data.
			➢ Idea on VLAN, VTP, STP and Inter-VLAN Routing.
	203CSD21	**Dissertation - (Topic selected should be relevant to the topic of the In-depth paper**	➢ Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
			➢ Systematic approach to hierarchical network that support voice, video, and data.

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SCHOOL OF ARTS AND SCIENCE

2020 REGULATION

BCA

Sem	Course code	Course title	CO's	PO1	PO2	PO3	PO4	PO5	PO6
I	20110AEC11	Tamil- I	Learn the changes occurred in literature since classical period.	3	1	3	1	3	0
			Obtaining More information about one's culture and tradition	2	0	3	2	1	0
			Encourage creative writing and developing self-confidence.	1	2	3	3	3	1
	20132AEC11	Hindi-I	Enables other state students to continue their learning phase without any disruptions.	2	1	3	2	1	0
			Through this language they can learn spirituality.	2	0	3	1	2	0
			Students can learn social discrimination	2	3	1	2	1	1

			Students can learn grammar techniques	2	1	2	1	3	0
	20111AEC11	**Advanced English-I**	Academic skills in preparation for tertiary study.	1	2	1	1	2	3
			Presentation and participation skills.	3	2	1	1	2	2
			Learning strategies and research skills	1	2	3	1	2	1
			Academic essay and report writing skills	2	0	1	3	1	1
	20135AEC11	**French-I**	Focus on all four modalities of the language: speaking, listening, reading and writing	3	2	1	1	2	2
			As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking	1	2	3	1	2	1
			Students can compare and contrast cultural practices as they relate to French and American culture.	2	0	1	3	1	1
	20111AEC12	**English-I**	Focus on all four modalities of the language: speaking, listening, reading and writing	2	3	2	2	3	1
			As well as knowledge of Francophone cultures and the skills of collaboration and	1	2	3	1	2	1

			critical thinking						
			Students can compare and contrast cultural practices as they relate to French and American culture.	2	1	2	1	3	0
			Improves their proficiency in English language.	1	2	1	1	2	3
			Develops functional communicative aspect of language through a series of real life tasks	3	2	1	1	2	2
	20122SEC13	**Programming in C with C++**	To understand the principles of Python and acquire skills in programming in python To develop the emerging applications of relevant field using Python	1	2	3	1	2	1
			Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.	2	0	1	3	1	1

	20112AEC15B	**CLASSICAL ALGIBRA**	Understand the theory of, and be able to solve problems in Caylee Hamilton Theorem, and finding the Eigen values & Eigen vectors	2	3	2	2	3	1
			Able to manipulate relation between root and coefficients, symmetric functions of the roots in terms of the coefficients and transformation of equation	3	0	3	3	2	3
			be able to calculate summation related to Binomial,	2	1	2	3	1	3
			be able to calculate summation related to Binomial, Exponential and Logarithmic series	3	2	1	1	1	0
	20112AEC16B	**Numerical And Statistical Methods**	Apply numerical methods to find the solution of algebraic equations using different meth od and numerical	2	0	1	1	2	0
			Apply various interpolation methods and finite difference concepts.	2	3	1	1	3	1

			Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.	2	1	1	3	1	0
			Solve a differential equation using an appropriate numerical method	1	2	2	2	3	0
	20122SEC14L	**Programming in C with C++ Lab**	To implement the python programming features in practical applications	2	3	1	1	3	1
			To implement Python programs with conditionals and loops	2	1	1	3	1	0
			Represent compound data using Python lists, tuples, dictionaries, turtles, Files and modules	1	2	2	2	3	0
			Use functions for structuring Python programs.	3	2	1	2	1	1
	20120SEC01A	**Skill Based Elective -I**	To make the students understand about the Democratic Rule and Parliamentarian administration.	2	1	3	1	3	1

			To appreciate the salient features of the Indian Constitution	2	1	1	3	1	0
	20111SEC01L	**Communicative English Lab-I**	Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.	1	2	1	2	3	0
			From case studies of lives of great and successful people who followed and practiced human values and achieved self-actualization.	3	2	3	2	1	3
			Realize their potential as human beings and conduct themselves properly in the ways of the world.	2	3	1	1	1	2
	201INDCONS	**Indian Constitution**	Democratic values and citizenship Training are gained.	1	2	1	2	3	0
			Awareness on Fundamental Rights are established	3	2	3	2	1	3

			Learn the functions of union and State Governments	1	2	1	2	3	0
			Learn the power and functions of the Judiciary	3	2	3	2	1	3
II	**20110AEC21**	**Tamil- II**	Know what devotion really is. Know the fruitfulness obtained through devotion	2	1	3	2	1	1
			Perceive the progress achieved in the society through devotion	2	0	1	2	3	0
			Obtaining More information about one's culture and tradition	2	1	2	3	1	1
			Encourage creative writing and developing self-confidence.	2	1	2	3	1	0
			Aiming at enriching human excellence	2	1	1	3	2	3

	20132AEC21	**Hindi-II**	Enables other state students to continue their learning phase without any disruptions	1	2	2	2	3	1
			Through this language the can learn spirituality Students can learn grammar techniques. Enables them to enhance their language skills. Enables them to develop creative writing.	2	2	3	2	2	1
			Students can learn social discrimination.D18	1	1	1	3	1	2
	20111AEC21	**Advanced English-II**	Communicate effectively in most daily practical and social situations at both concrete and abstract levels	2	0	2	3	1	1
			Participate in formal and informal conversations involving problem solving and decision making	2	1	3	1	1	0
			Speak on familiar concrete topics at a descriptive level and present a detailed analysis or comparison	2	0	1	3	1	1

			Demonstrate an increased ability to respond appropriately to the formality level of a social interaction	2	1	2	2	3	1
	20135AEC21	**French-II**	Focus on all four modalities of the language: speaking, listening, reading and writing.	2	1	1	1	2	3
			As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking.	3	2	1	1	2	1
			Students can compare and contrast cultural practices as they relate to French and American culture	3	2	1	1	2	1
	20111AEC22	**English-II**	Read and appreciate literature	2	3	1	1	1	0
			Know more about Mahatma Gandhi, Mother Teresa, and Martin Luther King.	2	1	2	3	1	0

			Describe Daffodils, beauty of Byron‘s Maid, Painful account of apple- pickers	2	1	3	2	3	0
			Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary	2	1	2	2	2	3
			Gain vocabulary through reading. Acquire fluency in English language.	3	1	3	2	2	2
	20122SEC23	**Data Structure and Algorithms**	To understand the core principles of the Java Language	3	2	3	3	2	3
			To study about Graphics programming using java Language	2	2	3	2	3	3
	20112AEC25B	**Discrete Mathematics**	Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives	3	2	3	2	3	3
	20112AEC26B	**Operations Research**	Identify and develop operational research	3	2	2	2	3	3

			models from the verbal description of the real system						
			Use mathematical software to solve the proposed models.	2	3	1	2	1	3
			Develop a report that describes the model And the solving technique, analyses the results and propose recommendations in language	2	1	3	1	2	0
			Understand variety of problems such as assignment, transportation, travelling salesman etc.	1	1	2	2	3	0
	20122SEC24L	**Data Structure and Algorithms Lab**	Implement the concept of data structures through ADT including List, Stack, and Queues.	2	1	1	2	2	3
			create a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing	3	0	2	3	2	

			Toolkit (AWT) & Swings						
			apply event handling on AWT and Swing components	1	2	2	2	1	3
			Learn to access database through Java programs, using Java Data Base Connectivity (JDBC)	2	0	3	2	2	2
	20120SEC02A	**Skill Based Elective-II**	Indicate the names and functions of the Excel interface components. Enter and edit data.	1	2	1	2	3	0
	20122RLC27	**Research Led Seminar**	Learning to communicate through the digital media .By the end of this program participants should have a clear understanding of what good	2	2	1	2	2	1

			Understand the importance of empathetic listening	2	1	3	2	2	2
			Explore communication beyond language.	3	1	2	1	1	0
			Communication skills are and what they can do to improve their abilities. Understand role of communication in teaching-learning process	1	2	3	1	1	0
	20111SEC02L	**Communicative English Lab-II**	Improves comprehension and retention. Develop speaking and writing skills	1	2	1	2	3	0
			Builds confidence in handling English language. Develops ideas with coherence and cohesion.	3	2	3	2	1	3
	IIII 20110AEC31	**Tamil-III**	Achieve one's goal by following the ancestral path.	2	0	3	2	2	0

			Obtaining More information about one's culture and tradition;						
			They will expose themselves into many question and answer session in research stations through which they can mould themselves for their better subject knowledge.	2	3	1	2	1	1
	20132AEC31	**Hindi-III**	Enables other state students to continue their learning phase without any disruptions.	2	1	2	3	2	0
			Through this language they can learn spirituality.	1	2	1	2	3	0
			Students can learn social discrimination.D18.	2	1	3	2	2	0
	20111AEC31	**Advanced English-III**	Follow main ideas, key words, and important details in an authentic 2-3 page text on a familiar and partially predictable topic.	2	3	1	3	2	0

			Read in English for information, to learn the language and to develop reading skills.	2	0	1	3	1	0
			Write coherent paragraphs on familiar topics with clear main ideas and some supporting details. Develop a sense of audience.	3	1	2	3	2	1
	20135AEC31	**French-III**	Focus on all four modalities of the language: speaking, listening, reading and writing.	2	3	1	1	2	2
			As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking.	1	2	3	2	1	1
			Students can compare and contrast cultural practices as they relate to French and American culture.	2	1	3	2	1	2
			Students can demonstrate critical thinking and Collaborative problem-solving through	2	1	2	1	2	3

			advanced task-based language activities.						
	20111AEC32	**English-III**	Gain vocabulary through reading. Acquire fluency in English language	1	2	1	2	3	0
			Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary	3	2	3	2	1	3
			Describe Daffodils, beauty of Byron‘s Maid, painful account of apple- pickers	2	3	1	1	1	2
			Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary	1	2	1	2	3	0
	20122SEC33	**Internet and Java Programming**	Students list the visual programming concepts. Explain basic concepts and definitions. Express constants and arithmetic operations.	2	1	1	2	2	1

			· The students can learn in selection of suitable farm equipment for tillage to harvest based on field and crop conditions.	2	1	3	3	2	2
			· The students can able to estimate the cost of farm equipment operation, coverage and power requirements	2	3	3	2	2	1
			· Students prepare various projects by helping visual programming.	3	1	3	3	2	2
	20122SEC34L	**Internet and Java Programming Lab**	Cognitive abilities and skills relating to solution of problems in Physics and Physics Related Disciplines	2	1	3	3	2	3
			Practical skills relating to the conduct of laboratory and industrial work in General skills relating to non-subject specific competencies, communication, ICT knowledge, interpersonal, organization skills and ethical standards.	3	3	1	2	1	3

	20161SEC35	**Financial Accounting**	To understand arithmetic operations Develop the skill of recording financial transactions and preparation of reports in accordance with GAAP	2	2	3	1	2	3
			To understand string and matrix operations	2	2	1	3		3
	20113AEC36C	**Applied physics Lab-I**	An ability to apply knowledge of mathematics, science, and engineering. Graduates should transform knowledge of mathematics, Physics, chemistry, Engineering Mechanics, probability and statistics, and engineering drawing in solving a wide range of civil engineering problems.	3	1	3	1	3	0
			An ability to design, implement, evaluate a system and conduct experiments, as well as to analyze and interpret data. Graduates should show that they can make decisions regarding type, and number of data points to be collected, duration of the experiment	2	0	3	2	1	0

			data points to be collected, duration of the experiment to obtain intended results, and demonstrate an understanding of accuracy and precision of data	1	2	3	3	3	1
			An ability to design, implement and evaluate a system, or process to meet desired needs Graduates should be able to identify the project goal;	2	1	3	2	1	0
III	**20122RMC37**	**Research Methodology**	Students who complete this course will be able to understand and comprehend the basics in research methodology and applying them in research/ project work.	2	0	3	1	2	1
			This course will help them to select an appropriate research design.	1	2	1	2	3	0
			The course will also enable them to collect the data, edit it properly and analyses it accordingly. Thus, it will facilitate students' prosperity in higher education.	2	3	1	1	3	0

			With the help of this course, students will be able to take up and implement a research project/ study.	1	1	1	3	1	0
	20120SEC03A	**Skill Based Elective –III**	Recognize when to use each of the Microsoft Office programs to create professional and academic documents.	2	1	3	2	3	0
			Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.	3	2	3	2	1	3
	20111SEC03L	**Communicative English Lab-III**	Learns to analyze unfamiliar words by understanding the structure of the English language.	1	2	1	2	3	0
IV	**20110AEC41**	**Tamil-IV**	Realize how the ancient people changed their life style according to the ages	3	1	2	1	2	0

			Learn how to change one's lifestyle according to the needs of the future	2	3	1	2	1	1
			Obtaining More information about one's culture and tradition; Encourage creative writing and developing self-confidence.	1	2	3	1	2	1
	20132AEC41	**Hindi-IV**	Enables other state students to continue their learning phase without any disruptions.	2	1	2	1	3	0
			Through this language they can learn spirituality.	1	2	1	1	2	3
			Students can learn social discrimination.D18.	3	2	1	1	2	2
	20111AEC41	**Advanced English-IV**	Make oral presentations effectively for academic purposes by using appropriate discourse markers, transitions and	1	2	3	1	2	1

			conjunctions.						
			Respond to spoken discourse in their content courses and academic presentations.	2	0	1	3	1	1
			Follow oral instructions, identify details, and evaluate the speakers' viewpoints and attitudes	2	3	2	2	3	1
	20135AEC41	**French-IV**	Focus on all four modalities of the language: speaking, listening, reading and writing. As well as knowledge of Francophone cultures and the skills of collaboration and critical	3	0	3	3	2	3
			Students can compare and contrast cultural practices as they relate to French and American culture.	2	1	2	3	1	3
	20111AEC42	**English-IV**	Know about genius of Shakespeare, Martin Luther King, Mahatma Gandhi, and Mother Teresa.	3	2	1	1	1	0

			Describe Daffodils, beauty of Byron‘s Maid, Painful account of apple- pickers.	2	0	1	1	2	0
			Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary	2	1	1	3	3	0
	20122SEC43	**Visual Programming**	Learners will be able to design web applications using ASP.NET	1	1	3	2	3	1
			Learners will be able to use ASP.NET controls in web applications	2	0	3	2	1	0
	20122SEC44L	**Visual Programming Lab**	Write Visual Basic programs using object-oriented programming techniques including classes, objects, methods, instance variables, composition, and inheritance, and polymorphism	1	2	1	2	3	0

			Create one and two dimensional arrays for sorting, calculating and displaying of data.	1	2	1	2	3	0
	20113AEC45C	**Allied Physics –II Digital Electronics**	Effectively use and critically evaluate current technical/scientific research literature, online information, as well as information related to scientific issues in the mass media	2	1	3	1	2	0
			Integrate and relate scientific knowledge learned from classroom with real life situations.	2	3	1	1	3	1
			Students acquire knowledge about the plant and host relationship and their management	2	1	1	3	1	0
			They get knowledge about the integrated management of plant diseases and pest.	1	2	2	2	3	0
	20120SEC04A	**Skill Based Elective-IV**	Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.	3	2	1	1	1	3

			Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.	2	1	3	1	1	0
			Demonstrate proficiency in quantitative methods, qualitative analysis, critical thinking, and written and oral communication needed to conduct high- level work as interdisciplinary scholars and/or practitioners.	1	1	1	3	1	2
			Analyze the ecosystem and able to understand the different types of pollutions in country. Learn about environmental pollution.	1	3	2	2	3	0
	20111SEC04L	**Communicative English Lab-IV**	Learners will be able to design web applications using ASP.NET	1	2	3	3	2	3
			Learners will be able to create database driven ASP.NET web applications and web services	3	2	1	1	1	0

			demonstrate advanced knowledge of programming for network communications						
	201ENVTSTU	**Environmental Studies**	Effectively use and critically evaluate current technical/scientific research literature, online information, as well as information related to scientific issues in the mass media	3	1	2	1	1	1
			Integrate and relate scientific knowledge learned from classroom with real life situations.	2	1	3	1	1	0
V	**20122SEC51**	**Relational Database Management Systems**	Help students to develop essential skills to influence and motivate others	2	0	1	1	3	0
			Nurture a creative and entrepreneurial mindset	2	0	1	1	1	3
			Make students understand the personal values and apply ethical principles in professional	2	1	3	1	2	0
	20122SEC52	**NET Programming**	Identify the components required to build different types of networks.	3	1	1	2	2	1

			Another node. Identify the components required to build different types of networks	3	2	2	3	3	2
			· Learning all farm activities field management and to gain maximum knowledge about crops of a particular season	2	3	2	1	1	3
	20122SEC53	**Designing and supporting Computer Networks**	Design various Scheduling algorithms.	1	2	2	3		3
			Compare and contrast various memory management schemes.	1		2	1	3	3
			Design and Implement a prototype file systems.	3	2	1	1	1	1
	20122SEC54L	**Oracle Lab**	Design and implement programs on 8086 microprocessor.	1	1	1	3	1	0

			Design and implement 8051 microcontroller based systems	1	2	1	2	3	0
	20122SEC55L	**.NET Programming Lab**	Identify the architecture, infrastructure and delivery models of cloud computing	1	1	3	1	2	1
			Address the core issues of cloud computing such as security, privacy and interoperability	2	1	1	3	2	0
			· The students will be able to undertake commercial cultivation of flower crop, medicinal and aromatic plants.	2	1	3	2	1	0
			· Students will gain knowledge to establish different type's garden in various locations.	3	3	1	2	2	0
	20122DSC56A	**Computer Organization and Architecture**	Understand Distributed systems design and implementation	1	2	3	3	3	1
			Use Middleware to Build Distributed Applications	2	0	2	2	3	3

	20122DSC56B	**E-learning**	Make basic use of Enterprise software, and its role in integrating business functions	2	1	1	2	1	2
			Analyze the strategic options for ERP identification and adoption.	2	1	3	2	1	2
			Design the ERP implementation strategies.	3	2	1	2	1	1
			Create reengineered business processes for successful ERP implementation.	2	1	3	1	3	0
	20122BRC57	**Participation in Bounded Research**	Design and implement programs on 8085 microprocessor.	2	1	1	3	1	0
			Design and implement 8051 microcontroller based systems	1	2	1	2	3	1

			· The student will learn the types of Intellectual Property and legislations covering IPR in India: Patents, Copyrights, Trademark, Industrial design, Geographical indications, Integrated circuits, and Trade secrets.	3	2	3	2	1	1
	20120SEC05A	**Skill Based Elective-V**	Execute the Unix Shell programming on the given system configuration.	2	3	1	1	1	0
			Studying the concepts and applications of remote sensing and image processing in agriculture	2	1	3	2	1	1
			Understanding the concepts of nanotechnology	2	0	1	2	3	0
			Students know about the economic and environmental feasibility of the precision farming technology.	2	1	2	3	1	3
	20111SEC05L	**Communicative English Lab-V**	Prepare their resume in an appropriate template without grammatical and other errors and	2	1	2	3	1	1

			Actively participate in group discussions towards gainful employment	2	1	1	3		1
			Enlist the common errors generally made by candidates in an interview	1	2	2	2	3	0
	VI 20122SEC61	**Advanced Web Technology**	Create web-based distributed applications using ASP.NET, SQL Server and ADO.NET	2	2	3	2	2	0
			Utilize DirectX libraries inthe.NET environment to implement 2D and 3D Animations and game-related graphic displays and audio.	1	1	1	3		0
			Understand the key protocols which support The internet.	1	1	3	2	2	0
	20122SEC62	**Operating System**	Demonstrate the basic elements of a relational database management system.	3	1	2	2	1	0

			Design entity relationship and convert entity relationship diagrams into RDBMS and formulate	2	2	3		3	1
			summarizationforms and determine data mining functionalities	1	1	1	3	1	1
			· Students learn to use the natural farm resources produced within the farm	2	0	1	2	3	2
	20122DSC65A	**Software Project Management**	Assess raw input data, and process it to provide suitable input for a range of data mining algorithms.	3	0	3	1	1	0
			Students will be equipped with management concepts and management of common resources.	3	1	1	1	1	0
			Evaluate and select appropriate data-mining algorithms and apply, and interpret and	2	1	3	1	2	0

	20122DSC65B	**Object Oriented Analysis and Design**	Contrast and compare major elements of the .NET Framework and explain how C# fits into the .NET platform.	2	1	2	3		2
			Analyze the basic structure of a C# application and be able to document, debug, compile, and run a simple application.	2	1	3	3	2	1
			Create methods (functions and subroutines) that can return values and take parameters.	2	0	2	3	1	1
			Use common statements to implement flow control, looping, and exception handling.	2	1	3	1	1	0
	20110OEC	**Tamil Ilakkiya Varalaru**	Summarization forms and determine data mining functionalities.	2	0	1	3	1	1
			· They have been familiarized with methods of food preservation and the fundamentals of human Nutrition.	2	1	2	2	3	1

			Brief knowledge about SQL Fundamentals	2	1	1	1	2	3
	20111OEC	**Journalism**	Develop mathematical thinking and problem solving skills associated with research and writing proofs.	3	2	1	1	2	1
			Get exposure to a wide variety of mathematical concepts used in computer science discipline like probability.	3	2	1	1	2	1
			Understand the mathematical fundamentals that are prerequisites for a variety of courses like Data Mining, Network protocols, analysis of Web traffic, Computer security, Bioinformatics and Machine Learning.	2	3	1	1	1	0
	20112OEC	**Development of Mathematical Skills**	To understand and analyses Information security threats & countermeasures	2	1	2	3	1	0
			To understand penetration and security testing issues	2	1	3	2	3	0

			To understand issues relating to ethical hacking	2	1	2	2	2	3
	20113OEC	**Instrumentation**	To understand and analyses Information security threats & countermeasures	3	1	3	2	2	2
			To understand penetration and security testing issues	3	1	3	1	3	0
			To understand issues relating to ethical hacking	2	0	3	2	1	0
			Develop and maintain problem-solving skills. Use mathematical ideas to model real-world problems	1	2	3	3	3	1
	20114OEC	**Food and Adulteration**	know and demonstrate understanding of the concepts from the five branches of mathematics (Operations Research, Set Theory, statistics, Matrices and Business mathematics)	2	1	3	2	1	0

			use appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations including those in real-life contexts	2	0	3	1	2	-1
	20116OEC	**Wildlife Conservation**	To use the techniques and skills for electrical projects.	2	1	3	1	2	0
			Design a system, component or process to meet desired needs in electrical engineering.	2	3	1	1	3	0
			Measurement of R,L,C ,Voltage, Current, Power factor , Power, Energy	1	1	1	3	1	0
			· Ability to measure strain, displacement, Velocity, Angular Velocity, temperature, Pressure, Vacuum, and Flow.	2	1	3	2	3	0

	20120OEC	**E-Learning**	Ability to apply principles of food engineering in industry	3	2	3	2	1	3
			Related to food industry and ability to find an appropriate solution for the same.	3	1	2	1	2	0
	20161OEC	**Banking Service**	Maintenance of rare species in protected areas such as national parks, sentries etc.,	2	3	1	2	1	1
			Maintenance of rare species in protected areas such as national parks, sentries etc.,	1	2	3	1	2	1
			Protection of wild life through legislation such as banning hunting etc.,	2	1	2	1	3	0
			Imposing specific restrictions on export of endangered plants and animals or their products	1	2	1	1	2	3
	20120SEC06A	**Skill Based Elective –VI**	Acquire knowledge about functionalities of world wide web	3	2	1	1	2	2

			Explore markup languages features and create interactive web pages using them	1	2	3	1	2	1
			Able to design front end web page and connect to the back end databases.	2	0	1	3	1	1
			Acquire knowledge about Open source Java ,Script libraries	2	3	2	2	3	1
	20111SEC06L	**Communicative English Lab-VI**	To help to gather knowledge on banking and Financial system in India.	3	0	3	3	2	3
			various types of risk based by banks	2	1	2	3	1	3
	20122EXACT	**Extension Activities**	Learn to create animated graphics and sound and interactivity	3	2	1	1	1	0
			CD based presentations	2	0	1	1	2	0
			Add and Manage Tweens.	2	1	1	3	3	0

	20122PEE	**Program Exit Examination**	Increases confidence in their ability to read comprehends organize and retain written information.	1	1	3	2	3	1
			Increases Vocabulary through the study of word parts, use of context clues and Practice with a dictionary.	2	0	3	2	1	0
	201LSCIC	**Indian Constitution**	Concept of various organizations, approaches, thoughts of Political Science	1	2	1	2	3	0
			Ability to understand basic foundation of Political Science	3	2	3	2	1	3
			Applying this knowledge in understanding legal studies and political discourse	2	3	1	1	1	2

	201LSCCS	**Communication Skills**	Develop knowledge, skills, and judgment around human communication that facilitate their ability to work collaboratively with others.	1	2	1	2	3	0
			Understand and practice different techniques of communication.	3	2	3	2	1	3
			Practice and adhere to the 7Cs of Communication.	2	3	1	1	1	2
	201SSCBE	**Basic Behavioral Etiquette**	Network effectively, including making introductions, shaking hands, and using business cards appropriately	1	2	1	2	3	0
			Develop an extra edge to establish trust and credibility	3	2	3	2	1	3
			To perform documentation	2	3	1	1	1	2

			To perform accounting operations	3	2	3	1	3	0
	201LSCOA	**Office Automation**	To perform presentation skills	3	2	3	1	3	0
			To perform accounting operations	3	3	1	1	3	0
	201LSCLS	**Leadership and Management Skills**	Identify different leadership styles;	2	3	1	3	3	1
			Communicate effectively by saying no, delegating, and promoting others' growth;	3	1	2	1	2	0
	201SSCAQ	**General Aptitude and Quantitative Ability**	Students will communicate effectively & appropriately in real life situation.	1	1	3	3	2	3
			Students will be able to prepare for various public and private sector exams & placement drives.	2	1	1	1	2	3

	201LSCPS	**Professional Skills**	To Develop Coherence, Cohesion and Competence in Oral Discourse through Intelligible Pronunciation.	1	3	2	1	1	0
			Develop and Expand Writing Skills through Controlled and Guided Activities	1	1	3	2	1	1
	201LSCCE	**Community Engagement**	Demonstrate an ability to engage respectfully with others in a diverse society.	3	1	2	1	3	0
			Demonstrate an ability to engage respectfully with others in a diverse society.	3	2	1	2	2	0
	201SSCIM	**Interview Skills Training and Mock Test**	understand how to decide between the different types of interview	1	1	2	3	1	0

SCHOOL OF ARTS AND SCIENCE

2020 REGULATION

DEPARTMENT OF COMPUTER SCIENCE

BSC CS

Sem	Course code	Course title	CO's	PO1	PO2	PO3	PO4	PO5	PO6
I	20110AEC11	Tamil- I	Learn the changes occurred in literature since classical period.	3	1	3	1	3	0
			Obtaining More information about one's culture and tradition	2	0	3	2	1	0
			Encourage creative writing and developing self-confidence.	1	2	3	3	3	1

	20132AEC11	**Hindi-I**	Enables other state students to continue their learning phase without any disruptions.	2	1	3	2	1	0
			Through this language they can learn spirituality.	2	0	3	1	2	0
			Students can learn social discrimination	2	3	1	2	1	1
			Students can learn grammar techniques	2	1	2	1	3	0
	20111AEC11	**Advanced English-I**	Academic skills in preparation for tertiary study.	1	2	1	1	2	3
			Presentation and participation skills.	3	2	1	1	2	2
			Learning strategies and research skills	1	2	3	1	2	1

			Academic essay and report writing skills	2	0	1	3	1	1
	20135AEC11	**French-I**	Focus on all four modalities of the language: speaking, listening, reading and writing	2	3	2	2	3	1
			As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking	1	2	3	1	2	1
			Students can compare and contrast cultural practices as they relate to French and American culture.	2	1	2	1	3	0
			Improves their proficiency in English language.	1	2	1	1	2	3
			Develops functional communicative aspect of language through a series of real life tasks	3	2	1	1	2	2
	20111AEC12	**English-I**	Read and comprehend literature						

			Understand how to lead one's life realizing the modernity and its environment/atmosphere.						
			Improves their proficiency in English language.						
			Develops effective writing skills.						
			Develops functional communicative aspect of language through a series of real life tasks.						
	20120SEC13	**Programming in C with C++**	Design C Programs for problems.	1	2	3	1	2	1
			Able to understand and design the solution to a problem using object-oriented programming concepts.	2	0	1	3	1	1

	20120SEC16L	**Programming in C with C++ Lab**	Read understand and trace the execution of programs written in C language.						
			Implement programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.						
	20112AEC14B	**CLASSICAL ALGIBRA**	Understand the theory of, and be able to solve problems in Caylee Hamilton Theorem, and finding the Eigen values & Eigen vectors	2	3	2	2	3	1
			Able to manipulate relation between root and coefficients, symmetric functions of the roots in terms of the coefficients and transformation of equation	3	0	3	3	2	3
			be able to calculate summation related to Binomial,	2	1	2	3	1	3

			be able to calculate summation related to Binomial, Exponential and Logarithmic series	3	2	1	1	1	0
	20112AEC15B	**Numerical And Statistical Methods**	Apply numerical methods to find the solution of algebraic equations using diffe rent method and numerical	2	0	1	1	2	0
			Apply various interpolation methods and finite difference concepts.	2	3	1	1	3	1
			Work out numerical differentiati on and integration whenever and wherever routine methods are not applicable.	2	1	1	3	1	0
			Solve a differential equation using an appropriate numerical method	1	2	2	2	3	0

	201LSCIC	**Indian Constitution**	Understand how Constitutions embody certain ideals.	2	3	1	1	3	1
			Learn why there is a need for limits on power in a democratic form of government.	2	1	1	3	1	0
			Understand the difference between monarchy, dictatorship and democracy.	1	2	2	2	3	0
			Describe the importance of Preamble of the Indian Constitution and its significance.	3	2	1	2	1	1
	201LSCUV	**Universal Human Values**	Know about universal human values and understand the importance of values in individual, social circles, career path, and national life.	1	2	1	2	3	0

			From case studies of lives of great and successful people who followed and practiced human values and achieved self-actualization.	3	2	3	2	1	3
			Realize their potential as human beings and conduct themselves properly in the ways of the world.	2	3	1	1	1	2
II	**20110AEC21**	**Tamil- II**	Know what devotion really is. Know the fruitfulness obtained through devotion	2	1	3	2	1	1
			Perceive the progress achieved in the society through devotion	2	0	1	2	3	0
			Obtaining More information about one's culture and tradition	2	1	2	3	1	1
			Encourage creative writing and developing self-confidence.	2	1	2	3	1	0

			Aiming at enriching human excellence	2	1	1	3		3
	20111AEC21	**Hindi-II**	Enables other state students to continue their learning phase without any disruptions	1	2	2	2	3	1
			Through this language the can learn spirituality Students can learn grammar techniques. Enables them to enhance their language skills. Enables them to develop creative writing.	2	2	3	2	2	1
			Students can learn social discrimination.D18	1	1	1	3	1	2
	20111AEC21	**Advanced English-II**	Communicate effectively in most daily practical and social situations at both concrete and abstract levels	2	0	2	3	1	1

			Participate in formal and informal conversations involving problem solving and decision making	2	1	3	1	1	0
			Speak on familiar concrete topics at a descriptive level and present a detailed analysis or comparison	2	0	1	3	1	1
			Demonstrate an increased ability to respond appropriately to the formality level of a social interaction	2	1	2	2	3	1
	20135AEC21	**French-II**	Focus on all four modalities of the language: speaking, listening, reading and writing.	2	1	1	1	2	3
			As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking.	3	2	1	1	2	1
			Students can compare and contrast cultural practices as they relate to	3	2	1	1	2	1

			French and American culture						
			Read and appreciate literature	2	3	1	1	1	0
			Know more about Mahatma Gandhi, Mother Teresa, and Martin Luther King.	2	1	2	3	1	0
			Describe Daffodils, beauty of Byron‘s Maid, Painful account of apple- pickers	2	1	3	2	3	0
			Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary	2	1	2	2	2	3
			Gain vocabulary through reading. Acquire fluency in English language.	3	1	3	2	2	2
	20120SEC23	**Internet and Java Programming**	Understand development of JAVA applets vs. JAVA applications.	3	2	3	3	2	3

			Understand object inheritance and its use.	2	2	3	2	3	3
	20120SEC26L	**Internet and Java Programming Lab**	To develop software applications using Java programming language.	3	2	3	1	3	1
			Write modular, multithreading and event driven programming.	3	2	3	1	3	0
	20112AEC24B	**Discrete Mathematics**	Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives	3	2	3	2	3	3
	20112AEC25B	**Operations Research**	Identify and develop operational research models from the verbal description of the real system	3	2	2	2	3	3
			Use mathematical software to solve the proposed models.	2	3	1	2	1	3

			Develop a report that describes the model And the solving technique, analyses the results and propose recommendations in language	2	1	3	1	2	0
			Understand variety of problems such as assignment, transportation, travelling salesman etc.	1	1	2	2	3	0
	20120RLC27	**Research Led Seminar**	This course provides an experience in leading and participating in a discussion about a scientific paper.	3	2	3	1	3	0
	201LSCCS	**Communication Skill**	Develop speaking and writing skills .	3	2	3	1	3	0
			Identifying strengths and weaknesses of contributions and expanding a discussion beyond the paper content.	3	3	1	1	3	0

			Improves their ability to read and spell words through an analysis of structure of the English language.	3	2	3	1	3	0
	201SSCBE	**Basic Behavioral Etiquette**	Business etiquette training, a key part of soft skills & communication, facilitated by Momentum enlightens participants on the accepted behaviour patterns and manners key to their profession.	**2**	**2**	**1**	**2**	**2**	**1**
			It emphasises on a set of practices used and accepted in a multi-national work environment. .	2	1	3	2	2	2
	IIII **20110AEC31**	**Tamil-III**	Achieve one's goal by following the ancestral path.	2	0	3	2	2	0

			They will expose themselves into many question and answer session in research stations through which they can mould themselves for their better subject knowledge.	2	3	1	2	1	1
	20132AEC31	**Hindi-III**	Enables other state students to continue their learning phase without any disruptions.	2	1	2	3	2	0
			Through this language they can learn spirituality.	1	2	1	2	3	0
			Students can learn social discrimination.D18.	2	1	3	2	2	0
	20111AEC31	**Advanced English-III**	Follow main ideas, key words, and important details in an authentic 2-3 page text on a familiar and partially predictable topic.	2	3	1	3	2	0

			Read in English for information, to learn the language and to develop reading skills.	2	0	1	3	1	0
			Write coherent paragraphs on familiar topics with clear main ideas and some supporting details. Develop a sense of audience.	3	1	2	3	2	1
	20135AEC31	**French-III**	Focus on all four modalities of the language: speaking, listening, reading and writing.	2	3	1	1	2	2
			As well as knowledge of Francophone cultures and the skills of collaboration and critical thinking.	1	2	3	2	1	1
			Students can compare and contrast cultural practices as they relate to French and American culture.	2	1	3	2	1	2

			Students can demonstrate critical thinking and Collaborative problem-solving through advanced task-based language activities.	2	1	2	1	2	3
	20111AEC32	**English III**	Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary.	3	2	3	1	3	0
			Know more about Mahatma Gandhi, Mother Teresa, Martin Luther King.	3	2	3	1	3	0
	20120SEC33	**Visual Programming**	Design, create, build, and debug Visual Basic applications.	2	1	1	2	2	1
			Explore Visual Basic's Integrated Development Environment (IDE).	2	1	3	3	2	2

			Write Windows applications using forms, controls, and events	2	3	3	2	2	1
			Write and apply decision structures for determining different operations.	3	1	3	3	2	2
	20120SEC35L	**Visual Programming Lab**	Apply arithmetic operations for displaying numeric output.	2	1	3	3	2	3
			Apply decision structures for determining different operations.	3	3	1	2	1	3
	20113AEC34A	**Applied physics –I**	Demonstrate a working knowledge of the basic concepts and theories of physics.	2	2	3	1	2	3
			Formulate hypotheses and devise and perform experiments to test a hypothesis as individuals and in a team.	2	2	1	3		3

			Cognitive abilities and skills relating to solution of problems in Physics and Physics Related Disciplines						
	20113AEC36AL	**Applied physics Lab-I**	An ability to apply knowledge of mathematics, science, and engineering. Graduates should transform knowledge of mathematics, Physics, chemistry, Engineering Mechanics, probability and statistics, and engineering drawing in solving a wide range of civil engineering problems.	3	1	3	1	3	0
			An ability to design, implement, evaluate a system and conduct experiments, as well as to analyze and interpret data. Graduates should show that they can make decisions regarding type, and number of data points to be collected, duration of the	2	0	3	2	1	0

			experiment						
			data points to be collected, duration of the experiment to obtain intended results, and demonstrate an understanding of accuracy and precision of data	1	2	3	3	3	1
			An ability to design, implement and evaluate a system, or process to meet desired needs Graduates should be able to identify the project goal;	2	1	3	2	1	0
III	**20120RMC37**	**Research Methodology**	Students who complete this course will be able to understand and comprehend the basics in research methodology and applying them in research/ project work.	2	0	3	1	2	-1
			This course will help them to select an appropriate research design.	3	2	3	1	3	0

			The course will also enable them to collect the data, edit it properly and analyses it accordingly. Thus, it will facilitate students' prosperity in higher education.	2	3	1	1	3	0
			With the help of this course, students will be able to take up and implement a research project/ study.	1	1	1	3	1	0
	201LSCOAN	**OFFICE AUTOMATION**	Recognize when to use each of the Microsoft Office programs to create professional and academic documents.	2	1	3	2	3	0
			Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.	3	2	3	2	1	3

IV	**20110AEC41**	**Tamil-IV**	Realize how the ancient people changed their life style according to the ages	3	1	2	1	2	0
			Learn how to change one's lifestyle according to the needs of the future	2	3	1	2	1	1
			Obtaining More information about one's culture and tradition; Encourage creative writing and developing self-confidence.	1	2	3	1	2	1
	20132AEC41	**Hindi-IV**	Enables other state students to continue their learning phase without any disruptions.	2	1	2	1	3	0
			Through this language they can learn	1	2	1	1	2	3

			spirituality.						
			Students can learn social discrimination.D18.	3	2	1	1	2	2
	20111AEC41	**Advanced English-IV**	Make oral presentations effectively for academic purposes by using appropriate discourse markers, transitions and conjunctions.	1	2	3	1	2	1
			Respond to spoken discourse in their content courses and academic presentations.	2	0	1	3	1	1
			Follow oral instructions, identify details, and evaluate the speakers' viewpoints and attitudes	2	3	2	2	3	1
	19135AEC41	**French-IV**	Focus on all four modalities of the language: speaking, listening, reading and writing.	3	0	3	3	2	3

			As well as knowledge of Francophone cultures and the skills of collaboration and critical						
			Students can compare and contrast cultural practices as they relate to French and American culture.	2	1	2	3	1	3
	20111AEC42	**English-IV**	Know about genius of Shakespeare, Martin Luther King, Mahatma Gandhi, and Mother Teresa.	3	2	1	1	1	0
			Describe Daffodils, beauty of Byron‘s Maid, Painful account of apple- pickers.	2	0	1	1	2	0
			Understand the basic Grammar, and Spoken English. Ability to write composition, letter and vocabulary	2	1	1	3	3	0
	20120SEC43	**Active Server Programming**	Learners will be able to design web applications using ASP.NET	1	1	3	2	3	1

			Learners will be able to use ASP.NET controls in web applications	2	0	3	2	1	0
	20120SEC46L	**Active Server Page Lab**	Analyze the basic structure of a C# application and be able to document, debug, compile, and run a simple application.	2	1	3	1	2	0
			Integrate and relate scientific knowledge learned from classroom with real life situations.	2	3	1	1	3	1
			Use common statements to implement flow control, looping, and exception handling.	2	1	1	3	1	0

			They get knowledge about the integrated management of plant diseases and pest.	1	2	2	2	3	0
	20113AEC44A	**Applied physics –II**	Demonstrate a working knowledge of the basic concepts and theories of physics.	3	2	1	1	1	3
			The Applied Physics program will produce intellectually engaged graduates accomplished in application of fundamental physics principles, and prepared for direct entry into the workplace or continuing professional development.	2	1	3	1	1	0
			Demonstrate a working knowledge of the basic concepts and theories of physics.	1	1	1	3	1	2

	20113AEC47AL	**Applied physics Lab–II**	Integrate and relate scientific knowledge learned from classroom with real life situations.	1	2	3	3	2	3
			Effectively use and critically evaluate current technical/scientific research literature, online information, as well as information related to scientific issues in the mass media.	3	2	1	1	1	0
	22113AEC44AZ	**Applied physics lab II**		3	1	2	1	1	1
			Maintain life-long learning in the sciences and incorporate new information into the existing body of knowledge.	2	1	3	1	1	0
	201ACLSLMS	**Leadership and Management Skills**	Help students to develop essential skills to influence and motivate	2	0	1	1	3	0

			others						
			Nurture a creative and entrepreneurial mindset	2	0	1	1	1	3
			Make students understand the personal values and apply ethical principles in professional	2	1	3	1	2	0
	201ACSSAQA	**General Aptitude and Quantitative Ability**	The student will be able to • Use their logical thinking and analytical abilities to solve Quantitative aptitude questions from company specific and other competitive tests.	3	1	1	2	2	1
			Effort has been made to accommodate fundamental, mathematical aspects to instill confidence among students.	3	2	2	3	3	2

			This course consists of practice exercises for Quantitative or Numerical and Verbal Ability. Prepare for Aptitude Tests for Entrance Exams like GATE, CAT, Bank PO, SAT, GMAT, GRE, UPSC and RRB.	2	3	2	1	1	3
	V 20120SEC51	**Data Communication and Networking**	Choose the required functionality at each layer for given application	1	2	2	3		3
			Trace the flow of information from one node to another node in the network	1		2	1	3	3
			Use data communication vocabulary appropriately when discussing issues with other networking professionals.	3	2	1	1	1	1
	20120SEC52	**Operating System**	Compare and contrast various memory management schemes.	1	1	1	3	1	0

			Design and Implement a prototype file systems.	1	2	1	2	3	0
	20120SEC53	**Microprocessor and its Applications**	Design Memory Interfacing circuits.	1	1	3	1	2	1
			Understand the implementation of Buses	2	1	1	3	2	0
			Design and implement programs on 8086 microprocessor.	2	1	3	2	1	0
			Design and implement 8051 microcontroller based systems	3	3	1	2	2	0
	20120SEC55L	**Microprocessor lab**	Develop testing and experimental procedures on Microprocessor and Microcontroller analyze their operation under different cases.	1	2	3	3	3	1

			Prepare professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.	2	0	2	2	3	3
	20120SEC56L	**Operating System Lab**	Use UNIX/Linux command line (shell) commands to navigate and manage the UNIX/Linux file system, customize the user shell environment,	2	1	1	2	1	2
			Install a Linux operating system with a custom partitioning scheme and log into and out of a UNIX/Linux computer system using graphical and command line environments.	2	1	3	2	1	2

			Use file name globing and regular expressions to find files and text in the system.	3	2	1	2	1	1
			To Manage user and group accounts and permissions.	2	1	3	1	3	0
	20120DSC56A	**Cloud Computing**	Identify the architecture, infrastructure and delivery models of cloud computing	2	1	1	3	1	0
			Address the core issues of cloud computing such as security, privacy and interoperability	1	2	1	2	3	1
			. Apply suitable virtualization concept.	3	2	3	2	1	1
	20120DSC56B		To study how it helps to incorporate	2	3	1	1	1	0

		Middleware Technology	application portability, distributed application component interoperability and integration.						
			Understand Distributed systems design and implementation	2	1	3	2	1	1
			Understand existing Distributed Technologies	2	0	1	2	3	0
			Understand Web services architectures	2	1	2	3	1	3
	20120DSC56C	**Enterprise Resource Planning**	To aim at preparing the students technological competitive and make them ready to self-upgrade with the higher technical skills.	2	1	2	3	1	1
			Actively participate in group	2	1	1	3		1

			discussions towards gainful employment						
			Enlist the common errors generally made by candidates in an interview	1	2	2	2	3	0
	20120BRC57	**Participation in Bounded Research**	Familiar with how to write a good introduction to an educationa; research study and the components that comprise such an introduction.	2	2	3	2	2	0
			To understood a general definition of research design .	1	1	1	3		0
			Improves their ability to read and spell words through an analysis of structure of the English language		1	3	2	2	0
	201ACLSPSL	**Professional Skills**	Develop effective presentation skills. Conduct effective business	3	1	2	2	1	0

			correspondence and prepare business reports which produce results. Conduct effective business correspondence and prepare business reports which produce results.						
			By the end of the soft skills training program, the students should be able to: Develop effective communication skills (spoken and written).	2	2	3		3	1
			summarizationforms and determine data mining functionalities	1	1	1	3	1	1
			· Students learn to use the natural farm resources produced within the farm	2	0	1	2	3	2
	VI 20120SEC61	**NET Programming**	Utilize the .NET environment to create Web Service-based applications and components.	3	0	3	1	1	0

			Demonstrate advanced knowledge of programming for network communications.	3	1	1	1	1	0
			Utilize DirectX libraries in the .NET environment to implement 2D and 3D animations and game-related graphic displays and audio.	2	1	3	1	2	0
	20120SEC62	**Relational Data Base Management System**	Apply security concepts to databases.	2	1	2	3		2
			Apply concurrency control and recovery mechanisms for practical problems.	2	1	3	3	2	1
			Use the Relational model, ER diagrams.	2	0	2	3	1	1

			Design Databases for applications.	2	1	3	1	1	0
	20120SEC64L	**NET Programming Lab**	Use common statements to implement flow control, looping, and exception handling.	2	0	1	3	1	1
			Contrast and compare major elements of the .NET Framework and explain how C# fits into the .NET platform.	2	1	2	2	3	1
			Analyze the basic structure of a C# application and be able to document, debug, compile, and run a simple application.	2	1	1	1	2	3

	20120SEC65L	**Oracle Lab**	Unary and Binary table Operations.	3	2	1	1	2	1
			Handling online Transactions.	3	2	1	1	2	1
			Database Connectivity with front-end.	2	3	1	1	1	0
	20120DSC65A	**Data Mining**	Assess raw input data, and process it to provide suitable input for a range of data mining algorithms.	2	1	2	3	1	0
			Characterize and discriminate data summarization forms and determine data mining functionalities.	2	1	3	2	3	0
			Evaluate and select appropriate data-mining algorithms and apply, and interpret and report the output appropriately.	2	1	2	2	2	3

	20120DSC65B	**Artificial Intelligence and Expert Systems**	Demonstrate fundamental understanding of the history of artificial intelligence(AI) and its foundation.	3	1	3	2	2	2
			Apply basic principles of aim solutions that require problem solving, inference, perception, knowledge representation, and learning.	3	1	3	1	3	0
			Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.	2	0	3	2	1	0
			Formalize a given problem in the language/framework of different AI methods.	1	2	3	3	3	1

	20120DSC65C	**Ethical Hacking**	Plan a vulnerability assessment and penetration test for a network.	3	2	3	1	3	0
			Execute a penetration test using standard hacking tools in an ethical manner.	3	2	3	1	3	0
			Report on the strengths and vulnerabilities of the tested network.	3	3	1	1	3	0
			Identify legal and ethical issues related to vulnerability and penetration testing.	2	3	1	3	3	1
	201TAOEC	**Tamil IlakkiyaVaralaru**	Realize how the ancient people changed their life style according to the ages	2	1	3	2	1	0

			Obtaining More information about one's culture and tradition;	2	0	3	1	2	-1
	201TAOEC	**Development of Mathematical Skill**	Aiming at enriching human excellence;	2	1	3	1	2	0
			. Select and apply general rules correctly to solve problems including those in real-life contexts. Write and understand basic proofs.	2	3	1	1	3	0
			Develop and maintain problem-solving skills.	1	1	1	3	1	0
			Use mathematical ideas to model real-world problems.	2	1	3	2	3	0
		Instrumentation	Measurement of R,L,C ,Voltage,	2	3	1	2	1	1

	201PHOEC		Current, Power factor , Power, Energy						
			Ability to balance Bridges to find unknown values.	1	2	3	1	2	1
			Ability to use Digital voltmeters	2	1	2	1	3	0
			Ability to measure strain, displacement, Velocity, Angular Velocity, temperature, Pressure , Vacuum, and Flow.	1	2	1	1	2	3
	201CHOEC	**Food and Adulteration**	Understand, identify and analyze a problem related to food industry and ability to find an appropriate solution for the same.	3	2	1	1	2	2
			Design, implement and evaluate a research based project to meet	1	2	3	1	2	1

			demands of the society. Use appropriate techniques, skills, and modern tools in the food industry and in academic profession.						
			Understanding of professional, ethical, legal, security and social issues and responsibilities for entrepreneurship skills.	2	0	1	3	1	1
			Use appropriate techniques, skills, and modern tools in the food industry and in academic profession.	2	3	2	2	3	1
	201MBOEC	**Wildlife Conservation**	understand the factors affecting the need to find sustainable practices for production of food, feed and fiber crops and how to implement them.	3	0	3	3	2	3

			competent in basic forest management principles and evaluation of forest stands for health, wildlife habitat and lumber use.	2	1	2	3	1	3
	22120PRW66	**E-Learning**	Students will be able to write a well formed / valid XML document.	3	2	1	1	1	0
			Students will be able to connect a java program to a DBMS and perform insert, update and delete operations on DBMS table	2	0	1	1	2	0
	201CMOEC	**Banking Service**	Understand the ability to use accounting concepts, principles, and frameworks to analyze and effectively communicate information to a variety of audiences.	1	1	3	2	3	1

			Apply the ability to use accounting information to solve a variety of business problems.	2	0	3	2	1	0
	20120PRW66	**Project Work**	For a selected research topic, student manager will be able to compile the relevant literature and frame hypotheses for research as applicable	3	2	3	1	3	
			For a selected research topic, student manager will be able to plan a research design including the sampling, observational, statistical and operational designs if any	3	2	3	1	3	
	201SSCIM	**Interview Skills Training and Mock Test**	Help candidates reduce their stress and anxiety before a real job interview.	3	3	1	1	3	

			Provide you with useful feedback in a low-stress environment.	2	3	1	3	3	
	201LSCCE	**Community Engagement**	Experience the personal benefits of forming reciprocal relationships in one's community, including joy, fulfillment, and well-being.	3	1	2	1	2	
			Being Healthy so that they are physically, mentally, emotionally and sexually healthy, have healthy lifestyles and choose not to take illegal drugs.	1	1	3	3	2	

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THANJAVUR – 613 403 - TAMILNADU

SCHOOL OF ARTS AND SCIENCE

2022 REGULATION

MCA

Sem	Course code	Course title	CO's	PO1	PO2	PO3	PO4	PO5	PO6
I	**20220SEC11**	**J2EE programming**	Understand the format and use of objects.	3	1	3	1	3	0
			Understand basic input/output methods and their use.	2	0	3	2	1	0
			Understand development of JAVA applets vs. JAVA applications.	1	2	3	3	3	1
	20220SEC12	**Relational Data Base Management System**	Design a database using ER diagrams and map ER into Relations and normalize the reltions.	2	1	3	2	1	0
			Acquire the knowledge of query evaluation to monitor the performance of the DBMS.	2	0	3	1	2	0

			Identify what students will know and be able to do if they master the material.	2	3	1	2	1	1
			Identify what students will know and be able to do if they master the material.	2	1	2	1	3	0
	20222SEC13	Routing and Switching in LAN	Students develop PERT and CPM networks and finding the shortest path	1	2	1	1	2	1
			Understand the concept of sequencing problems and game theory	3	2	1	1	2	3
			Students gets the knowledge about inventory theory	1	2	3	1	2	1
			Extend knowledge to Non Linear Programming Problems	2	0	1	3	1	2
	20212SEC14	**Discrete Mathematics**	The common 2-year sequence works well for many disciplines.	1	2	1	1	2	3
			Topics can be introduced ""just-in-time"" for many disciplines.	3	2	1	1	2	2
			Ability study of mathematical structures that are countable or otherwise distinct and separable.	1	2	3	1	2	1
			Examples of structures that are discrete are combinations, graphs, and logical statements. Discrete structures can be finite or infinite.	2	0	1	3	1	1

	20220SEC15L	**J2EE programming Lab**	Thestudents ableto Design and develop GUI applications using Abstract Windowing Toolkit (AWT)	2	3	2	2	3	1
			Programmer training by creating standardized, reusable modular components and by enabling the tier to handle many aspects of programming automatically.	1	2	3	1	2	1
			Swing and Event Handling	2	1	2	1	3	0
			Web applications and Designing	1	2	1	1	2	3
			Enterprise based applications for business logic	3	2	1	1	2	2
	20220SEC16L	**RDBMS Lab**	Can Declare and enforce integrity constraints on a database using a state-of-the-art.	1	2	3	1	2	1
			Programming PL/SQL including stored Procedures.	2	0	1	3	1	1
	20222DSC17A	Mobile Computing	Analyze processor Performance improvement using instruction level parallelism.	2	3	2	2	3	1

			Learn the function of each element of a memory hierarchy.	3	0	3	3	2	3
			Articulate design issues in the development of processor or other components that satisfy design requirements and objectives.	2	1	2	3	1	3
	20222DSC17B -	Knowledge based decision support system	Analyze processor Performance improvement using instruction level parallelism.	2	0	1	1	2	0
			Study various data transfer techniques in digital computer.	2	3	1	1	3	1
	20222RLC18	Research Led Seminar	The exam is supposed to measure the learning outputs of the program as a whole not a individual course.	1	2	1	1	2	1
			The primary purpose of the exit exams is to assess students' educational achievement in the courses in their major area of program study.	3	2	1	1	2	3
	20220SEC21	**Python Programming**	To implement the python programming features in practical applications	2	3	1	1	3	1

			To implement Python programs with conditionals and loops	2	1	1	3	1	0
			Represent compound data using Python lists, tuples, dictionaries, turtles, Files and modules	1	2	2	2	3	0
			Use functions for structuring Python programs.	3	2	1	2	1	1
	20220SEC22	**Cryptography & Network Security**	Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.	2	1	3	1	3	1
			Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.	2	1	1	3	1	0
	20220SEC23	Open Source programming	Graduates of the program are expected to demonstrate the problem	1	2	1	2	3	0
			An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	3	2	3	2	1	3
			To Explain methods of capturing, specifying, visualizing and analyzing software requirements.	2	3	1	1	1	2

	20220SEC25L	**Python Programming Lab**	Able to determine the methods to create and manipulate Python programs.	2	1	3	2	1	1
			By utilizing the data structures like lists, dictionaries, tupelos and sets.	2	0	1	2	3	0
			Identify the commonly used operations involving file systems and regular expressions	2	1	2	3	1	1
			Duck typing and huge standard library	2	1	2	3	1	0
			Presence of third-party modules.	2	1	1	3		3
	20220SEC24	Web Service	To introduce Basic Unix general purpose Commands	1	2	2	2	3	1
			To learn C programming in Unix editor environment.	2	2	3	2	2	1
			To learn shell script and sed concepts.	1	1	1	3	1	2

	20222SEC26L	Open Source programming Lab	To impart basic proficiency in representing difficult real life problems in a state space representation so as to solve them using AI techniques like searching and game playing	2	0	2	3	1	1
			To introduce advanced topics of AI such as planning, Bayes networks,	2	1	3	1	1	0
			Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.	2	0	1	3	1	1
			Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing	2	1	2	2	3	1
	20222DSC27A	Game Programming	To understand the main components of an OS & their functions.	2	1	1	1	2	3
			To study the process management and scheduling.	3	2	1	1	2	1
			To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC.	3	2	1	1	2	1

	20222DSC27B	Multimedia and Graphics	Develop open source programming products which are normally free to download, although it does incur running costs such as storage and computing power.	2	3	1	1	1	0
			Even those rare paid-for open source products still tend to be far cheaper than closed source alternatives	2	1	2	3	1	0
			Understand process of executing a PHP-based script on a webserver.	2	1	3	2	3	0
			Be able to develop a form containing several fields and be able to process the data provided on the form by a user in a PHP-based script.	2	1	2	2	2	3
			Understand basic PHP syntax for variable use, and standard language constructs, such as conditionals and loops	3	1	3	2	2	2
	20222DSC27C	Middleware Technology	To Dmonstrate advanced knowledge of networking understands the key protocols which support the Internet.	3	2	3	3	2	3
			Be familiar with several common programming interfaces for network communication.	2	2	3	2	3	3
	20222RMC28	Research Methodology	Thesestudents able to develop efficient open source programmes for rapidly developing network world	3	2	3	2	3	3

	20222BRC29	Participation in Bounded Research	The students are able to develop programs using C# based on object oriented concepts	3	2	2	2	3	3
			Write the ROBUST, EXTENSIBLE and EFFICIENT programs by using c# code and ASP.Net	2	3	1	2	1	3
			Create dynamic web pages for further development.	2	1	3	1	2	0
			It provides re-usability.	1	1	2	2	3	0
	IIII 20222SEC31	Data mining and warehousing	Ability to estimate if a system takes distributed system characteristic into account in a reasonable way.	2	1	1	2	2	3
			Knowing the basic structures (e.g. client-server) and knowing the existing middleware frameworks.	3	0	2	3	2	
			Ability to estimate framework suitability for different applications.	1	2	2	2	1	3
			Ability to implement a simple distributed software laboratory work with socket and RMI interfaces.	2	0	3	2	2	2
	20222SEC32	Grid and Cloud Computing.	These students able to understand and develop wireless communication and its infrastructure. Understand design considerations for wireless communication networks	2	2	1	2	2	1

			Understand the fundamentals of wireless networks.	2	1	3	2	2	2
			Learn and analyze the different wireless technologies.	3	1	2	1	1	0
			These students able to understand and develop wireless communication and its infrastructure.	1	2	3	1	1	0
	20222SEC33	.NET Programming	It provides re-usability.	2	0	3	2	2	0
			Create web-based distributed applications using ASP.NET, SQL Server and ADO.NET	2	3	1	2	1	1
	20222SEC34	Object Oriented System Design	develop menu based program for text manipulation.	2	1	2	3	2	0
			Utilize the .NET environment to create Web Service-based applications and components.	1	2	1	2	3	0
			Less Coding and Increased Reuse of Code: This framework works on object-oriented programming which eliminates unnecessary codes and involves less coding for the developers.	2	1	3	2	2	0

	20222SEC35L	.NET Programming Lab.	Securing confidential information.	2	3	1	3	2	0
			Protection from malicious attacks on your network.	2	0	1	3	1	0
			Develop an understanding of security policies.	3	1	2	3	2	1
	20222DSC 36A	Information Security	Deletion and/or guaranteeing malicious elements within a preexisting network.	2	3	1	1	2	2
			Prevents users from unauthorized access to the network.	1	2	3	2	1	1
			Upon completion of the course, the student should be able to	2	1	3	2	1	2
			Analyze various protocols for IoT	2	1	2	1	2	3
	20222DSC36B	Internet of Things	Develop web services to access/control IoT devices.	2	1	1	2	2	1

			Design a portable IoT using Rasperry Pi	2	1	3	3	2	2
			Deploy an IoT application and connect to the cloud.	2	3	3	2	2	1
			Analyze applications of IoT in real time scenario	3	1	3	3	2	2
	20222DSC36C	M-Marketing	Upon Completion of the course, the students should be able to Business techinques	2	1	3	3	2	3
			Analyze various mobile marketing strategies.	3	3	1	2	1	3
	20222SRC37	Societal project (Mini Project)	To understand and implement Automated software testing techniques for Web testing, Performance testing, and GUI testing.	2	2	3	1	2	3
			To develop, implement, and demonstrate the learning through a project that meet stated specifications.	2	2	1	3		3
	20222SEC41	**Human Computer Interaction**	Design effective dialog for HCI.	3	1	3	1	3	0
			Design effective HCI for individuals and persons with disabilities.	2	0	3	2	1	0
			Assess the importance of user feedback.	1	2	3	3	3	1

			Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Websites.	2	1	3	2	1	0
	20222SEC42	Software Project Management	An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.	2 2	0 1	3 3	1 1	2 2	-1 0
			An understanding of the content of learning materials available from e-skills UK and how these can be used with learners to develop multimedia products						
			To work with learners to plan and create a multimedia product that includes animation, audio and video	2	3	1	1	3	0
			An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.	1	1	1	3	1	0
	20222SEC43	Big Data	In Business it helps streamline processes and improve efficiency in terms of organization.	2	1	3	2	3	0
			It facilitates communication between the system.	3	2	3	2	1	3
	20222PRW44	Project work	Can be able to develop plans with relevant people to achieve the project's goals.	3	1	2	1	2	0

			Break work down into tasks and determine handover procedures.	2	3	1	2	1	1
			Identify links and dependencies, and schedule to achieve deliverablehandoverE	1	2	3	1	2	1
	20222PEE	Program Exit Examination	The exam is supposed to measure the learning outputs of the program as a whole not a individual course.	2	1	2	1	3	0
			The primary purpose of the exit exams is to assess students' educational achievement in the courses in their major area of program study.	1	2	1	1	2	3
			The exam is supposed to measures the learning outputs of the program as a whole not the individual courses.	3	2	1	1	2	2

SCHOOL OF ARTS AND SCIENCE

2022 REGULATION

MSC CS

Sem	Course code	Course title	CO's	PO1	PO2	PO3	PO4	PO5	PO6
I	**20220SEC11**	**J2EE programming**	Understand the format and use of objects.	3	1	3	1	3	0

			Understand basic input/output methods and their use.	2	0	3	2	1	0
			Understand development of JAVA applets vs. JAVA applications.	1	2	3	3	3	1
	20220SEC12	**Relational Data Base Management System**	Design a database using ER diagrams and map ER into Relations and normalize the relations.	2	1	3	2	1	0
			Acquire the knowledge of query evaluation to monitor the performance of the DBMS.	2	0	3	1	2	0
			Identify what students will know and be able to do if they master the material.	2	3	1	2	1	1
			Identify what students will know and be able to do if they master the material.	2	1	2	1	3	0
	20212SEC13	**Discrete Mathematics**	The common 2-year sequence works well for many disciplines.	1	2	1	1	2	3
			Topics can be introduced ""just-in-time"" for many disciplines.	3	2	1	1	2	2
			Ability study of mathematical structures that are countable or otherwise distinct and separable.	1	2	3	1	2	1

			Examples of structures that are discrete are combinations, graphs, and logical statements. Discrete structures can be finite or infinite.	2	0	1	3	1	1
	20220SEC14L	**J2EE programming Lab**	The students ableto Design and develop GUI applications using Abstract Windowing Toolkit (AWT)	2	3	2	2	3	1
			Programmer training by creating standardized, reusable modular components and by enabling the tier to handle many aspects of programming automatically.	1	2	3	1	2	1
			Swing and Event Handling	2	1	2	1	3	0
			Web applications and Designing	1	2	1	1	2	3
			Enterprise based applications for business logic	3	2	1	1	2	2
	20220SEC15L	**RDBMS Lab**	Can Declare and enforce integrity constraints on a database using a state-of-the-art.	1	2	3	1	2	1

			Programming PL/SQL including stored Procedures.	2	0	1	3	1	1
	20220DSC16A	**WAP and XML**	Analyze processor Performance improvement using instruction level parallelism.	2	3	2	2	3	1
			Learn the function of each element of a memory hierarchy.	3	0	3	3	2	3
			Articulate design issues in the development of processor or other components that satisfy design requirements and objectives.	2	1	2	3	1	3
			Analyze processor Performance improvement using instruction level parallelism	3	2	1	1	1	0
	20220DSC16B	**Advanced Computer Architecture**	Analyze processor Performance improvement using instruction level parallelism.	2	0	1	1	2	0
			Study various data transfer techniques in digital computer.	2	3	1	1	3	1
			Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.	2	1	1	3	1	0

			Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.	1	2	2	2	3	0
	20220SEC21	**Python Programming**	To implement the python programming features in practical applications	2	3	1	1	3	1
			To implement Python programs with conditionals and loops	2	1	1	3	1	0
			Represent compound data using Python lists, tuples, dictionaries, turtles, Files and modules	1	2	2	2	3	0
			Use functions for structuring Python programs.	3	2	1	2	1	1
	20220SEC22	**Cryptography & Network Security**	Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.	2	1	3	1	3	1
			Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.	2	1	1	3	1	0

	20220SEC23	**Software Engineering**	Graduates of the program are expected to demonstrate the problem	1	2	1	2	3	0
			An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	3	2	3	2	1	3
			To Explain methods of capturing, specifying, visualizing and analyzing software requirements.	2	3	1	1	1	2
	20220SEC24L	**Python Programming Lab**	Able to determine the methods to create and manipulate Python programs.	2	1	3	2	1	1
			By utilizing the data structures like lists, dictionaries, tupelos and sets.	2	0	1	2	3	0
			Identify the commonly used operations involving file systems and regular expressions	2	1	2	3	1	1
			Duck typing and huge standard library	2	1	2	3	1	0
			Presence of third-party modules.	2	1	1	3		3

	20220SEC25L	**UNIX Lab**	To introduce Basic Unix general purpose Commands	1	2	2	2	3	1
			To learn C programming in Unix editor environment.	2	2	3	2	2	1
			To learn shell script and sed concepts.	1	1	1	3	1	2
	20220DSC26A	**Artificial Intelligence**	To impart basic proficiency in representing difficult real life problems in a state space representation so as to solve them using AI techniques like searching and game playing	2	0	2	3	1	1
			To introduce advanced topics of AI such as planning, Bayes networks,	2	1	3	1	1	0
			Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.	2	0	1	3	1	1
			Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing	2	1	2	2	3	1

	20220DSC26B -	**Distributed Operating System**	To understand the main components of an OS & their functions.	2	1	1	1	2	3
			To study the process management and scheduling.	3	2	1	1	2	1
			To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC.	3	2	1	1	2	1
	20220SEC31	**Open Source programming**	Develop open source programming products which are normally free to download, although it does incur running costs such as storage and computing power.	2	3	1	1	1	0
			Even those rare paid-for open source products still tend to be far cheaper than closed source alternatives	2	1	2	3	1	0
			Understand process of executing a PHP-based script on a webserver.	2	1	3	2	3	0
			Be able to develop a form containing several fields and be able to process the data provided on the form by a user in a PHP-based script.	2	1	2	2	2	3
			Understand basic PHP syntax for variable use, and standard language constructs, such as conditionals and loops	3	1	3	2	2	2

	20220SEC32	**.Net Programming**	To Demonstrate advanced knowledge of networking understands the key protocols which support the Internet.	3	2	3	3	2	3
			Be familiar with several common programming interfaces for network communication.	2	2	3	2	3	3
	20220SEC33L	**Open Source programming Lab**	These students able to develop efficient open source programmers for rapidly developing network world	3	2	3	2	3	3
	20220SEC34L	.Net Programming Lab	The students are able to develop programs using C# based on object oriented concepts	3	2	2	2	3	3
			Write the ROBUST, EXTENSIBLE and EFFICIENT programs by using c# code and ASP.Net	2	3	1	2	1	3
			Create dynamic web pages for further development.	2	1	3	1	2	0
			It provides re-usability.	1	1	2	2	3	0
	20220DSC35A	Real Time Operating Systems	Ability to estimate if a system takes distributed system characteristic into account in a reasonable way.	2	1	1	2	2	3
			Knowing the basic structures (e.g. client-server) and knowing the existing middleware frameworks.	3	0	2	3	2	
			Ability to estimate framework suitability for different applications.	1	2	2	2	1	3

			Ability to implement a simple distributed software laboratory work with socket and RMI interfaces.	2	0	3	2	2	2
	20220DSC35B	Wireless Communication Network	These students able to understand and develop wireless communication and its infrastructure. Understand design considerations for wireless communication networks	2	2	1	2	2	1
			Understand the fundamentals of wireless networks.	2	1	3	2	2	2
			Learn and analyze the different wireless technologies.	3	1	2	1	1	0
			These students able to understand and develop wireless communication and its infrastructure.	1	2	3	1	1	0
	202ENOEC	Writing for the Media	To understand and implement Automated software testing techniques for Web testing, Performance testing, and GUI testing.	2	0	3	2	2	0
			To develop, implement, and demonstrate the learning through a project that meet stated specifications.	2	3	1	2	1	1
	202MAOEC		Design effective dialog for HCI.	2	1	2	3	2	0

		Applicable Mathematics Techniques	Design effective HCI for individuals and persons with disabilities.	1	2	1	2	3	0
			Assess the importance of user feedback.	2	1	3	2	2	0
	202PHOEC	Bio-medical Instrumentation	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Websites.	2	3	1	3	2	0
			Analyze processor Performance improvement using instruction level parallelism.	2	0	1	3	1	0
			Learn the function of each element of a memory hierarchy.	3	1	2	3	2	1
	202CHOE	Green Chemistry	Study various data transfer techniques in digital computer.	2	3	1	1	2	2
			Articulate design issues in the development of processor or other components that satisfy design requirements and objectives.	1	2	3	2	1	1
			Develop basic skills of secure network architecture and explain the theory behind the security of different cryptographic algorithms.	2	1	3	2	1	2

			Describe common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.	2	1	2	1	2	3
	202BCOEC	Herbal Medicines	Compare various Cryptographic Techniques	2	1	1	2	2	1
			Design Secure applications	2	1	3	3	2	2
			Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.	2	3	3	2	2	1
			Formulate and solve problems with uncertain information using Bayesian approaches.	3	1	3	3	2	2
	202CMOEC	Financial Service	To understand the main components of an OS & their functions.	2	1	3	3	2	3
			To study the process management and scheduling.	3	3	1	2	1	3

	IV 20220SEC41	Software Testing	To understand and implement Automated software testing techniques for Web testing, Performance testing, and GUI testing.	2	2	3	1	2	3
			To develop, implement, and demonstrate the learning through a project that meet stated specifications.	2	2	1	3		3
	20220SEC42	Human Computer Interaction	Design effective dialog for HCI.	3	1	3	1	3	0
			Design effective HCI for individuals and persons with disabilities.	2	0	3	2	1	0
			Assess the importance of user feedback.	1	2	3	3	3	1
			Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Websites.	2	1	3	2	1	0
	20220DSC43A	Multimedia and its application	An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.	2 2	0 1	3 3	1 1	2 2	-1 0
			An understanding of the content of learning materials available from e-skills UK and how these can be used with learners to develop multimedia products						
			To work with learners to plan and create a multimedia product that includes animation, audio and video	2	3	1	1	3	0
			An understanding of multimedia development in the business world, and how successful development is contingent on detailed client specifications, user and audience research, and design decisions taken during the planning phase.	1	1	1	3	1	0

	20220DSC43B	Middleware Technology	In Business it helps streamline processes and improve efficiency in terms of organization.	2	1	3	2	3	0
			It facilitates communication between the system.	3	2	3	2	1	3
	20220PRW44	Project work	Can be able to develop plans with relevant people to achieve the project's goals.	3	1	2	1	2	0
			Break work down into tasks and determine handover procedures.	2	3	1	2	1	1
			Identify links and dependencies, and schedule to achieve deliverablehandoverE	1	2	3	1	2	1
	20220PEE	Programme Exit Examination	The exam is supposed to measure the learning outputs of the program as a whole not a individual course.	2	1	2	1	3	0
			The primary purpose of the exit exams is to assess students' educational achievement in the courses in their major area of program study.	1	2	1	1	2	3
			The exam is supposed to measures the learning outputs of the program as a whole not the individual courses.	3	2	1	1	2	2

SCHOOL OF ARTS AND SCIENCE

2022 REGULATION

M.Phil

Sem	Course code	Course title	CO's	PO1	PO2	PO3	PO4	PO5	PO6

I	**203RMGC11**	**Research Methodology**	Systematic approach to hierarchical network that support voice, video, and data.	3	1	3	1	3	0
			Idea on VLAN, VTP, STP and Inter-VLAN Routing.	2	0	3	2	1	0
			Components of a wireless LAN and its operations.	1	2	3	3	3	1
	203CSC12	**Advanced Technologies in Computer Science**	You will also learn how to configure the router and the switch for remote access.	2	1	3	2	1	0
			small business router in order to provide network connectivity in a small LAN environment.	2	0	3	1	2	0
			Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.	2	3	1	2	1	1
			Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.	2	1	2	1	3	0
	203CSC13_	**Advanced Networking Big Data**	Systematic approach to hierarchical network that support voice, video, and data.	1	2	1	1	2	3
			Idea on VLAN, VTP, STP and Inter-VLAN Routing.	3	2	1	1	2	2
			Components of a wireless LAN and its operations.	1	2	3	1	2	1

			You will also learn how to configure the router and the switch for remote access.	2	0	1	3	1	1
	203RPE14	**Research and Publication Ethic**	Small business router in order to provide network connectivity in a small LAN environment.	2	3	2	2	3	1
			Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.	1	2	3	1	2	1
			Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.	2	1	2	1	3	0
			Systematic approach to hierarchical network that support voice, video, and data.	1	2	1	1	2	3
			Idea on VLAN, VTP, STP and Inter-VLAN Routing.	3	2	1	1	2	2
	203CSD21	**Dissertation - (Topic selected should be relevant to the**	Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.	1	2	3	1	2	1

		topic of the In-depth paper	Systematic approach to hierarchical network that support voice, video, and data.	2	0	1	3	1	1