

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



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RAJAHMUNDRY-533296

PEOs, PSOs & COs

GR-17 CIVIL ENGINEERING

Department Vision: To be the best Civil Engineering department in the region by means of good teaching, research and consultancy that serves the society.

Department Mission:

- Arranging field visits, guest lectures and interactive sessions with subject experts
- Creating a strong bond between industrial needs and academic research outcomes
- Undertaking collaborative projects which offer opportunities for long-term interaction between academia and industry
- Promoting the career of the faculty members by encouraging their research work
- Adopting best teaching practices, imparting employability skills and empowering to become entrepreneurs in the trade.

Program Educational Objectives (PEOs):

PEO1	Learning new technologies and/or undertaking higher education.
PEO2	Leading a team of engineers in executing projects.
PEO3	An entrepreneur in civil engineering community and/or a leadership role exhibiting systematic approach to resolve societal problems with ethical values.

Program Educational Objectives (PSOs):

PSOs	• PSO1: Get proficiency in management and communication skills to become an entrepreneur. • PSO2: Ability to use earth sciences in execution of civil engineering projects.
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Program Outcomes (POs): Engineering Graduates will be able to:

- PO-1. Apply knowledge of computing, mathematics, science and engineering basics related to Civil Engineering.
- PO-2. Identify the problems and analyse the solutions by simulating, conducting experiments and interpreting data.
- PO-3 Design civil engineering structures to meet industrial needs.
- PO-4 Explore and investigate contemporary engineering problems and proposed solutions.
- PO-5 Use latest techniques, skills and modern machinery for engineering practices.
- PO-6 Propose civil engineering solutions to solve societal problems.
- PO-7 Design sustainable systems in congruence with social and environmental issues.
- PO-8 Practice professional ethics with legal awareness and societal responsibilities.
- PO-9 Work as an individual or in a team to achieve targets.
- PO-10 Articulate thoughts and ideas effectively at different levels.
- PO-11 Manage financial and human resources for better execution of project.
- PO-12 Participate in lifelong learning process.

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Course outcomes for First Year First Semester Course

Course Code: 17199101

Course Title: English - I

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|------|---|
| CO1: | To apply their learning in different fields and can serve the society accordingly |
| CO2: | Identify safety measures against different kinds of accidents at home and also in the workplace |
| CO3: | Experiment the usefulness of animals for the human society |
| CO4: | Appraise writing skills that is required for professional development |

Course Code: 17199111

Course Title: English – Communication skills lab – I

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|------|--|
| CO1: | Appraise the importance of functional English |
| CO2: | Relate his knowledge to the competitive world |
| CO3: | Identify the necessity to follow native speakers accent |
| CO4: | Experiment how the communicative items in the laboratory will help the students to be effective communicators. |

Course Code: 17199102

Course Title: Mathematics - I

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|------|--|
| CO1: | Solve linear differential equations of first order and higher order with constant coefficients |
| CO2: | Apply Laplace transform and inverse Laplace transform to determine particular solution of ODE |
| CO3: | Solve first and higher order linear PDE in various applications. |

Course Code: 17199105

Course Title: Mathematics - II

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| CO1: | Apply Numerical techniques to solve algebraic and transcendental equations and also IVPs in ODE |
| CO2: | Calculate the tabulated data at the given values using various Interpolation techniques |
| CO3: | Derive and apply C – R equations |
| CO4: | Execute a given function of Fourier series and use finite and infinite Fourier Integral transforms to solve BVPS |

Course outcomes for First Year Second Semester Course

Course Code: 17199205

Course Title: Mathematics – III

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|------|---|
| CO1: | Apply matrix theory to linear systems of equations and identify Eigen values and Eigen vectors to solve Eigen value problems. |
| CO2: | Evaluate and apply the multiple integrals |
| CO3: | Apply Beta & Gamma functions and evaluate Improper integrals. |
| CO4: | Implement vector Differentiation and Integration in Physical and Engineering Situations |

Course Code: 17199202

Course Title: Engineering Physics

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|------|---|
| CO1: | Identify the difference between spontaneous and stimulated emissions |
| CO2: | Illustrate the functions of Nano materials and nanotechnology |
| CO3: | Apply quantum mechanics in computer technology and experiment the uses of fundamentals of quantum mechanics |
| CO4: | Demonstrate the knowledge of semiconductor physics in diode to Chip technology |

Course Code: 17199212

Course Title: Engineering Physics Laboratory

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|------|--|
| CO1: | Practice the concept of propagation of light and how light will be diffracted by using the experiments like Newton's rings and grating experiments |
| CO2: | Experiment the concept of acceleration due to gravity by using compound pendulum |
| CO3: | Apply Stewart and Gee's apparatus that gives knowledge about the magnetic field |

Course Code: 17198204

Course Title: Engineering Chemistry

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|------|---|
| CO1: | Examine the importance of fundamentals of Water Technology |
| CO2: | Identify the reasons for corrosion and some of corrosion control methods. |
| CO3: | Classify the advantages and limitations of polymers, plastic materials and their use in Engineering design |
| CO4: | Experiment the importance of green synthesis and how it is different from conventional methods and also aware of nano-materials and cement technology |

Course Code: 17198213

Course Title: Engineering Chemistry Laboratory

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| CO1: | Experiment volumetric analysis and titrations with different indicators |
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CO2:	Analyse a few instrumental methods of chemical analysis
CO3:	Demonstrate different methods of chemical analysis and use of some commonly employed instruments.
Course Code: 17199201	
Course Title: English – II	
CO1:	Analyse that the lesson underscores the ultimate aim of education is to enhance wisdom
CO2:	Experiment the lessons to promote peaceful co – existence and universal harmony among people and society.
CO3:	Relate the achievements of C V Raman that are inspiring and exemplary.
Course Code: 17199211	
Course Title: English – Communication Skills Lab - II	
CO1:	Analyse the importance of communication
CO2:	Experiment the importance of LSRW skills
CO3:	Apply the necessary skills to face job interviews
Course outcomes for Second Year First Semester Course	
Course Code: 17112301	
Course Title: Basic Electrical & Electronics Engineering	
CO 1:	Able to analyse the various electrical networks
CO 2:	Able to understand the operation of DC generators,3-point starter and conduct the Shinbone's Test
CO 3:	Able to analyse the performance of transformer, operation of 3-phase alternator and 3-phase induction motors
CO 4:	Able to analyse the operation of half Wave, full wave rectifiers, op-amps and explain the single stage CE amplifier and concept of feedback amplifier.
Course Code: 17110302	
Course Title: Building Materials and Constructions	
CO 1:	Describe the types and properties of various building materials -stones, clay products, Timber, metals, cement and concrete and their applications in building industry.
CO 2:	Select the appropriate' building materials to suit to the structural requirements including exposure conditions.
CO 3:	Describe the various components of buildings.
CO 4:	Select the appropriate construction methods to meet the local conditions.
CO 5:	Describe the various types of stairs and stair cases and their locations, sizes and materials including fire escapes and also lifts and escalators.
CO 6:	Describe the various methods of shuttering, scaffolding and centring.
CO 7:	Describe the various types expansion and construction joints and their construction.
Course Code: 17110303	
Course Title: Building Planning & Drawing	
CO 1:	Explain principles of building planning
CO 2:	Explain the procedure of building planning incorporating climatic and functional aspects.
CO 3:	Design/compose various rooms in a building considering the functional requirements.
CO 4:	Design and draw the plans, sections and elevations of residential and simple public buildings.
Course Code: 17110304	
Course Title: Strength of Materials-I	
CO 1:	Understand the basic materials behaviour under the influence of different external loading conditions and the support conditions
CO 2:	Draw the diagrams indicating the variation of the key performance features like bending moment and shear forces.
CO 3:	Have knowledge of bending concepts and calculation of section modulus and for determination of stressed developed in the beams due to various loading conditions
CO 4:	Assess stresses across section of the thin and thick cylinders to arrive at optimum sections to withstand the internal pressure
CO 5:	Apply Green's theorem top for determination of forces beams subjected to distributed loads
Course Code: 17110305	
Course Title: Surveying	
CO 1:	Demonstrate the basic surveying skills
CO 2:	Use various surveying instruments.
CO 3:	Perform different methods of surveying

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CO 4:	Compute various data required for various methods of surveying.
CO 5:	To integrate the knowledge and produce topographical map.
Course Code: 17110306	
Course Title: Fluid Mechanics	
CO 1:	Solve manometer problems, and calculate force on submerged bodies.
CO 2:	Use conservation of mass principle to calculate flow rates through control volumes.
CO 3:	Use Bernoulli's equation to solve simple problems
CO 4:	calculate the lift and drag forces for various objects
CO 5:	Apply appropriate equations and principles to analyse a variety of pipe flow situations.
CO 6:	Predict the flow 'rate in a pipe by use of common flow meters.
Course Code: 17110311	
Course Title: Surveying - Field Work	
CO 1:	To demonstrate the basic surveying skills
CO 2:	To use various surveying instruments.
CO 3:	To perform different methods of surveying
CO 4:	To compute various data required for various methods of surveying.
CO 5:	To integrate the knowledge and produce topographical map.
Course Code: 17110312	
Course Title: Strength of Materials Lab	
CO 1:	To determine the engineering properties of materials in the laboratory.
CO 2:	To conduct laboratory tests to verify the suitability of the engineering materials for the given purpose.
CO 3:	To verify the basic principles of behaviour of materials.
CO 4:	To verify the quality of materials through laboratory tests.
Course outcomes for Second Year Second Semester Course	
Course Code: 17119401	
Course Title: Statistics through R -Programming	
CO 1:	Probability and Statistics for Engineers: Miller and John E. Freund, Prentice Hall of India
CO 2:	Probability and Statistics for Engineers and Scientists: Ronald E. Walpole, Sharon L. Mayers and Keying Ye: Pearson
CO 3:	Probability Statistics and Random Processes, Murugesan, Anuradha Publishers, Chennai
CO 4:	Probability, Statistics and decision making for Civil Engineering by Benjamin &Franking
Course Code: 17110402	
Course Title: Strength of Materials-II	
CO 1:	The student will be able to understand the basic concepts of Principal stresses developed when subjected to stresses along different axes and design the sections.
CO 2:	The student can assess stresses in different engineering applications like shafts, springs, columns and struts subjected to different loading conditions.
CO 3:	The student will be able to assess forces in different types of trusses used in construction.
Course Code: 17110403	
Course Title: Hydraulics and Hydraulic Machinery	
CO 1:	Solve uniform open channel flow problems
CO 2:	Apply dimensional analysis and similitude in order to account for the implications of scale in model experiment.
CO 3:	Calculate depth profiles in channels with steady gradually – varied flow.
CO 4:	Understand the working principles of various hydraulic machineries.
	Select the appropriate turbines and pumps to meet the field requirements
Course Code: 17110404	
Course Title: Concrete Technology	
CO 1:	Understand the basic concepts of concrete.
CO 2:	Realise the importance of quality of concrete.
CO 3:	Familiarise the basic ingredients of concrete and their role in the production of concrete and its behaviour in the field.
CO 4:	Test the fresh concrete properties and the hardened concrete properties.
CO 5:	Evaluate the ingredients of concrete through lab test results.
CO 6:	Design the concrete mix by BIS method.
CO 7:	Familiarise the basic concepts of special concrete and their production and applications.
CO 8:	Understand the behaviour of concrete in various environments.
Course Code: 17110405	

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Course Title: Structural Analysis - I	
CO 1:	Differentiate determinate and indeterminate structures.
CO 2:	Identify the behaviour of structures due to the expected loads, including the moving loads, acting on the structure
CO 3:	Estimate the bending moment and shear forces in beams for different boundary conditions.
CO 4:	Analyse the continuous beams using various methods-, three moment method, slope deflection method, energy theorems.
CO 5:	Draw the influence line diagrams for various types of moving loads on beams/bridges.
CO 6:	Analyse the loads in Pratt and Warren trusses when loads of different types and spans are passing over the truss.
Course Code: 17110406	
Course Title: Environmental Engineering - I	
CO 1:	Plan and design the water and distribution networks.
CO 2:	Identify the water source and select proper intake structure.
CO 3:	Characterization of water.
CO 4:	Select the appropriate appurtenances in the water supply.
CO 5:	Selection of suitable treatment flow for raw water treatments.
Course Code: 17110411	
Course Title: Fluid Mechanics and Hydraulic Machinery Lab	
CO 1:	Calibrate various discharge measurement meters in a open channel flow.
CO 2:	Measure the discharge through an open channel.
CO 3:	Draw performance curves by conducting experiments on various hydraulic machineries.
CO 4:	Conduct efficiency and performance tests on turbines and pumps.
Course Code: 17110412	
Course Title: Concrete Technology Lab	
CO 1:	Determine the consistency and fineness of cement.
CO 2:	Determine the setting times of cement.
CO 3:	Determine the specific gravity and soundness of cement.
CO 4:	Determine the compressive strength of cement.
CO 5:	Determine the workability of cement concrete by compaction factor, slump and Vee – Bee tests
CO 6:	Determine the specific gravity of coarse aggregate and fine aggregate by Sieve analysis.
CO 7:	Determine the flakiness and elongation index of aggregates.
CO 8:	Determine the bulking of sand.
CO 9:	Understand the non-destructive testing procedures on concrete.

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GR-17 ELECTRONICS & COMMUNICATIONS ENGINEERING

Department Vision:

Create an educational environment to mould the students to meet the challenges of modern Electronics & Communication industry through state of the art Technical knowledge and Innovative experimental Approaches.

Department Mission:

1. To create learning, development and testing environment to meet ever challenging needs of the Electronic industry
2. To create entrepreneurial environment and industry Interaction for Mutual benefit
3. To become a global partner in training human resources in the fields of chip design, instrumentation and networking
4. To associate with internationally reputed Institutions for Academic excellence and collaborative Research

Program Educational Objectives (PEOs):

PEO1	To prepare students with excellent comprehension of basic Sciences, mathematics and engineering subjects facilitating them to gain employment or pursue postgraduate studies with an appreciation for lifelong learning.
PEO2	To train students with problem solving capabilities such as analysis and design with adequate practical skills wherein they demonstrate creativity and innovation that would enable them to develop state of the art equipment and technologies of multidisciplinary nature for societal development.

Program Specific Outcomes (PSO's):

PSO1	Analyze and design analog and digital circuits or systems for a given specification and function.
PSO2	Implement functional blocks of hardware-software co-designs for signal processing and communication applications.

Program Outcomes (POs): Engineering Graduates will be able to:

1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate

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	consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustain able development.
8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments.
12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Outcomes for First Year First Semester Course

Course Code: 17199102

Course Title: Mathematics – I

CO-1	Transform the knowledge of solving system of linear equations using matrices.
CO-2	Apply mean value Rolls, Lagranges and Cauchy mean value theorem in engineering applications.
CO-3	Acquire the knowledge maxima and minima of function of several variables

Course Code: 17199103

Course Title: Computer programming

CO-1	To obtain the knowledge about different languages used in computer programming and also about the number systems which will be very useful for bitwise operations and basic terminology used in the computer programming.
CO-2	To obtain knowledge about algorithm, flow chart, and structure of C program and different C tokens used inside C program.
CO-3	To develop program by using Control structure, different looping and Jump statement
CO-4	To obtain knowledge about the application and implementation of 2-dimentional Array and string inside the program.

Course code: 17199104

Course Title: Engineering Drawing

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CO-1	To understand the concepts and use of drawing Instruments and Curves used in Engineering Practice.
CO-2	To understand the concepts of Vernier and Diagonal scales and concepts of orthographic projections.
CO-3	To understand the concepts of Projections of isometric views to orthographic views
Course code: 17199111	
Course Title: English Communication Skills Lab-I	
CO-1	Paraphrase short academic texts using suitable strategies and conventions
CO-2	Make formal structured presentations on academic topics using PPT slides with relevant graphical elements
Course Outcomes for First Year Second Semester Course	
Course code:17199201	
Course Title: English – II	
CO-1	Paraphrase short academic texts using suitable strategies and conventions
CO-2	Make formal structured presentations on academic topics using PPT slides with relevant graphical elements.
CO-3	Build the ability to convey in different communicative forms.
Course code:17199202	
Course Name: Engineering Physics	
CO-1	To impart knowledge of physical optical phenomenon like Interference, Diffraction and polarization involving design of optical instruments with higher resolution To explain the concept of dielectric constant and polarization in dielectric materials and summarize Gauss's law in the presence of dielectrics
Course code:17195105	
Course Name: Mathematics –II	
CO-1	Apply the knowledge of descriptive statistics and method of data science in practical engineering problems.
CO-2	Demonstrate the knowledge of Probability distributions.
Course Outcomes for Second Year First Semester Course	
Course Code: 17142302	
Course Title: Network Analysis	
CO-1	analyze network, network topology and various network reduction techniques
CO-2	understand AC fundamentals, steady-state analysis of AC circuits, magnetic circuits and resonance concepts
CO-3	apply network theorems to both DC and AC networks and know about various two-port network parameters
Course Code: 17140304	
Course Title: Electronic Devices and Circuits	
CO-1	Apply the Knowledge of semiconductor physics for designing the circuits of electronic devices.
CO-2	Obtain the characteristics of diode in forward and reverse bias and perform mathematical modeling of diode as a resistor and capacitor.
CO-3	Perform analysis and design of a complete AC to DC converter (Eg: Mobile Charger) consisting of Rectifiers, Filters and regulators.
CO-4	Describe the construction and working of a Transistor in various modes and design circuits for stabilization and compensation of both BJT and FET..
Course code: 17140306	
Course Title: Signals & Systems	

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CO-1	Identify different types of signal and systems properties that are commonly Used in engineering.
CO-2	Explain and differentiate the properties of continuous-time and discrete-time Linear Time Invariant (LTI) systems.
CO-3	Distinguish the Fourier series and transform in terms of applicable time functions and the resulting spectral properties
Course Outcomes for Second Year Second Semester Course	
Course code: 17140403	
Course Title: Electronic Circuits Analysis	
CO-1	Perform analysis and design of Small Signal High Frequency Transistor Amplifier models.
CO-2	Demonstrate the knowledge of multistage amplifier and differential amplifier using BJT.
CO-3	Analyze the concepts of both positive and negative feedback in electronic circuits and to generate signals in various frequency ranges
Course code: 17140404	
Course Name: EM Waves and Transmission Lines	
CO-1	Students are able to understand how EM waves will propagate in free space and their characteristics at the boundary between media.
CO-2	Students are familiar with the characteristics of transmission lines and their equivalent circuits at UHF.
CO-3	Students able to learn Maxwell's equations to understand boundary conditions of time varying fields.
Course code: 17140406	
Course Name: Analog Communication	
CO-1	Identify and describe different Amplitude modulation techniques
CO-2	Identify and applying Emphasis techniques in analog systems Sample analog signals
CO-3	Analyze different discrete pulse modulation techniques Understand and Simulate the different codes using MATLAB

Course Outcomes for Third Year First Semester Course	
Course Code:17145502	
Course Title: Computer Architecture & Organization	
CO-1	Know the concept of Basic operational concepts, computer arithmetic operations and Register Transfer language.
CO-2	Analyze the concept of central processing unit, micro programmed control and hard wired control.
CO-3	Analyze the concept of Memory management hardware, Input-Output Interface and Input-Output Processor.
Course Code: 17140505	
Course Title: Antenna and Wave Propagation	
CO-1	Design and analyze wire antennas, loop antennas, reflector antennas, lens antennas, horn antennas, and micro-strip antennas.
CO-2	Analyze the fields radiated by various types of antennas.
CO-3	Analyze antenna arrays.
CO-4	Acquire knowledge of basic antenna parameters.
Course code: 17140506	
Course Title: Digital Communications	
CO-1	Analyze the performance of Digital communication system for probability of error and are able to design a digital communication system.

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CO-2	Analyze various source coding techniques.
CO-3	Compute and analyze block codes, cyclic codes and convolution codes.
Course Outcomes for Third Year Second Semester Course	
Course code: 17140602	
Course Title: Microprocessors and Microcontrollers	
CO-1	Understand architectural difference between Microprocessor and Microcontroller and its need for development of products and product development procedure.
CO-2	Apply concepts of programming in Assembly Language.
CO-3	Analyse concepts of Input/output port Interfacing of microcontroller.
Course code: 17140603	
Course Name: Digital Signal Processing	
CO-1	Estimate the spectra of signals that are to be processed by a discrete time filter, and to verify the performance of variety of modern and classical spectrum estimation techniques.
CO-2	Design and simulate a digital filter.
CO-3	Design new digital signal processing systems.
Course code: 17140701	
Course Name: VLSI	
CO-1	Apply the concept of design rules during the layout of a circuit.
CO-2	Model and simulate digital VLSI systems using Hardware Description Language.
CO-3	Synthesize digital VLSI systems from register transfer or higher level descriptions.

Course Outcomes for Fourth Year First Semester Course	
Course Code:17140702	
Course Title: Radar Systems	
CO-1	Acquire the knowledge to apply and design required parameters for RADAR system.
CO-2	Analyze the working principle of CW and Frequency Modulated Radar.
CO-3	Analyze the working principle of MTI and pulse Doppler Radar
Course Code: 17140704	
Course Title: Digital Image processing	
CO-1	Perform different transforms on image useful for image processing applications.
CO-2	Perform spatial and frequency domain filtering on image and can implement all smoothing and sharpening operations on images.
CO-3	Perform image restoration operation/techniques on images.
CO-4	Operate effectively on color images and different color conversions on images and can code images to achieve good compression.
Course code: 17140703	
Course Title: Optical Communication	
CO-1	Choose necessary components required in modern optical communication systems.
CO-2	Design and build optical fiber experiments in laboratory, and learn how to calculate electromagnetic modes in wave guides, the amount of light lost going through an optical system, dispersion of optical fibers.

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CO-3	Use different types of photo detectors and optical test equipment to analyze optical fiber and light wave systems.
Course Outcomes for Fourth Year Second Semester Course	
Course code: 17140801	
Course Title: Cellular and Mobile Communications	
CO-1	Identify the limitations of conventional Mobile Telephone System and interpret the operation of cellular system.
CO-2	Illustrate the concept of frequency Reuse channels, Deduce the Co-channel interference reduction factor.
CO-3	Design the Antenna system to reduce Co-channel interference.
Course code: 17140862b	
Course Name: Mixed Signal Design	
CO-1	Demonstrate the concepts of Switched capacitor circuits.
CO-2	Apply the concept of Phased Locked Loop.
CO-3	Extend the Mixed Signal Design to Different Applications.
Course code: 17140862d	
Course Name: Real time Operating Systems	
CO-1	Summarize the issues in real time computing
CO-2	Understand how RTOS utilize resources like memory, CPU etc. effectively.
CO-3	Solve scheduling problems and can apply them in real time applications in industry

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GR-17 Electrical & Electronics Engineering

Department Vision:

To be a pioneering department in preparing students to compete globally in their profession and making significant contribution to the society.

Department Mission:

- Establishing centers of excellence with focus on advanced technology
- By preparing the students for successful careers based on a strong normative ethical foundation
- Delivering world class teaching, mentoring, intellectual stimulation, industry collaborations and state of the art research
- By training and educating students as global citizens to become entrepreneurs in their chosen field

Program Educational Objectives (PEOs):

PEO1	Engage in ongoing learning and professional development through self-study, continuing education in Electrical and Electronics Engineering and also in other allied fields
PEO2	Apply their engineering skills, exhibiting critical thinking and problem solving skills in professional engineering practices or tackle social, technical and business challenges
PEO3	Improve professional competence through lifelong learning including higher education and research

Program Specific Outcomes (PSO's):

PSO1	Apply knowledge of power system configuration, electrical equipment and protection practices to the design and specifications of electrical generation, transmission, distribution and utilization systems
PSO2	To design, analyze, test and evaluate the performance of the electrical machines and transformers
PSO3	To develop the expertise in the technology associated with efficient conversion and control of electrical power by static means from available forms to the required form
PSO4	Graduates will be able to work as research fellow and implement their knowledge in all electrical and electronics research organization of defense, renewable energy, mines, chemical and power plants

Program Outcomes (POs): Engineering Graduates will be able to:

1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

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4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments.
12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Outcomes for First Year First Semester Course	
Course Code: 17199102	
Course Title: Mathematics-I	
CO-1	Solve first and higher order ordinary differential equations (ODE) with applications by various techniques
CO-2	Apply Laplace Transforms to solve Initial Value Problems and evaluate Infinite Integrals
CO-3	Apply Partial Differentiation to solve Inequalities and to find maxima and minima
CO-4	Solve first and higher order PDE with their applications to Heat equation, wave equation, Laplace equation
Course Code: 17199101	
Course Title: English-I	
CO-1	Take inspiration by reading autobiographies
CO-2	Aspire for the useful innovations to improve living
CO-3	Help the common man and achieve the social cause
CO-4	Achieve the target without compromise
Course Code: 17199104	
Course Title: Engineering Mechanics	
CO-1	Summarizes the behavior of basic materials under the influence of different external loading conditions and support conditions.
CO-2	Determine shear Force and Bending moments in statically determinate Beams and draw the Diagrams.

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CO-3	Examine the different methods to find slope and deflection of beams subjected to loads
CO-4	Estimate the principal stresses & strains and torsional stresses in structural members
Course Code: 17199196	
Course Title: Professional Ethics & Human Values	
CO-1	Understood the core values that shape the ethical behavior of an engineer
CO-2	Exposed awareness on professional ethics and human values
CO-3	Known their role in technological development
CO-4	knowledge of contemporary issues related to human and professional Interactions atworkplace which helps students to understand practically the importance of trust, mutually satisfying human behavior and enriching interaction with nature
Course Code: 17199103	
Course Title: Computer Programming	
CO-1	Obtain the knowledge about different languages used in computer programming
CO-2	Write algorithm. Flow chart, and structure of C program and make use of different C tokens
CO-3	Develop program by using control structure , different looping and Jump statements
CO-4	Implement applications of Array, structure and String inside the program
Course Code: 17199189	
Course Title: Engineering Workshop & IT Workshop	
CO-1	Explain the limitations, tolerances, safety aspects of electrical systems & wiring.
CO-2	Select wires/cables and other accessories used in different types of wiring
CO-3	Make simple lighting and power circuits
CO-4	Make disassembling and assembling of PC.
Course Code: 14199111	
Course Title: English Communication Lab I	
CO-1	Learn to communicate in English
CO-2	Comprehend native speaker's accent
CO-3	Speak appropriately in real life situations
CO-4	Display public speaking skills in the required context
Course Code: 17199112	
Course Title: Computer Programming Lab	
CO-1	Obtain the knowledge about different languages used in computer programming
CO-2	Write algorithm. Flow chart, and structure of C program and make use of different C tokens
CO-3	Develop program by using control structure , different looping and Jump statements
CO-4	Implement applications of Array, structure and String inside the program
Course Code : 17199105	
Course Title : Mathematics-II	
CO-1	Apply numerical techniques to solve algebraic and transcendental equations and also initial value problems and ODE
CO-2	To interpolate the tabulated data at the given values using various interpolation techniques
CO-3	Express a given function satisfying certain conditions in Fourier series
CO-4	Use finite and infinite Fourier Integral Transforms to solve BVPs
Course Outcomes for First Year Second Semester Course	
Course Code : 17199203	
Course Title : Engineering Drawing	
CO-1	Apply principles of drawing to represent dimensions of an object

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CO-2	Outline the Polygons and engineering curves
CO-3	Illustrate projections of points, lines, plane and solids
CO-4	Illustrate 3D views through isometric views
Course Code: 17199204	
Course Title: Engineering Physics	
CO-1	Understand applications of optics using basic fundamentals of Physics
CO-2	Explain the Modern Physics Concepts
CO-3	Familiar with Basic Elements of Quantum Theory
CO-4	Knowledge about dual nature of wave function, Applications of Schrodinger wave equation Fermi-Dirac probability function
Course Code: 17199201	
Course Title: English-II	
CO-1	Be inspired by Bose's achievements so that he may start his own original work
CO-2	Be inspired by Bhabha's achievements so as to make his own experiments
CO-3	Realize that development is impossible without scientific research
CO-4	Appreciate the art of writing a short story and try his hand at it.
Course Code: 17199202	
Course Title: Engineering Chemistry	
CO-1	Understand the removal technique of hardness of the water
CO-2	Distinguish the fuel cells and batteries
CO-3	Identify different control techniques of corrosion
CO-4	Understand the concept of plastics and rubbers
Course code : 14199212	
Course Title: Engineering Physics Laboratory	
CO-1	To handle optical instruments like microscope and spectrometer
CO-2	To demonstrate the importance of dielectric material in storage of electric field energy in capacitors
CO-3	To evaluate the resistivity of the given semiconductor using probe method
CO-4	To identify the type of semi-conductor
Course Code: 17199206	
Course Title: Environmental Studies	
CO-1	Gain a higher level of personal involvement and interest in understanding and solving environmental problems
CO-2	Comprehend environmental problems from multiple perspectives with emphasis on human modern life styles and developmental activities
CO-3	Demonstrate knowledge relating to the biological systems involved in the major global environmental problems of 21 st century
CO-4	Recognize the interconnectedness of human dependence on the earth's eco system
Course Code: 17199211	
Course Title: English Communicative Laboratory II	
CO-1	Learn to communicate in English
CO-2	Comprehend native speaker's accent
CO-3	Speak appropriately in real life situations
CO-4	Display public speaking skills in the required context
Course Code : 17199205	
Course Title : Data Structures Through C	
CO-1	Obtain the knowledge about different languages used in computer programming
CO-2	Write algorithm. Flow chart, and structure of C program and make use of different C tokens

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CO-3	Develop program by using control structure , different looping and Jump statements
CO-4	Implement applications of Array, structure and String inside the program
Course Code : 17199213	
Course Title : Data Structures Through C Lab	
CO-1	Obtain the knowledge about different languages used in computer programming
CO-2	Write algorithm. Flow chart, and structure of C program and make use of different C tokens
CO-3	Develop program by using control structure , different looping and Jump statements
CO-4	Implement applications of Array, structure and String inside the program
Course Outcomes for Second Year First Semester Course	
Course Code : 17120303	
Course Title : Electrical Circuits Analysis – I	
CO-1	Analyze electrical network in presence of active and passive elements
CO-2	Analyze magnetic circuit with various dot convention
CO-3	Analyze steady state circuits
CO-4	Analyze series and parallel resonant circuit
Course Code : 17120304	
Course Title : Electro Magnetic Fields	
CO-1	Analyze field potentials due to static changes and static magnetic fields
CO-2	Explain how materials affect electric and magnetic fields
CO-3	Analyze the relation between the fields under time varying situations.
CO-4	Discuss the principles of propagation of uniform plane waves.
Course Code : 17120305	
Course Title : Electrical Machines – I	
CO-1	Analyze the conditions required of self excitation of dc generators and paralleloperation of dc generators the operation of dc machines
CO-2	Determine the performance of dc machine using the results of tests
CO-3	Distinguish the operation of various dc machine configurations.
CO-4	Determine the voltage regulation and efficiency of single phase transformer.
Course Code : 17129304	
Course Title : Mathematics III	
CO-1	Familiarize with the techniques in partial differential equations and complex variables
CO-2	Solve application problems
CO-3	Familiarize the transform techniques and complex variables
Course Code : 17123301	
Course Title : Fluid Mechanics & Hydraulic Machinery	
CO-1	Define fundamental concepts of fluid mechanics as applied to civil engineering and environmental problems
CO-2	Discuss and derive the fundamental mathematical equations of fluid mechanics
CO-3	Solve the problems of water conveyance in pipes, orifices, mouthpieces, notches and weirs
CO-4	Apply conservation laws to derive governing equations of fluid flows
Course Code : 17124302	
Course Title : Electronic Devices & circuits	
CO-1	Understand the basic concepts of semiconductor physics
CO-2	Understand the formation of p-n junction and how it can be used as a p-n junction as diode in different modes of operation

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CO-3	Know the construction, working principle of rectifiers with and without filters with relevant expressions and necessary comparisons
CO-4	Understand the construction, principle of operation of transistors, BJT and FET with their V-I characteristics in different configuration
Course Code : 17129397	
Course Title : Soft Skills – I	
CO-1	Construct coherent, cohesive and unambiguous verbal expressions in both oral and written discourses.
CO-2	Analyze the given data/text and find out the correct responses to the questions asked based on their aiding exercises; identify relationships or patterns within groups of words or sentences
CO-3	Write paragraphs on a particular topic, essays (issues and arguments), e mails, summaries of group discussions, reports, make notes, statement of purpose (for Admission into foreign universities), letters of recommendation (for professional and educational purposes).
CO-4	Converse with ease during interactive sessions/seminars in their classrooms, compete in literary activities like elocution, debates etc., raise doubts in class, participate in JAM sessions/variant tests with confidence and convey oral information in a professional manner.
Course Code : 17124311	
Course Title : Electronic Devices & Circuits Lab	
CO-1	Analyze the characteristics of diodes, transistors and other devices
CO-2	Design and implement the rectifier circuits, SCR and UJT in the hardware circuits
CO-3	Design the biasing and amplifiers of BJT and FET amplifiers
CO-4	Measure electrical quantities using CRO in the experimentation
Course Code : 17123312	
Course Title : Fluid Mechanics & Hydraulic Machines Lab	
CO-1	Define and Measure Fluid Properties.
CO-2	Illustrate Flow Measuring Devices used in pipes, channels and Tanks
CO-3	Analyze characteristics of broad crested weir.
CO-4	Illustrate the characteristics of surface profiles in free and forced vibrations.
Course Outcomes for Second Year Second Semester Course	
Course Code : 17120403	
Course Title : Electrical Circuit analysis – II	
CO-1	Able to solve three- phase circuits under balanced and unbalanced condition
CO-2	Learn transient response of electrical networks for different types of excitations.
CO-3	To find parameters for different types of network.
CO-4	To realize electrical equivalent network for a given network transfer function.
Course Code : 17120404	
Course Title : Power Systems – I	
CO-1	Understand the Principle of operation of different types of conventional power generating stations.
CO-2	Classify Distribution system and its design
CO-3	Classify Substations
CO-4	Types of Underground cables
Course Code : 17120405	
Course Title : Electrical Machines – II	
CO-1	Demonstrate ability to understand operation and working of 3-Ph induction motor

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CO-2	Analyze performance alternator when connected in parallel with infinite bus or with another alternator
CO-3	Determine the voltage regulation of alternator through indirect methods and parallel operation of alternators
CO-4	Demonstrate ability to understand the concepts of synchronous motor's working and methods to start synchronous motor.
Course Code : 17120406	
Course Title : Electrical Measurements	
CO-1	Know principles of different electrical measurement instruments and to measure voltage and current and different types of instruments for measurement of Power and Energy.
CO-2	Understand about different types of A.C and D. C Potentiometers
CO-3	Measure resistance, capacitance, inductance and frequency by using various bridges
CO-4	Know about the magnetic measurements
Course Code : 17120401	
Course Title : Switching Theory and Logic Design	
CO-1	Analyze different number systems, its conversions
CO-2	Analyze different types of logic gates and fundamentals of karnaugh maps
CO-3	Understand the design of combinational and sequential circuits using logic gates
CO-4	Understand the fundamentals of op-amps, its circuits and parameters
Course Code : 17124402	
Course Title : Pulse & Digital Circuits	
CO-1	Analyze different number systems, its conversions
CO-2	Analyze different types of logic gates and fundamentals of karnaugh maps
CO-3	Understand the design of combinational and sequential circuits using logic gates
CO-4	Understand the fundamentals of op-amps, its circuits and parameters
Course Code : 17120411	
Course Title : Electrical Machines – I Lab	
CO-1	Determine the performance of DC shunt machine
CO-2	Determine the performance of DC series machine
CO-3	Determine the performance of DC compound machine
CO-4	Connect DC machines in parallel
Course Code : 17120412	
Course Title : Electrical Circuits Lab	
CO-1	Apply mesh and nodal analysis to solve electrical circuit problems
CO-2	Analyze circuits in the sinusoidal steady-state domain
CO-3	Apply network theorems for the analysis of circuits and two port networks
CO-4	Measure active and reactive powers

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GR-17 MECHANICAL ENGINEERING

Department Vision:

To be recognized as a Global Centre of Excellence in Mechanical Engineering Education, Research and Consultancy

Department Mission:

Department of Mechanical Engineering strives to provide scope for all round development of the students and staff by engaging them in various activities such as

- Participative learning so that students internalize their classroom learning practices.
- Student centric learning practices such as summary sessions, learn-ahead-of class, problem solving.
- Extensive practical courses to foster learning by observation.
- Exposing students, faculty and staff to various industrial practices and usage of modern tools to reinforce their classroom/laboratory learning.
- Sensitization towards importance of ethical practice, societal responsibility, leadership skills, entrepreneurship skills, communication skills and lifelong learning.

Program Educational Objectives (PEOs):

PEO1	Working professional in Mechanical Engineering field or other disciplines to develop products, processes to solve Mechanical Engineering related or other problems for betterment of society.
PEO2	Pursuing further education to enrich their knowledge in Mechanical Engineering or other fields.
PEO3	Undertaking entrepreneurial ventures in Mechanical Engineering or other disciplines.

Program Specific Outcomes (PSO's):

PSO1	Join a technically sophisticated workforce as successful professionals in a wide range of mechanical engineering and related fields.
PSO2	Continuously improve and expand their technical and professional skills through formal means as well as through informal self-study.
PSO3	Pursue advanced degrees in engineering, business, or other professional fields.
PSO4	Advance themselves professionally and personally by accepting professional and social responsibilities and pursuing leadership roles.

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Program Outcomes (POs): Engineering Graduates will be able to:

1	Apply fundamental knowledge of Science, Mathematics and Engineering principles in solving problems related to Mechanical Engineering.
2	Apply principles of design engineering, thermal engineering, production engineering and industrial engineering to arrive at a physically meaningful analysis of engineering problems.
3	Present feasible designs for simple domestic and industrial Mechanical Engineering problems through drawings and other multimedia tools to meet desired needs.
4	Identify, formulate and solve Mechanical engineering problems through rigorous research methodology.
5	Use Drafting, Modeling and Analysis Software and/or hardware tools for meaningful and economically viable Engineering practice.
6	Apply knowledge of Thermal, Design, Automation Technologies and Management principles to inter-disciplinary engineering problems and their societal implications.
7	Understand and propose, where ever possible, environment-friendly and sustainable solutions to Mechanical Engineering problems.
8	Expertise in following ethical code of conduct in professional activities.
9	Use their analytical, teamwork, leadership skills in the development of products and provide solutions to problems sought by local and/or global community.
10	Communicate verbally, textually and graphically to collaborate effectively towards engineering activities
11	Inspire confidence in team members to realize the goals of the organization and manage finances an sizeable projects by choosing the right blend of common sense solutions.
12	Develop confidence and a sense of curiosity towards life-long learning to adapt to ever changing technologies.

Course outcomes for First Year First Semester Course

Course Code: 17198102

Course Title: Mathematics - I

CO1:	Transform the knowledge of solving system of linear equations using matrices.
CO2:	Evaluate nature of the Quadratic form.
CO3:	Acquire the knowledge maxima and minima of function of several variables.
CO4:	Evaluate multiple integrals and their applications.
CO5:	Understand and apply vector derivatives and vector integration theorems.

Course Code: 17198101

Course Title: Communicative English-I

CO1:	Develop effective reading strategies
CO2:	Demonstrate writing skills that are required for professional development and use graphic elements for communication.
CO3:	Apply grammatical skills and vocabulary effectively in speech and writing
CO4:	Display language efficacy in tune with subjective knowledge
CO5:	Use required language along with contextual vocabulary and grammar structures

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Course Code: 17198205	
Course Title: Engineering Chemistry	
CO1:	Understand the removal techniques of hardness of water
CO2:	Distinguish the fuel cells and batteries
CO3:	Identify different control techniques of corrosion
CO4:	Understand the concepts of plastics and rubbers
CO5:	Analyse the importance of nanomaterials.
Course Code : 17132302	
Course Title: Basic Electrical and Electronics Engineering	
CO1:	Analyze the various electrical networks.
CO2:	Perform the operation of DC generators, 3-point starter and conduct the Swinburne's Test.
CO3:	Analyze the performance of transformer, operation of 3-phase alternator and 3-phase Induction motors.
CO4:	CO-4. Analyze the operation of half Wave, full wave rectifiers, op-amps and explain the single stage CE amplifier and concept of feedback amplifier.
Course Code: 17193176	
Course Title: Engineering Graphics	
CO1:	To understand the concepts and use of drawing Instruments and Curves used in Engineering Practice.
CO2:	To understand the concepts of Vernier and Diagonal scales and concepts of orthographic projections.
CO3:	To understand the concepts of Projections of isometric views to orthographic views.
Course Code: 17198212	
Course Title: Engineering Chemistry Laboratory	
CO1:	Explain the functioning of the instruments such as pH, conductivity, and potentiometric meters.
CO2:	Determine the total hardness of water
CO3:	Perform various redox titrations.
CO4:	Preparation of polymers
CO5:	Compare viscosities of different oils
Course outcomes for First Year Second Semester Course	
Course Code: 17198202	
Course Title: Mathematics – II	
CO1:	Solve first order differential equations.
CO2:	Solve higher order differential equations with constant coefficients
CO3:	Apply the knowledge of approximating and find the roots of polynomial and transcendental equation in practical engineering problems.
CO4:	Understand numerical differentiation and integration.
CO5:	Apply the knowledge of different algorithms for approximating the solution of ordinary differential equations in practical engineering problems.
Course Code: 17198104	
Course Title: Engineering Physics	
CO1:	Construction and working details of instruments
CO2:	Interferometer, Diffract meter and Polarimeter are learnt.
CO3:	Study EM-fields and semiconductors under the concepts of Quantum mechanics paves way for their optimal utility.

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Course Code: 17193204	
Course Title: Engineering Mechanics	
CO1:	To understand the concepts of forces and its resolution in different planes.
CO2:	To understand the concepts of Equilibrium of Systems of Forces, law of Triangle of forces and converse of the law of polygon of forces.
CO3:	To understand the concepts of Area moments of Inertia, Mass Moment of Inertia.
CO4:	To understand the concepts of Equations for Translation, D'Alembert's principle in rotation.
Course Code: 17195103	
Course Title: Computer Programming	
CO1:	Obtain the knowledge about different languages used in computer programming and also about the number systems which will be very useful for bitwise operations and basic terminology used in the computer programming.
CO2:	Obtain knowledge about algorithm, flow chart, and structure of C program and different C tokens used inside C program and develop program by using Control structure, different looping and Jump statement.
CO3:	Obtain knowledge about the application and implementation of 2-dimensional Array and string inside the program.
CO4:	Obtain knowledge about different functionalities of Preprocessors and also to develop the program by using different type of function calls.
Course Code: 17130303	
Course Title: Material Science and Metallurgy	
CO1:	To enhance students' ability to understand the science and fundamentals of materials
CO2:	To understand the basic requirements and improve the selection and utilization of materials
CO3:	To understand the regions of stability of phases that occur in the systems
Course Code: 17198112	
Course Title: Engineering Physics Laboratory	
CO1:	Physics lab curriculum gives fundamental understanding of design of an instrument with targeted accuracy for physical measurements
Course Code: 17198111	
Course Title: Communicative English Laboratory	
CO1:	Learn to communicate in English
CO2:	Comprehend native speaker's accent
CO3:	Speak appropriately in real life situations
CO4:	Display public speaking skills in the required context
CO5:	Handle different communicative situations
Course Code: 17195113	
Course Title: Computer Programming Laboratory	
CO1:	To know the structure and syntax of a programming language.
CO2:	To develop code for simple mathematical problems.
CO3:	To write the programs using arrays, structures and pointers
Course Code: 17198105	
Course Title: Environmental Studies	
CO1:	The natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
CO2:	The concepts of the ecosystem and its function in the environment. The need for protecting the producers and consumers in various ecosystems and their role in the food web.

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CO3:	The biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
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Course Outcomes for Second Year First Semester Course	
Course Code: 17130304	
Course Title: Mechanics of Solids	
CO-1	Understand the concepts of stress and strain at a point as well as the stress-strain relationships for homogenous, isotropic materials.
CO-2	Calculate the stresses and strains in axially-loaded members, circular torsion members, and members subject to flexural loadings.
CO-3	Determine the deflections and rotations produced by the three fundamental types of loads: axial, torsional, and flexural.
CO-4	Calculate the stresses and strains associated with thin-wall spherical and cylindrical pressure vessels.
CO-5	Able to calculate the failure load of column and struts with different type of end condition.
Course Code: 17130403	
Course Title: Production Technology	
CO-1	Understand principles of sand casting processes.
CO-2	Discuss various casting methods and melting methods.
CO-3	Demonstrate welding methods and their applications.
CO-4	Explain metal forming methods such as rolling, forging, extrusion and sheet metal forming methods.
CO-5	Interpret the methods of fabrication of different plastics.
Course Code: 17130305	
Course Title: Thermodynamics	
CO-1	Explain the importance of thermodynamic properties related to conversion of heat energy into work.
CO-2	Apply the laws of thermodynamics to boilers, heat pumps, refrigerators, IC engines, compressors and nozzles.
CO-3	Utilize steam properties in components of heat engines running with steam.
CO-4	Compare air standard cycles using thermodynamic relations.
CO-5	Apply thermodynamics in solving engineering problems relates heat and work
Course Code: 17130404	
Course Title: Fluid Mechanics & Hydraulic Machinery	
CO-1	Discuss the properties of fluids, pressure and its measurement.
CO-2	Identify the types lines, flows and derive continuity equation, Bernoulli's equation and Buckingham's π theorem.
CO-3	Examine the energy losses in pipes and sketch EGL. Discuss about the flow measuring devices. Learn the concepts of boundary layer.
CO-4	Describe working of hydraulic turbines and performance characteristics.
CO-5	Describe working centrifugal and reciprocating pumps and its performance.
Course Code: 17130411	
Course Title: Fluid Mechanics & Hydraulic Machinery Lab	
CO-1	Understand the concept of flow measuring devices and determine the coefficient of discharge of Venturimeter and Orifice meter
CO-2	Apply the knowledge of Centrifugal pump and Reciprocating pump in real life situations and find out the performance of pumps.
CO-3	Evaluate the performance parameters of hydraulic turbines Pelton wheel and Francis turbine.

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CO-4	Understand the concept of flow through pipes and determine the losses.
CO-5	Justify the Bernoulli's theorem
Course Code: 17130312	
Course Title: Mechanics of Solids & Metallurgy lab	
CO-1	Determine the Young's Modulus for ductile materials and analyze the various points on stress strain diagram.
CO-2	Analyze & compare the hardness values for various materials.
CO-3	Understand various micro structures and relationship to properties.
CO-4	Compare the Micro structures of Ferrous & Non-Ferrous Alloys.
CO-5	Improving material properties by different heat treatment processes.
Course Code: 17130376	
Course Title: Computer Aided Design and Modelling Lab	
CO-1	Illustrate the importance of CAD package and its basic commands.
CO-2	Produce the orthographic projections of regular solids.
CO-3	Develop the lateral surfaces of regular solids and interpenetration curves
CO-4	Convert to Isometric drawings and 3D Surface Models.
CO-5	Connect simple parts using CAD Package
Course Outcomes for Second Year Second Semester Course	
Course Code: 17130401	
Course Title: Kinematics of Machinery	
CO-1	Explain about the mobility and inversions of a planar mechanism.
CO-2	Discuss mechanisms with lower pairs
CO-3	Determine the velocity and acceleration for the planar mechanisms
CO-4	Analyse the motion of the cams and followers.
CO-5	Analyse Gears and Gear Trains
Course Code: 17130402	
Course Title: Thermal Engineering	
CO-1	Evaluate performance of IC Engine.
CO-2	Evaluate various efficiencies of air compressors.
CO-3	Define various types of boilers and principles of draught.
CO-4	Classify different types of Nozzle and Condensers.
CO-5	Analyze the thermal analysis of steam turbines.
Course Code: 17130405	
Course Title: Industrial Engineering & Management	
CO-1	Describe the various concepts of management techniques.
CO-2	Identify a suitable plant location and layout by considering various industrial aspects.
CO-3	Use work study concepts to improve productivity.
CO-4	Apply the suitable quality management techniques.
CO-5	Assess the project duration and crashing of any network problems.
Course Code: 17130412	
Course Title: Production Technology Lab	
CO-1	Understand the fundamentals of pattern making, molding process./understand the pattern design and making using wood turning lathe.

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CO-2	Gain knowledge in sand casting processes.
CO-3	Learn on Welding processes like MMAW. Gas welding and cutting , TIG , MIG welding and resistance process.
CO-4	Gain knowledge on sheet metal cutting and operations, extrusion.
CO-5	Understand the fabrication methods of plastics using injection and blow moulding.

Course Code: 17130413

Course Title: Thermal Engineering Lab

CO-1	Calculate various powers, efficiencies and energy balance for several types of Internal Combustion Engines and compressors.
CO-2	Classify various types of IC Engines, Air compressors & cycle of operations
CO-3	Demonstrate the effect of various operating variables on engine performance
CO-4	Estimate properties of various fuels and lubricants.
CO-5	Evaluate Coefficient of Performance of Refrigeration and Air-conditioning units

Course Code: 17130376

Course Title: Computer Aided Machine Drawing

CO-1	Illustrate the conventional representations of materials and machine components.
CO-2	Produce the detachable joints by any CAD package.
CO-3	Sketch 2D profile of riveted, welded and key joints.
CO-4	Develop the shaft couplings solid model in 3D CAD package.
CO-5	Connect the Engine parts, machine tool parts , valves and Miscellaneous parts to form assemblies.

Course Outcomes for Second Year First Semester Course

Course Code: 17130304

Course Title: Mechanics of Solids

CO-1	Understand the concepts of stress and strain at a point as well as the stress-strain relationships for homogenous, isotropic materials.
CO-2	Calculate the stresses and strains in axially-loaded members, circular torsion members, and members subject to flexural loadings.
CO-3	Determine the deflections and rotations produced by the three fundamental types of loads: axial, torsional, and flexural.
CO-4	Calculate the stresses and strains associated with thin-wall spherical and cylindrical pressure vessels.
CO-5	Able to calculate the failure load of column and struts with different type of end condition.

Course Code: 17130403

Course Title: Production Technology

CO-1	Understand principles of sand casting processes.
CO-2	Discuss various casting methods and melting methods.
CO-3	Demonstrate welding methods and their applications.
CO-4	Explain metal forming methods such as rolling, forging, extrusion and sheet metal forming methods.
CO-5	Interpret the methods of fabrication of different plastics.

Course Code: 17130305

Course Title: Thermodynamics

CO-1	Explain the importance of thermodynamic properties related to conversion of heat energy into work.
CO-2	Apply the laws of thermodynamics to boilers, heat pumps, refrigerators, IC engines, compressors and nozzles.
CO-3	Utilize steam properties in components of heat engines running with steam.

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CO-4	Compare air standard cycles using thermodynamic relations.
CO-5	Apply thermodynamics in solving engineering problems relates heat and work
Course Code: 17130404	
Course Title: Fluid Mechanics & Hydraulic Machinery	
CO-1	Discuss the properties of fluids, pressure and its measurement.
CO-2	Identify the types lines, flows and derive continuity equation, Bernoulli's equation and Buckingham's π theorem.
CO-3	Examine the energy losses in pipes and sketch EGL. Discuss about the flow measuring devices. Learn the concepts of boundary layer.
CO-4	Describe working of hydraulic turbines and performance characteristics.
CO-5	Describe working centrifugal and reciprocating pumps and its performance.
Course Code: 17130411	
Course Title: Fluid Mechanics & Hydraulic Machinery Lab	
CO-1	Understand the concept of flow measuring devices and determine the coefficient of discharge of Venturimeter and Orifice meter
CO-2	Apply the knowledge of Centrifugal pump and Reciprocating pump in real life situations and find out the performance of pumps.
CO-3	Evaluate the performance parameters of hydraulic turbines Pelton wheel and Francis turbine.
CO-4	Understand the concept of flow through pipes and determine the losses.
CO-5	Justify the Bernoulli's theorem
Course Code: 17130312	
Course Title: Mechanics of Solids & Metallurgy lab	
CO-1	Determine the Young's Modulus for ductile materials and analyze the various points on stress strain diagram.
CO-2	Analyze & compare the hardness values for various materials.
CO-3	Understand various micro structures and relationship to properties.
CO-4	Compare the Micro structures of Ferrous & Non-Ferrous Alloys.
CO-5	Improving material properties by different heat treatment processes.
Course Code: 17130376	
Course Title: Computer Aided Design and Modelling Lab	
CO-1	Illustrate the importance of CAD package and its basic commands.
CO-2	Produce the orthographic projections of regular solids.
CO-3	Develop the lateral surfaces of regular solids and interpenetration curves
CO-4	Convert to Isometric drawings and 3D Surface Models.
CO-5	Connect simple parts using CAD Package
Course Outcomes for Second Year Second Semester Course	
Course Code: 17130401	
Course Title: Kinematics of Machinery	
CO-1	Explain about the mobility and inversions of a planar mechanism.
CO-2	Discuss mechanisms with lower pairs
CO-3	Determine the velocity and acceleration for the planar mechanisms

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CO-4	Analyse the motion of the cams and followers.
CO-5	Analyse Gears and Gear Trains
Course Code: 17130402	
Course Title: Thermal Engineering	
CO-1	Evaluate performance of IC Engine.
CO-2	Evaluate various efficiencies of air compressors.
CO-3	Define various types of boilers and principles of draught.
CO-4	Classify different types of Nozzle and Condensers.
CO-5	Analyze the thermal analysis of steam turbines.
Course Code: 17130405	
Course Title: Industrial Engineering & Management	
CO-1	Describe the various concepts of management techniques.
CO-2	Identify a suitable plant location and layout by considering various industrial aspects.
CO-3	Use work study concepts to improve productivity.
CO-4	Apply the suitable quality management techniques.
CO-5	Assess the project duration and crashing of any network problems.
Course Code: 17130412	
Course Title: Production Technology Lab	
CO-1	Understand the fundamentals of pattern making, molding process./understand the pattern design and making using wood turning lathe.
CO-2	Gain knowledge in sand casting processes.
CO-3	Learn on Welding processes like MMAW. Gas welding and cutting , TIG , MIG welding and resistance process.
CO-4	Gain knowledge on sheet metal cutting and operations, extrusion.
CO-5	Understand the fabrication methods of plastics using injection and blow moulding.
Course Code: 17130413	
Course Title: Thermal Engineering Lab	
CO-1	Calculate various powers, efficiencies and energy balance for several types of Internal Combustion Engines and compressors.
CO-2	Classify various types of IC Engines, Air compressors & cycle of operations
CO-3	Demonstrate the effect of various operating variables on engine performance
CO-4	Estimate properties of various fuels and lubricants.
CO-5	Evaluate Coefficient of Performance of Refrigeration and Air-conditioning units
Course Code: 17130376	
Course Title: Computer Aided Machine Drawing	
CO-1	Illustrate the conventional representations of materials and machine components.
CO-2	Produce the detachable joints by any CAD package.
CO-3	Sketch 2D profile of riveted, welded and key joints.
CO-4	Develop the shaft couplings solid model in 3D CAD package.
CO-5	Connect the Engine parts, machine tool parts , valves and Miscellaneous parts to form assemblies.

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GR- 17 Master of Business Administration

Department Vision:

To be a centre of excellence for management education and nurture young minds into professionals with values, passion, integrity and entrepreneurial spirit.

Department Mission:

- Offer enriching learning experience.
- Provide cutting edge paradigms to the aspiring Managers.
- Highlight the contemporary Management practices and enlighten the budding Managers.
- Adopt Innovative Approach in introducing business world to the students.
- Influence the students with uncompromising Human Values so as to make them as ideal Corporate Citizens.

Program Educational Objectives (PEOs):

PEO1	Engage in ongoing learning and professional development through self- study, continuing education in Electrical and Electronics Engineering and also in other allied fields
PEO2	Apply their engineering skills, exhibiting critical thinking and problem solving skills in profession all engineering practices or tackle social, technical and business challenges
PEO3	Improve professional competence through lifelong learning including higher education and research

Program Specific Outcomes (PSO's):

PSO1	Demonstrating professionalism, self-awareness, leadership and effective communication skills
PSO2	Possessing the skills requiring to work and lead effectively in a team based environment
PSO3	Integrating tools and concepts from multiple functional areas (i.e., Finance, HR, Marketing, Operations etc.,) to solve business problems
PSO4	Understanding concepts of Information Technology (IT) and how IT can improve organizational performance. Identifying key issues facing a business or business sub-division
PSO5	Utilizing qualitative and quantitative methods to investigate and solve critical business problems.
PSO6	Evaluating and integrating ethical considerations when making business decisions.
PSO7	Incorporating diversity and multicultural perspectives while making business decisions.

Program Outcomes (POs): MBA Graduates will be able to:

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1	To develop ideas and ideologies to inspire and impress the business world with effective personality and communication skills.
2	To be proactive to critical situations and changes of business management.
3	To be responsive for the difficulties of the society with possible solutions.
4	To sustain in competition with optimal performance.
5	To practice knowledge management for potential enrichment.
6	To make continuous improvement and practice Kaizen.
7	To execute feasibility study for effective decision making.
8	To contribute to business consultancy.
9	To be a Professional with care for, concern and consistency in performance.
10	To be trust worthy

Course outcomes for First Year First Semester Course	
Course Code: : 17400101	
Course Title: Management Theory and Practices	
CO1:	To provide a rich pool of contemporary Management knowledge.
CO2:	To gain the knowledge in time tested principles, basic concepts, emerging ideas, evolving theories, and latest techniques.
CO3:	To understand the ever changing procedures & practices in the field of Management in a comprehensive way
CO4:	Students can gain the knowledge of contemporary issues like MBO, SIX SIGMA, TQM etc.,
CO5:	To enable the students to understand critical decisions that ensure growth and sustainability of the organization.
Course Code: 17400102	
Course title: Managerial Economics	
CO1:	Enable students to get the basic economic principles, forecast demand and supply and
CO2:	Should be able to estimate cost and understand market structure and pricing practices
CO3:	To gain knowledge in Pricing methods, market structures and various Concepts.
CO4:	The module draws on student prior learning and combines insights from economics.
CO5:	Finding solutions to various problems that arise in ordinary business life
Course Code: 17400103	
Course Title: Accounting For Managers	
CO 1:	Student shall be able to apply accounting concepts, principles, standards and processes
CO 2:	Student must demonstrate analytical skills through findings, organizing, assessing and analyzing data appropriate to a given situation.
CO 3:	Student must demonstrate skills in financial analysis.
CO 4:	Each student must identify and analyze financial statements.
Course Code: 17400104	
Course Title: Managerial Communication & Soft Skills and Business Etiquette	
CO1:	To develop communication skills.
CO2:	To gain Knowledge of intra personal and inter personal communication skills.
CO3:	To demonstrate the knowledge of formal and informal report writing

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CO4:	Apply the knowledge of problem solving
CO5:	Gain knowledge of communicating through social media and mobile
Course Code: 17400105	
Course Title: Business Environment	
CO1:	To provide a rich pool of contemporary knowledge.
CO2:	To gain the knowledge in time tested principles, basic concepts, emerging ideas, evolving theories, and latest techniques .
CO3:	To understand the ever changing procedures & practices in the field of law in a comprehensive way.
CO4:	Students can gain the knowledge on balance of payments.
CO5:	Competition Act and BIFR and enable them to understand critical decisions that ensure growth and sustainability of the organization .
Course Code:17400106	
Course Title: Quantitative Analysis For Business Decisions	
CO1:	Acquits with data reduction techniques and calculate and interpret measures of central values and dispersion.
CO2:	Understands and applies decision making in business and marketing.
CO3:	Performs optimization techniques like linear programming.
CO4:	Aware of application techniques in transportation assignment and replacement problem.
CO5:	Can draw Network diagram for project and draw conclusion from it.
Course Code: 174005	
CO1:	To know the process of assembling a personal computer, installation of system software
CO2:	Like MS Windows, Linux and the required device drivers.
CO3:	Understand the hardware and software level trouble shooting process, tips and tricks.
CO4:	Masters in working PC to disassemble and assemble to working condition and install
Course outcomes for First Year Second Semester Course	
Course Code: 17400201	
Course Title :Financial Management	
C01:	Understand the basic type of financial management decisions and the role of the financial manager.
C02:	Identify tools used by Finance professionals in making financial decisions.
C03:	Explain how the manager's decisions are reflected in the share prices.
C04:	Specify the objective hat ensure Financial Managers makes rational investment and how they make short term investment decisions.
C05:	Examine the implications of stakeholders, ethics and the agency relationships
Course Code: 17400202	
Course Title :Human Resource Management	
CO1:	Analyze the broad fundamental concepts of HRM.
CO2:	Assess the processes to build a talented work force (include recruitment and selection, training and development, professional development plans).
CO3:	Evaluate performance and mange effectively in unionized environment.
CO4:	Use the qualitative and quantitative information to make effective decisions related to functional areas of business.
CO5:	Mange group and individual dynamics in organization.
Course Code: 17400203	
Course Title : Marketing Management	

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CO1:	By reading text and relating the concepts through cases the student would be able to understand the concepts of marketing management.
CO2:	They will be able to analyze markets and design customer driven strategies and will be able to communicate the decisions towards business development with customer relation as focus.
Course Code: 17400204	
Course Title: 111- IT-LAB	
CO1:	Students will identify operational and administrative processes and roles and responsibilities of operation managers in different organizational contexts.
CO2:	Students can analyze the content of an operations strategy and the decision involved.
CO3:	Understand the input – process-output framework ,the extensions of it and apply them to a wide range of operations.
CO4:	Students can gain the knowledge of forecasting techniques in operations and productions methods.
Course Code: 17400205	
Course Title : Business Research Methods	
CO1 :	Theoretical and Applied Research
CO2:	Knowing Data collection Methods
CO3:	Questionnaire Preparation
CO4:	Preparation of Quality Control Charts
CO5:	Gain Knowledge in Research Techniques
Course Code: 17400206	
Course Title : Organizational Behavior	
CO1:	Analyze the behavior of individuals and groups in organizations in terms of the key factors that influence organizational behavior.
CO2:	Assess the potential effects of organizational-level factors (such as structure, culture and change) on organizational behavior.
CO3:	Critically evaluate the potential effects of important developments in the external environment (such as globalization and advances in technology) on organizational behavior.
CO4:	Analyze organizational behavioral issues in the context of organizational behavior theories, models and concepts
Course outcomes for II Year I Semester Course	
Course Code: 17400301	
Course Title : -Strategic Management	
CO1:	Overview of strategic management.
CO2:	Knowledge of environmental analysis and framing of strategy .
CO3:	Demonstrate the knowledge of leadership styles and planning of strategy.
CO4:	Apply the knowledge of strategy formulation and its implementation.
CO5:	Gain knowledge of Strategic management process and control towards firm's success
Course Code: 17400302	
Course Title : Legal Aspects Of Business	
CO1:	Overview of Legal Aspects of Business.

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CO2:	Knowledge of sale of goods act, unpaid seller rights, consumer protection act.
CO3:	Demonstrate the knowledge of Agency contract and negotiable instrument act.
CO4:	Gain knowledge of partnership act. Gain knowledge of Formation of companies
Course Code : 17400303	
Course Title : Business Ethics And Corporate Governance	
CO1:	To understand the theories of Business ethics.
CO2:	Knowledge of dealing Ethical problems of Business.
CO3:	Demonstrate the concepts of work ethics.
CO4:	Apply the knowledge of Ethics in real life situation
CO5:	Gain knowledge of Corporate governance issues.
Elective –I	
Marketing	
Course Code: 17400361A	
Course Title: Retail Management	
CO1:	Understand the basic theories, principles, practices and terminology related to each functional area of business.
CO2:	Identify the key stakeholders and the roles/responsibilities of retailers towards these stakeholders.
CO3:	Product and merchandise mix, pricing, location and store- design, promotions, and store Management - to improve the total customer experience and retailer market Competitiveness.
CO4:	Interpret retail problems and be capable of critically evaluating and applying appropriate Retail management models and theories to generate strategic and tactical solutions
CO5:	Explain the central role of retail in industrialised societies, and the impact of key Market/retail trends upon this sector in the local and global contexts.
HR	
Course Code: 17400363A	
Course Title : - PERFORMANCE MANAGEMENT	
CO1:	Able to understand the practical implications of PM.
CO2:	Gain knowledge of Performance planning, appraisal and characteristic of reward system and counseling.
CO3:	Enable to design performance appraisal tools for different job descriptions.
CO4:	Apply the knowledge to develop effective team building.
CO5:	Learn the techniques of monitoring and problem solving skills.
FINANCE	
Course Code: 17400362	
Course Title : Security Analysis and Portfolio Management	
CO1:	Analysis and evaluation of financial markets, trading of securities, mutual funds.
CO2:	Construct optimal portfolios and application of asset pricing models.
CO3:	Study of Fundamental and Technical Analysis
CO4:	Analysis of bond prices yields and fixed-income portfolios.
CO5:	Role of options and futures and their use as hedging instruments.
Elective –II	
Marketing	

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Course Code: 17400361B

Course Title : CONSUMER BEHAVIOR

CO1:	Identify the consumer need in the view of business growth and understand the environmental influences on consumer behavior.
CO2:	Gain the knowledge in psychological foundations of consumer behavior.
CO3:	Apply the knowledge in consumer decision making process.
CO4:	Gain the knowledge on consumer issues.
CO5:	Enlighten the concepts of legal protection towards consumer issues

HR

Course Code: 17400363B

Course Title : - Strategic Human Resource Management

CO1:	To understand how to interpret basic statistical analysis of HRM data, theoretical perspectives of SHRM approaches.
CO2:	To understand various features of HRM systems influence the composition of workers attracted to the firm and strategic HR planning model.
CO3:	To understand how the various features of HRM Systems Influence Retention and turnover.
CO4:	To analyze a firm's HRM Systems evaluate its strengths and weaknesses, and propose changes to improve it.
CO5:	To acquire knowledge of the legal and institutional landscape for HRM systems and evaluation of strategic contribution of traditional areas and emerging areas.

FINANCE

Course Code: 17400362B-

Course Title: Banking & Insurance

CO1:	To understand the theory and practices of banking. To know the features of bank credit, types of lending, assessment of worthiness of borrower and NPAs.
CO3:	To know the need of regulating bank capital, retail banking, plastic money, NEFT, RTGS, Mobile banking, Banc assurance.
CO4:	To understand the principles and characteristics of insurance, underwriting, concept of reinsurance, an overview of IRDA.
CO5:	To understand the life and general insurance, the actuarial science, Micro insurance in India.

Course outcomes for II Year II Semester Course

Course Code: 17400401

Course Title: Logistics And Supply Chain Management

CO1:	Provide learners with knowledge and skills in information systems and qualitative analysis needed in logistics and supply chain management.
CO2:	To gain knowledge of impact of logistics on shareholder value and customer profitability analysis.
CO3:	Gain the knowledge of setting benchmarking priorities and economics of distribution.
CO4:	Student can have the knowledge of pricing and revenue management and Bullwhip Effect.
CO5:	Apply skills in Global logistics, Global strategies, Channels in Global logistics and Global Alliances.

Course Code: 17400402

Course Title :Entrepreneurship Development

CO1:	Understand the mindset of the entrepreneurs.
CO2:	

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	Apply sound business and economic principles to successfully launch and Effectively manage a new venture.
C03:	To develop an idea on the legal framework and also understand strategic Perspectives in entrepreneurship and Project Management.
C04:	Develop analytical and critical thinking skills necessary to make sound financial Decisions in business and personal arenas.
C05:	Exhibit financial and management skills necessary to succeed in increasingly Challenging academic environments of further higher education.
Elective-III	
Marketing	
The students will be able to recognize the characteristics of services, understand consumer behavior in services, align service design and standards, delivering service, managing services promises.	
FINANCE	
Course Code: : 17400462A	
Course Title: International Financial Management	
CO1:	To understand the role of currency in international financial markets and exchange rate procedures.
CO2:	To know the participants in foreign exchange market, currency derivatives, FEMA.
CO3:	To know foreign direct Investment (FDI), modes of foreign investment, international cash management, capital structure decisions and project financing.
CO4:	To know the types of risk in multinational corporations, hedging.
CO5:	To know the types of taxes at the international level, tax treaties.
CO6:	The students can also emerge as good traders of currency futures as they will come to know about hedging, speculation and various international corporate taxation procedures
Elective-III	
Marketing	
Course Code: 17400461B	
Course Title: Promotion And Distribution Management	
CO1:	Understand practical implications of Sales Management, i.e., sales planning , Budgeting.
CO2:	Apply the knowledge in preparing Advertisement & themes of Advertising etc.,
CO3:	Gain the knowledge of Advertisement Budget preparation and Decision Making
CO4:	Apply the knowledge in Channels management decision
CO5:	Enlighten the Wholesalers & Retailer theories.
HR	
Course Code : 17400463A	
Course Title: Global Human Resource Management	
CO1:	Overview of HRM and GHRM
CO2:	Knowledge of HR issues and concern of cross cultural theories and negotiations
CO3:	Demonstrate the knowledge of Domestic and International recruitment and training process
CO4:	Apply the knowledge for HRD
CO5:	Gain knowledge of Employees' compensation at global level , diversity management and IR at global level
Finance	
Course Code: 17400462B	

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Course Title: Financial Risk Management

CO1:	The students will gain knowledge in the risk management process.
CO2:	The student understands the economic environment in which such instruments operate.
CO3:	To Developing and employing theoretical valuation methods.
CO4:	The student understand financial instruments such as options, futures, swaps and other derivative securities in detail
CO5:	Application of financial instruments in managing the risk of investing and hedging activity at the individual and the corporate level.

HR

Course Code: 17400463B

Course Title : Change Management And Organizational Development

CO1:	Study how environmental events affect organizations and drive the need for continuous Change.
CO2:	Analyze change at the individual, group, and systemic levels .
CO3:	Contrast planned and unplanned change .
CO4:	Evaluate and apply integrative models for assessing, diagnosing, and implementing the need for change .
CO5:	Identify the role of leaders and managers, change agents, and change recipients in various stages of organizational change .
CO6:	Comprehend the complexity of change within organizational cultures and systems

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GR-17 Master of Computer Applications

Department Vision:

To achieve and evolve as a centre of academic excellence and research in the field of computer applications.

Department Mission:

To realize the vision, the Dept. of Computer Applications will take up following activities:

- Preparing students on latest trends in techniques by doing suitable changes in syllabus and maintaining very good academic report.
- Providing the students with in-depth understanding of technology by establishing specialized labs.
- Conducting trainings in high tech areas of computing as well as providing an environment of deep learning leading to innovative projects.
- Maintaining strong liaison with industry and creating an environment of competition for students.
- Putting efforts in strengthening student in all aspects like concern for society, better citizens, ethics and moral values, while respecting tradition.

Program Educational Objectives (PEOs):

PEO1	Working professionals in problem solving and programming skills in various computing fields of IT industries.
PEO2	To prepare the students to pursue higher studies in computing or related disciplines and to work in the fields of teaching and initiating them to take up research.
PEO3	To promote students capability to set up their own enterprise in various sectors of computer application.

Program Specific Outcomes (PSOs):

PSO1	Work as professionals in problem solving and programming skills in various computing fields of IT industries.
PSO2	Prepare the students to pursue higher studies in computing or related disciplines and to work in the fields of teaching and initiating them to take up research.
PSO3	Promote students capability to set up their own enterprise in various sectors of computer application

Program Outcomes(POs):

After completion of the programme, the post graduate in computer application will be able to

1	Apply mathematical foundation, computing and domain knowledge for the conceptualization of computing model of problems.
2	Identify, analyze the computing requirements of a problem and Solve them using computing principles.
3	Design and Evaluate a computer based system, components and process to meet the specific needs of applications.
4	Develop and integrate effectively system based components into user environment.
5	Identify opportunities and use innovative ideas to create value and wealth for the betterment of the individual and society.
6	Use current techniques and tools necessary for complex computing practices.

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7	Use suitable architecture or platform on design and implementation with respect to performance.
8	Commit to cyber regulations and responsibilities in Professional and computing practices.
9	Take up societal, environmental, health, legal, ethical issues within local and global contexts and the consequential responsibilities relevant to professional practice.
10	Identify opportunities and use innovative ideas to create value and wealth for the betterment of the individual and society.
11	Use knowledge to analyze, interpret the data and synthesis the information to derive valid conclusions using research methods.
12	Expertise in developing applications with required domain knowledge.

Course Outcomes for First Year First Semester Course	
Course Code : 17300101	
Course Title: Computer Programming	
CO1	Write clear, elementary C programs, understand algorithmic thinking and apply it to Programming.
CO2	Apply for problem-solving techniques.
CO3	Code with C arithmetic, increment, decrement, assignment, relational, equality and logical operators
CO4	Code C control structures (if, if/else, switch, while, do/while, for) and use built-in data types.
CO5	Use standard library functions and write user-defined function definitions.
Course Code : 17300102	
Course Title: Digital Logic Design	
CO1	Design Combinational sequential circuits.
CO2	They should be in a position to continue with computer organization.
CO3	To recognize Logic level models, including Boolean algebra, finite state machines, Arithmetic circuits and hardware description languages.
CO4	Describe Logic gates, memory, including CMOS gates, flip-flops, arrays.
CO5	Design tools, both manual and computerized, for design, optimization, and test of logic circuits.
CO6	Describe the design criteria, including area, speed, power consumption, and testability.
Course Code : 17300103	
Course Title: Discrete Mathematical Structures and Graph Theory	
CO1	Have knowledge of the concepts needed to test the logic of a program.
CO2	Identify mathematical structures on various levels.
CO3	Be aware of a class of functions which transform a finite set into another finite set which relates to input output functions in computer science.
CO4	Be aware of the counting principles
CO5	Be exposed to concepts and properties of algebraic structures such as semi groups, monoids and groups.
Course Code : 17300104	
Course Title: Human Resource Management	
CO1	Describe what human resource management is and how human resource management relates to effective and successful organizations.
CO2	Articulate the critical issues and challenges involved in contemporary human resource management.

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CO3	Discriminate between different types of human resource strategies, models, theories and approaches.
CO4	Develop plans relating to central HR issues.
CO5	Highlight particular issues that determine the success or failure of human resource management practices.
Course Code : 17300105	
Course Title: Accounting and Financial Management	
CO1	Solve ethical issues related to the accounting profession.
CO2	Prepare financial statements in accordance with Generally Accepted Accounts
CO3	Develop Financial accounting methods on the financial statements.
CO4	Build the audit process from the engagement planning stage through completion of the audit, as well as the rendering of an audit opinion via the various report options.
CO5	Recognize current auditing standards and acceptable practices, as well as the impact of audit risk on the engagement.
Course Code : 17300111	
Course Title: English Communication Lab	
CO1	Recognize the nuances of English language through audio-visual experience and group Activities.
CO2	Neutralize of accent for intelligibility.
CO3	Improve Speaking skills with clarity and confidence which in turn enhances their Employability skills.
Course Code : 17300112	
Course Title: Computer Programming Lab	
CO1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming
CO2	Acquire knowledge about the basic concept of writing a program.
CO3	Recognize constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
CO4	Use of conditional expressions and looping statements to solve problems Associated with conditions and repetitions.
CO5	Use functions involving the idea of modularity.
CO6	Construct structures and unions through which derived data types can be formed
CO7	Implement file handling for permanent storage of data or record.
Course Code : 17300113	
Course Title: Digital Logic Design Lab	
CO1	Describe the architecture of modern computer.
CO2	Analyze the Performance of a computer using performance equation
CO3	Calculate the effective address of an operand by addressing modes
CO4	Understand how a computer performs arithmetic operation of positive and negative numbers.
CO5	Understand how cache mapping occurs in computer and can solve various problems related to this Secondary storage organization and problem solving.

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Course Outcomes for First Year Second Semester Course	
Course Code : 17300201	
Course Title: Data Structures	
CO1	Learn how to use data structure concepts for realistic problems.
CO2	Ability to identify appropriate data structure for solving computing problems in respective language
CO3	Ability to solve problems independently and think critically.
Course Code : 17300202	
Course Title: Computer Organization	
CO1	To apply the knowledge of performance metrics to find the performance of systems.
CO2	To create an assembly language program for a microprocessor system.
CO3	To design a hardware component for an embedded system
CO4	To deal with different types of computers
CO5	To identify high performance architecture design
Course Code : 17300203	
Course Title: OOPS Through Java	
CO1	Understand of the principles and practice of object oriented analysis and design in the construction of robust, maintainable programs.
CO2	Develop object oriented constructs such as various class hierarchies, interfaces & exception handling .
CO3	Able to implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.
CO4	Demonstrate the ability to use simple data structures like arrays in a Java program.
CO5	Make use of members of classes found in the Java API
CO6	Develop various types of selection constructs in a Java program.
CO7	Know about the creation of applets & using it and application oriented knowledge on swings.
Course Code : 17300204	
Course Title: Organizational Structures and Personnel Management	
CO1	Understand the importance of organizational structure and design on internal organizational.
CO2	Understand the relationships between organization structure and the behavior of those who work in them or otherwise interact with them.
CO3	Recognize the managerial implications of organization design and change and how these are informed by the relevant theories.
CO4	Appreciate the impact of advanced technologies on the strategy and structure of organizations and how to address the changes implied by the adoption of these technologies.
CO5	Understand the Personnel Functions like position of the personnel department in the organization
Course Code : 17300205	
Course Title: Intellectual Property Rights & Professional Ethics	
CO1	Understand intellectual property rights and trademarks
CO2	Model in different views in patent law and international patent law
CO3	Identify and analyze intellectual property rights and law of trademarks

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CO4	Identify the infringement of different laws basing on ownership, transfers , duration, registration and searching
CO5	Know about the importance of software quality, social networking and ethical Issues .
Course Code : 17300211	
Course Title: DATA STRUCTURES LAB	
CO1	Identify the appropriate data structure for given problem.
CO2	Design and analyze the time and space complexity of algorithm or program.
CO3	Effectively use different data structures for solving real application problems.
Course Code : 17300212	
Course Title: OOPS Through Java Lab	
CO1	Write, compiling and execute basic Java program.
CO2	Know the use of data types and variables, decision control structures: if, nested if, etc.
CO3	Understand the use loop control structures: do, while, for etc.
CO4	Create classes and objects and use them in their program.
CO5	Know the use of OOP's concept i.e data abstraction, data hiding, encapsulation, Inheritance and polymorphism.
CO6	Create and use threads, handle exceptions and write applets.
CO7	Develop programs to create interfaces ,inner classes and wrapper classes.
Course Code : 17300213	
Course Title: IT Workshop	
CO1	To know the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers.
CO2	Understand the hardware and software level trouble shooting process, tips and tricks.
CO3	Masters in working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC.
CO4	Having awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks.
CO5	Design in crafting professional word documents; excel spread sheets and power point presentations using the Microsoft suite of office tools and Latex.

Course Outcomes for Second Year Third Semester Course	
Course Code : 17300301	
Course Title: Probability and Statistics with R	
CO1	Use of R programming for Statistical applications.
CO2	Understand the different data structures in R.
CO3	Use Sampling and find errors using R.
CO4	Acquaint with Graphics and Charts through R Programming,
CO5	Use ANOVA classification.
Course Code : 17300302	
Course Title: Data Base Management Systems	

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CO1	Master the basics of SQL and construct queries using SQL.
CO2	Analyze the difference between traditional file system and DBMS.
CO3	Work with different data base languages.
CO4	Draw various data models for data base.
CO5	Be familiar with the relational database theory, and be able to write relational algebra expressions for queries.
CO6	Design schema and normalize data.
CO7	Understand how query are being processed and executed.
CO8	Deal with online transactions and control concurrency.
CO9	Work with indexing and sorting in disk files.
CO10	Understand types of data base failures and recovery.
Course Code : 17300303	
Course Title: Operations Research	
CO1	Be proficient with tools from optimization, probability, statistics and simulation.
CO2	Understand engineering economic analysis, including fundamental applications.
CO3	Develop tools in industry and the public sector.
CO4	Facilitate mathematical and computational modeling of real decision-making problems.
CO5	Use modeling tools and computational tools.
CO6	Develop analytic skills to evaluate the problems.
CO7	Facilitate with the design, implementation, and analysis of computational experiments.
Course Code : 17300304	
Course Title: Computer Networks	
CO1	Independently understand basic computer network technology.
CO2	Identify the different types of network topologies and protocols.
CO3	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
CO4	Identify the different types of network devices and their functions within a network
CO5	Understand and building the skills of subnetting and routing mechanisms.
CO6	Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
CO7	Be familiar with wireless networking concepts
Course Code : 17300305	
Course Title: Design & Analysis of Algorithms	
CO1	Able to analyze and design algorithms and to appreciate the impact of algorithm design in practice.
CO2	Understand how the best, worst optimum case time complexity of an algorithm is defined
CO3	Know how a number of algorithms exists for fundamental problems in computer science and engineering work and compare with one another.
CO4	Know how asymptotic notation is used to provide a rough classification of algorithms

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CO5	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize divide-and-conquer algorithms. Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
CO6	Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic-programming algorithms, and analyze them.
Course Code : 17300311	
Course Title: Probability and Statistics with R Lab	
CO1	Applying concepts of data inputting and basic statistics in R
CO2	Implementing statistical modeling in R
CO3	Implementing various functions and programming in R
Course Code : 17300312	
Course Title: Database Management Systems Lab	
CO1	Understand SQL Fundamentals.
CO2	Perform table operations.
CO3	Work with objects in databases.
CO4	Develop Table ,View, Log & Triggers.
CO5	Use PL/SQL for working with data
CO6	Develop Embedded and Nested Queries.
Course Code : 17300313	
Course Title: Python Programming Lab	
CO1	Design, create, build, and debug Python applications.
CO2	Write and apply decision and loop structures for different applications.
CO3	Write GUI based code for applications.
CO4	Write and apply procedures, sub-procedures, and functions to create manageable code.
CO5	Create one and two dimensional arrays for sorting, calculating, and displaying of data.
Course Outcomes for Second Year Forth Semester Course	
Course Code : 17300401	
Course Title: Operating Systems	
CO1	Understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
CO2	Understand the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system.
CO3	Understand the design and management concepts along with issues and challenges of main memory, virtual memory and file system.
CO4	Relate master system resources sharing among the users
CO5	Master issues related to file system interface and implementation, Disk management
Course Code : 17300402	
Course Title: Web Technologies	
CO1	Understand XML and how to parse and use XML data with Java
CO2	Use the knowledge for developing web pages for different applications.
CO3	Identify with the need for and be able to write validated XHTML 1.0.

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CO4	Apply sound, non-browser specific web design principles.
CO5	Use JavaScript to access the DOM to reference web document object CSS properties.
CO6	Understand and apply Javascript, JSP, CSS & XHTML to create dynamic XHTML.
CO7	Be aware of emerging technologies and developing W3C recommendation.
Course Code : 17300403	
Course Title: Software Engineering	
CO1	Identify the minimum requirements for the development of application.
CO2	Develop, maintain, efficient, reliable and cost effective software solutions
CO3	Critically thinking and evaluate assumptions and arguments
CO4	Understand the process to be followed in the software development life cycle.
CO5	Analyze quality of software.
Course Code : 17300404	
Course Title: Cryptography & Network Security	
CO1	Design efficient secure algorithms for message communication.
CO2	Masters in creation of digital signatures.
CO3	Awareness about Intruders and Hackers.
CO4	Knowledge about key generation , various attacks and viruses.
Course Code : 17300461A	
Course Title: Human Computer Interaction	
CO1	Design good user interface
CO2	Understand the requirements as a user.
CO3	Understand the usage of different software tools and interaction devices in user interface.
CO4	Understand the basic navigation tools and components in windows and their usage.
CO5	Understand interaction devices in user interface.
Course Code : 17300461B	
Course Title: Cloud Computing	
CO1	Understand the systems, protocols and mechanisms to support cloud computing.
CO2	Develop applications for cloud computing.
CO3	Understand the hardware necessary for cloud computing.
CO4	Design and implement a novel cloud computing application.
CO5	Handle the security features in cloud computing.
Course Code : 17300461C	
Course Title: Mobile Computing	
CO1	Explain the basics of mobile telecommunication system
CO2	Choose the required functionality at each layer for given application
CO3	Identify solution for each functionality at each layer
CO4	Use simulator tools and design Ad hoc networks
CO5	Develop a mobile application.
Course Code : 17300411	
Course Title: OPERATING SYSTEMS LAB	

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CO1	Use Unix utilities and perform basic shell control of the utilities
CO2	Use the Unix file system and file access control.
CO3	Use of an operating system to develop software
CO4	Use Linux environment efficiently
CO5	Solve problems using bash for shell scripting
Course Code : 17300412	
Course Title: Web Technologies Lab	
CO1	Design and implement a basic website.
CO2	Implement different navigation strategies.
CO3	Use client-side technologies (XHTML, CSS, forms, JavaScript, and
CO4	Use server-side technologies (Servlets and JSP) to implement websites.
CO5	Develop simple back-end database to support a website.
CO6	Recognize and evaluate website organizational structure and design elements.
CO7	Create XML applications.
Course Code : 17300421	
Course Title: Mini Project	
CO1	Gain practical experience of working on real applications
CO2	Apply the concepts learned by them in various subjects.
CO3	Gain experience of working as a team or group.
CO4	Understand the importance of planning and designing in application design.

Course Outcomes for Third Year Fifth Semester Course	
Course Code : 17300501	
Course Title: Data Warehousing and Data Mining	
CO1	Understand why the data warehouse in addition to traditional database systems.
CO2	Perform the preprocessing of data and apply mining techniques on it.
CO3	Identify the association rules, classification and clusters in large data sets.
CO4	Solve real world problems in business .
CO5	Solve real world problems scientific information using data mining.
Course Code : 17300502	
Course Title: OOAD through UML	
CO1	Analyse the case studies.
CO2	Model in different views with respect user requirement.
CO3	Designing use case, logical, component and deployment.
CO4	Prepare document of any project.
CO5	Model a real world application by using ER-Diagrams.
Course Code : 17300503	
Course Title: Computer Graphics and Multimedia Systems	
CO1	solve a wide range of graphic design problems.

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CO2	Interactive experiences for a wide range of audiences.
CO3	Use various software programs used in the creation and implementation of multi-media (interactive, motion/animation, presentation, etc.).
CO4	Known relationship between critical analysis and the practical application of design.
CO5	Develop issues related to emerging electronic technologies and graphic design.
Course Code : 17300562A	
Course Title: Software Project Management	
CO1	Capable to determine the purpose and importance of project management from the Perspectives of planning, tracking and completion of project.
CO2	Compare and differentiate organization structures and project structures.
CO3	Implement a project to manage project schedule, expenses and resources with the application of suitable project management tools.
Course Code : 17300562B	
Course Title: Data Science	
CO1	Apply fundamental algorithmic ideas to process data.
CO2	Leverage algorithmic insights in order to design novel data science algorithms.
CO3	Develop a solid background on foundations of data science algorithms.
CO4	Determine running times for common algorithms that process large-scale data.
CO5	Usage of terminology related to data science.
Course Code : 17300562C	
Course Title: Mobile Application Development	
CO1	Design, implement and evaluate a User Interface for a mobile application using J2ME.
CO2	Create a small but realistic working mobile application for small computing devices.
CO3	Categorize the challenges posed by developing mobile applications and be able to Propose and evaluate and select appropriate solutions.
CO4	Install and configure Android application development tools.
CO5	Design and develop user Interfaces for the Android platform.
CO6	Save state information across important operating system events.
Course Code : 17300562D	
Course Title: Machine learning	
CO1	Differentiate between supervised, unsupervised, semi-supervised machine learning approaches
CO2	Discuss the decision tree algorithm and identify and overcome the problem of over fitting
CO3	Discuss and apply the back propagation algorithm and genetic algorithms to various problems
CO4	Apply the Bayesian concepts to machine learning
CO5	Analyse and suggest appropriate machine learning approaches for various types of problems
Course Code : 17300563A	
Course Title: Software Testing Methodologies	
CO1	Apply software testing knowledge and engineering methods.
CO2	Design and conduct a software test process for a software testing project.
CO3	Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.

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CO4	Use software testing methods and modern software testing tools for their testing projects.
Course Code : 17300563B	
Course Title: Artificial Intelligence	
CO1	Identify the problems that are amenable to solution by AI methods.
CO2	Identifying appropriate AI methods to solve a given problem.
CO3	Formalize a given problem in the language/framework of different AI methods.
CO4	Implementing basic AI algorithms.
CO5	Design and carry out an empirical evaluation of different algorithms on problem formalization, and state the conclusions that the evaluation supports.
Course Code : 17300563C	
Course Title: E-Commerce	
CO1	Understand modern computing infrastructures from the perspective of the internet and Organizations.
CO2	Having ability to solve theoretical and practical issues of conducting business over the internet and the Web
CO3	Reflect on general principles revealed through practical exploration of specific tools, techniques and methods in e-business.
Course Code : 17300511	
Course Title: Data Warehousing And Data Mining Lab	
CO1	Apply data mining techniques in real applications.
CO2	Decision on which concepts to be used and how to be used in applications.
CO3	Design a Conceptual, Logical, and Physical design of Data Warehouses OLAP applications and OLAP deployment.
CO4	Design a data warehouse or data mart to present information needed by management in a form that is usable for management client.
Course Code : 17300512	
Course Title: OOAD through UML Lab	
CO1	Understand the Case studies and design the Model.
CO2	Understand how design patterns solve design problems.
CO3	Develop design solutions using creational patterns.
CO4	Construct design solutions by using structural and behavioral patterns.
CO5	Able to construct UML diagrams for static view and dynamic view of the system.
CO6	Model creational patterns by applicable patterns for given context.
CO7	Create refined model for given Scenario using structural patterns.
CO8	Able to construct behavioral patterns for given applications.

Course Outcomes for Third Year Sixth Semester Course	
Course Code : 17300601	
Course Title: BIG DATA ANALYTICS	
CO1	Understand how to leverage the insights from big data analytics
CO2	Analyze data by utilizing various statistical and data mining approaches
CO3	Perform analytics on real-time streaming data
CO4	Understand the various NOSQL alternative database models

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Course Code : 17300611

Course Title: BIG DATA ANALYTICS LAB

CO1	Able to install Pig, Hive, SPARK and configure Hadoop and HDFS
CO2	Process big data using Hadoop framework
CO3	Understand R programming basics.
CO4	Build and apply linear and logistic regression models
CO5	Perform data analysis with machine learning methods



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GR-17 DEPARTMENT OF MANAGAMENT STUDIES

Department Vision

To be a centre of excellence for management education and nurture young minds into professionals with values, passion, integrity and entrepreneurial spirit.

Department Mission

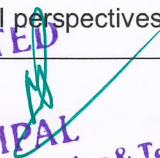
- Offer enriching learning experience.
- Provide cutting edge paradigms to the aspiring Managers.
- Highlight the contemporary Management practices and enlighten the budding Managers.
- Adopt Innovative Approach in introducing business world to the students.
- Influence the students with uncompromising Human Values so as to make them as ideal Corporate Citizens.

Program Educational Objectives(PEOs):

PEO1	Engage in ongoing learning and professional development through self- study, continuing education in Electrical and Electronics Engineering and also in other allied fields
PEO2	Apply their engineering skills, exhibiting critical thinking and problem solving skills in professional engineering practices or tackle social, technical and business challenges
PEO3	Improve professional competence through lifelong learning including higher education and research

Program Specific Outcomes(PSO's):

PSO1	Demonstrating professionalism, self-awareness, leadership and effective communication skills
PSO2	Possessing the skills requiring to work and lead effectively in a team based environment
PSO3	Integrating tools and concepts from multiple functional areas (i.e., Finance, HR, Marketing, Operations etc.,) to solve business problems
PSO4	Understanding concepts of Information Technology (IT) and how IT can improve organizational performance. Identifying key issues facing a business or business sub-division
PSO5	Utilizing qualitative and quantitative methods to investigate and solve critical business problems.
PSO6	Evaluating and integrating ethical considerations when making business decisions.
PSO7	Incorporating diversity and multicultural perspectives while making business decisions.

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Program Outcomes (POs): MBA Graduates will able to:

1	To develop ideas and ideologies to inspire and impress the business world with effective personality and communication skills.
2	To be proactive to critical situations and changes of business management.
3	To be responsive for the difficulties of the society with possible solutions.
4	To sustain in competition with optimal performance.
5	To practice knowledge management for potential enrichment.
6	To make continuous improvement and practice Kaizen.
7	To execute feasibility study for effective decision making.
8	To contribute to business consultancy.
9	To be a Professional with care for, concern and consistency in performance.
10	To be trust worthy

Course outcomes (CO's) of all courses of all programs offered by the institution

Regulation: GRMBA 17

Course outcomes for First Year First Semester Course	
Course Code: : 17400101	
Course Title: Management Theory and Practices	
CO1:	To provide a rich pool of contemporary Management knowledge .
CO2:	To gain the knowledge in time tested principles, basic concepts, emerging ideas, evolving theories, and latest techniques.
CO3:	To understand the ever changing procedures & practices in the field of Management in a comprehensive way
CO4:	Students can gain the knowledge of contemporary issues like MBO, SIX SIGMA, TQM etc.,
CO5:	To enable the students to understand critical decisions that ensure growth and sustainability of the organization.
Course Code: 17400102	
Course title: Managerial Economics	

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CO1:	Enable students to get the basic economic principles, forecast demand and supply and
CO2:	Should be able to estimate cost and understand market structure and pricing practices
CO3:	To gain knowledge in Pricing methods, market structures and various Concepts.
CO4:	The module draws on student prior learning and combines insights from economics.
CO5:	Finding solutions to various problems that arise in ordinary business life
Course Code: 17400103	
Course Title: Accounting For Managers	
CO1	Student shall be able to apply accounting concepts, principles, standards and processes
CO2	Student must demonstrate analytical skills through findings, organizing, assessing and analyzing data appropriate to a given situation.
CO3	Student must demonstrate skills in financial analysis.
CO4	Each student must identify and analyze financial statements.
Course Code: 17400104	
Course Title: Managerial Communication & Soft Skills and Business Etiquette	
CO1:	To develop communication skills.
CO2:	To gain Knowledge of intra personal and inter personal communication skills.
CO3:	To demonstrate the knowledge of formal and informal report writing
CO4:	Apply the knowledge of problem solving
CO5:	Gain knowledge of communicating through social media and mobile
Course Code: 17400105	
Course Title: Business Environment	
CO1:	To provide a rich pool of contemporary knowledge.
CO2:	To gain the knowledge in time tested principles, basic concepts, emerging ideas, evolving theories, and latest techniques .
CO3:	To understand the ever changing procedures & practices in the field of law in a Comprehensive way.
CO4:	Students can gain the knowledge on balance of payments.

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CO5:	Competition Act and BIFR and enable them to understand critical decisions that ensure growth and sustainability of the organization .
Course Code:17400106	
Course Title: Quantities Analysis For Business Decisions	
CO1:	Acquits with data reduction techniques and calculate and interpret measures of central values and dispersion.
CO2:	Understands and applies decision making in business and marketing.
CO3:	Performs optimization techniques like linear programming.
CO4:	Aware of application techniques in transportation assignment and replacement problem.
CO5:	Can draw Net work diagram for project and draw conclusion from it.
Course Code: 174005	
CO1:	To know the process of assembling a personal computer, installation of system software
CO2:	Like MS Windows, Linux and the required device drivers.
CO3:	Understand the hardware and software level trouble shooting process, tips and tricks.
CO4:	Masters in working PC to disassemble and assemble to working condition and install
Course outcomes for First Year Second Semester Course	
Course Code: 17400201	
Course Title :Financial Management	
C01:	Understand the basic type of financial management decisions and the role of the financial manager.
C02:	Identify tools used by Finance professionals in making financial decisions.
C03:	Explain how the manager's decisions are reflected in the share prices.
C04:	Specify the objective hat ensure Financial Managers makes rational investment and how they make short term investment decisions.
C05:	Examine the implications of stakeholders, ethics and the agency relationships
Course Code: 17400202	
Course Title : Human Resource Management	
CO1:	Analyze the broad fundamental concepts of HRM.
CO2:	Assess the processes to build a talented work force (include recruitment and selection, training, and development, professional development plans).

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CO3:	Evaluate performance and manage effectively in unionized environment.
CO4:	Use the qualitative and quantitative information to make effective decisions related to functional areas of business.
CO5:	Manage group and individual dynamics in organization.
Course Code: 17400203	
Course Title : Marketing Management	
CO1:	By reading text and relating the concepts through cases the student would be able to understand the concepts of marketing management.
CO2:	They will be able to analyze markets and design customer driven strategies and will be able to communicate the decisions towards business development with customer relation as focus.
Course Code: 17400204-	
Course Title: 111- IT-LAB	
CO1:	Students will identify operational and administrative processes and roles and responsibilities of operation managers in different organizational contexts.
CO2:	Students can analyze the content of an operations strategy and the decision involved.
CO3:	Understand the input – process-output framework, the extensions of it and apply them to a wide range of operations.
CO4:	Students can gain the knowledge of forecasting techniques in operations and productions methods.
Course Code: 17400205	
Course Title : Business Research Methods	
CO1 :	Theoretical and Applied Research
CO2:	Knowing Data collection Methods
CO3:	Questionnaire Preparation
CO4:	Preparation of Quality Control Charts
CO5:	Gain Knowledge in Research Techniques
Course Code: 17400206	
Course Title : Organizational Behaviour	
CO1:	Analyze the behaviour of individuals and groups in organizations in terms of the key factors that influence organizational behaviour.
CO2:	Assess the potential effects of organizational-level factors (such as structure, culture and change) on organizational behaviour.
CO3:	Critically evaluate the potential effects of important developments in the external environment (such as globalization and advances in technology) on organizational behaviour.

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CO4:	Analyze organizational behavioural issues in the context of organizational behaviour theories, models and concepts
Course outcomes for II Year I Semester Course	
Course Code: 17400301	
Course Title : -Strategic Management	
CO1:	Overview of strategic management.
CO2:	Knowledge of environmental analysis and framing of strategy.
CO3:	Demonstrate the knowledge of leadership styles and planning of strategy.
CO4:	Apply the knowledge of strategy formulation and its implementation.
CO5:	Gain knowledge of Strategic management process and control towards firm's success
Course Code: 17400302	
Course Title : Legal Aspects Of Business	
CO1:	Overview of Legal Aspects of Business.
CO2:	Knowledge of sale of goods act, unpaid seller rights, consumer protection act.
CO3:	Demonstrate the knowledge of Agency contract and negotiable instrument act.
CO4:	Gain knowledge of partnership act. Gain knowledge of Formation of companies
Course Code: : 17400303	
Course Title : Business Ethics And Corporate Governance	
CO1:	To understand the theories of Business ethics.
CO2:	Knowledge of dealing Ethical problems of Business.
CO3:	Demonstrate the concepts of work ethics.
CO4:	Apply the knowledge of Ethics in real life situation
CO5:	Gain knowledge of Corporate governance issues.
Elective –I	
Marketing	
Course Code: 17400361A-	
Course Title: Retail Management	
CO1:	Understand the basic theories, principles, practices and terminology related to each functional area of business.

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CO2:	Identify the key stakeholders and the roles/responsibilities of retailers towards these stakeholders.
CO3:	Product and merchandise mix, pricing, location and store- design, promotions, and store Management - to improve the total customer experience and retailer market Competitiveness.
CO4:	Interpret retail problems and be capable of critically evaluating and applying appropriate Retail management models and theories to generate strategic and tactical solutions
CO5:	Explain the central role of retail in industrialised societies, and the impact of key Market/retail trends upon this sector in the local and global contexts.
HR	
Course Code: 17400363A	
Course Title : - PERFORMANCE MANAGEMENT	
CO1:	Able to understand the practical implications of PM. CO2: Gain knowledge of Performance planning, appraisal and characteristic of reward system and counselling.
CO3:	Enable to design performance appraisal tools for different job descriptions.
CO4:	Apply the knowledge to develop effective team building.
CO5:	Learn the techniques of monitoring and problem solving skills.
FINANCE	
Course Code: 17400362	
Course Title : Security Analysis and Portfolio Management	
CO1:	Analysis and evaluation of financial markets, trading of securities, mutual funds.
CO2:	Construct optimal portfolios and application of asset pricing models.
CO3:	Study of Fundamental and Technical Analysis
CO4:	Analysis of bond prices yields and fixed-income portfolios.
CO5:	Role of options and futures and their use as hedging instruments.
Elective –II	
Marketing	
Course Code: 17400361B	
Course Title : CONSUMER BEHAVIOR	
CO1:	Identify the consumer need in the view of business growth and understand the environmental influences on consumer behavior.

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CO2:	Gain the knowledge in psychological foundations of consumer behavior.
CO3:	Apply the knowledge in consumer decision making process.
CO4:	Gain the knowledge on consumer issues.
CO5:	Enlighten the concepts of legal protection towards consumer issues
HR	
Course Code: 17400363B	
Course Title : - Strategic Human Resource Management	
CO1:	To understand how to interpret basic statistical analysis of HRM data, theoretical perspectives of SHRM approaches.
CO2:	To understand various features of HRM systems influence the composition of workers attracted to the firm and strategic HR planning model.
CO3:	To understand how the various features of HRM Systems Influence Retention and turnover.
CO4:	To analyze a firm's HRM Systems evaluate its strengths and weaknesses, and propose changes to improve it.
CO5:	To acquire knowledge of the legal and institutional landscape for HRM systems and evaluation of strategic contribution of traditional areas and emerging areas.
FINANCE	
Course Code: 17400362B-	
Course Title: Banking & Insurance	
CO1:	To understand the theory and practices of banking. To know the features of bank credit, types of lending, assessment of worthiness of borrower and NPAs.
CO3:	To know the need of regulating bank capital, retail banking, plastic money, NEFT, RTGS, Mobile banking, Banc assurance.
CO4:	To understand the principles and characteristics of insurance, underwriting, concept of reinsurance, an overview of IRDA.
CO5:	To understand the life and general insurance, the actuarial science, Micro insurance in India.
Course outcomes for II Year II Semester Course	
Course Code: 17400401	
Course Title: Logistics And Supply Chain Management	
CO1:	Provide learners with knowledge and skills in information systems and qualitative analysis needed in logistics and supply chain management.
CO2:	To gain knowledge of impact of logistics on shareholder value and customer profitability analysis.

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CO3:	Gain the knowledge of setting benchmarking priorities and economics of distribution.
CO4:	Student can have the knowledge of pricing and revenue management and Bullwhip Effect.
CO5:	Apply skills in Global logistics, Global strategies, Channels in Global logistics and Global Alliances.
Course Code: 17400402	
Course Title :Entrepreneurship Development	
C01:	Understand the mindset of the entrepreneurs.
C02:	Apply sound business and economic principles to successfully launch and Effectively manage a new venture.
C03:	To develop an idea on the legal framework and also understand strategic Perspectives in entrepreneurship and Project Management.
C04:	Develop analytical and critical thinking skills necessary to make sound financial Decisions in business and personal arenas.
C05:	Exhibit financial and management skills necessary to succeed in increasingly Challenging academic environments of further higher education.
Elective-III	
Marketing	
The students will be able to recognize the characteristics of services, understand consumer behavior in services, align service design and standards, delivering service, managing services promises.	
FINANCE	
Course Code: : 17400462A	
Course Title: International Financial Management	
CO1:	To understand the role of currency in international financial markets and exchange rate procedures.
CO2:	To know the participants in foreign exchange market, currency derivatives, FEMA.
CO3:	To know foreign direct Investment (FDI), modes of foreign investment, international cash management, capital structure decisions and project financing.
CO4:	To know the types of risk in multinational corporations, hedging.
CO5:	To know the types of taxes at the international level, tax treaties.
CO6:	The students can also emerge as good traders of currency futures as they will come to know about hedging, speculation and various international corporate taxation procedures
Elective-III	
Marketing	

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Course Code: 17400461B

Course Title: Promotion And Distribution Management

CO1:	Understand practical implications of Sales Management, i.e., sales planning , Budgeting.
CO2:	Apply the knowledge in preparing Advertisement & themes of Advertising etc.,
CO3:	Gain the knowledge of Advertisement Budget preparation and Decision Making
CO4:	Apply the knowledge in Channels management decision
CO5:	Enlighten the Wholesalers & Retailer theories.

HR

Course Code : 17400463A

Course Title: Global Human Resource Management

CO1:	Overview of HRM and GHRM
CO2:	Knowledge of HR issues and concern of cross cultural theories and negotiations
CO3:	Demonstrate the knowledge of Domestic and International recruitment and training process
CO4:	Apply the knowledge for HRD
CO5:	Gain knowledge of Employees' compensation at global level , diversity management and IR at global level

Finance

Course Code: 17400462B

Course Title: Financial Risk Management

CO1:	The students will gain knowledge in the risk management process.
CO2:	The student understands the economic environment in which such instruments operate.
CO3:	To Developing and employing theoretical valuation methods.
CO4:	The student understand financial instruments such as options, futures, swaps and other derivative securities in detail
CO5:	Application of financial instruments in managing the risk of investing and hedging activity at the individual and the corporate level.

HR

Course Code: 17400463B

Course Title : Change Management And Organizational Development

CO1:	Study how environmental events affect organizations and drive the need for continuous Change.
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CO2:	Analyze change at the individual, group, and systemic levels ·
CO3:	Contrast planned and unplanned change ·
CO4:	Evaluate and apply integrative models for assessing, diagnosing, and implementing the need for change ·
CO5:	Identify the role of leaders and managers, change agents, and change recipients in various stages of organizational change ·
CO6:	Comprehend the complexity of change within organizational cultures and systems

GR-17 DEPARTMENT OF COMPUTER APPLICATIONS

Department Vision:

To achieve and evolve as a centre of academic excellence and research in the field of computer applications.

Department Mission:

To realize the vision, the Dept. of Computer Applications will take up following activities:

- Preparing students on latest trends in techniques by doing suitable changes in syllabus and maintaining very good academic report.
- Providing the students with in-depth understanding of technology by establishing specialized labs.
- Conducting trainings in high tech areas of computing as well as providing an environment of deep learning leading to innovative projects.
- Maintaining strong liaison with industry and creating an environment of competition for students.
- Putting efforts in strengthening student in all aspects like concern for society, better citizens, ethics and moral values, while respecting tradition.

Program Educational Objectives (PEOs):

PEO1	Working professionals in problem solving and programming skills in various computing fields of IT industries.
PEO2	To prepare the students to pursue higher studies in computing or related disciplines and to work in the fields of teaching and initiating them to take up research.
PEO3	To promote students capability to set up their own enterprise in various sectors of computer application.

Program Specific Outcomes(PSOs):

PSO1	Work as professionals in problem solving and programming skills in various computing fields of IT industries.
PSO2	Prepare the students to pursue higher studies in computing or related disciplines and to work in the fields of teaching and initiating them to take up research.
PSO3	Promote students capability to set up their own enterprise in various sectors of computer application

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Program Outcomes(POs):

After completion of the programme, the post graduate in computer application will be able to

1	Apply mathematical foundation, computing and domain knowledge for the conceptualization of computing model of problems.
2	Identify, analyze the computing requirements of a problem and Solve them using computing principles.
3	Design and Evaluate a computer based system, components and process to meet the specific needs of applications.
4	Develop and integrate effectively system based components into user environment.
5	Identify opportunities and use innovative ideas to create value and wealth for the betterment of the individual and society.
6	Use current techniques and tools necessary for complex computing practices.
7	Use suitable architecture or platform on design and implementation with respect to performance.
8	Commit to cyber regulations and responsibilities in Professional and computing practices.
9	Take up societal, environmental, health, legal, ethical issues within local and global contexts and the consequential responsibilities relevant to professional practice.
10	Identify opportunities and use innovative ideas to create value and wealth for the betterment of the individual and society.
11	Use knowledge to analyze, interpret the data and synthesis the information to derive valid conclusions using research methods.
12	Expertise in developing applications with required domain knowledge.

Course Outcomes (GR-17)

Course Outcomes for First Year First Semester Course	
Course Code : 17300101	
Course Title: Computer Programming	
CO1	Write clear, elementary C programs, understand algorithmic thinking and apply it to Programming.
CO2	Apply for problem-solving techniques.
CO3	Code with C arithmetic, increment, decrement, assignment, relational, equality and logical operators
CO4	Code C control structures (if, if/else, switch, while, do/while, for) and use built-in data types.
CO5	Use standard library functions and write user-defined function definitions.
Course Code : 17300102	
Course Title: Digital Logic Design	
CO1	Design Combinational sequential circuits.
CO2	They should be in a position to continue with computer organization.
CO3	To recognize Logic level models, including Boolean algebra, finite state machines, Arithmetic circuits and hardware description languages.
CO4	Describe Logic gates, memory, including CMOS gates, flip-flops, arrays.

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CO5	Design tools, both manual and computerized, for design, optimization, and test of logic circuits.
CO6	Describe the design criteria, including area, speed, power consumption, and testability.
Course Code : 17300103	
Course Title: Discrete Mathematical Structures and Graph Theory	
CO1	Have knowledge of the concepts needed to test the logic of a program.
CO2	Identify mathematical structures on various levels.
CO3	Be aware of a class of functions which transform a finite set into another finite set which relates to input output functions in computer science.
CO4	Be aware of the counting principles
CO5	Be exposed to concepts and properties of algebraic structures such as semi groups, monodies and groups.
Course Code : 17300104	
Course Title: Human Resource Management	
CO1	Describe what human resource management is and how human resource management relates to effective and successful organizations.
CO2	Articulate the critical issues and challenges involved in contemporary human resource management.
CO3	Discriminate between different types of human resource strategies, models, theories and approaches.
CO4	Develop plans relating to central HR issues.
CO5	Highlight particular issues that determine the success or failure of human resource management practices.
Course Code : 17300105	
Course Title: Accounting and Financial Management	
CO1	Solve ethical issues related to the accounting profession.
CO2	Prepare financial statements in accordance with Generally Accepted Accounts
CO3	Develop Financial accounting methods on the financial statements.
CO4	Build the audit process from the engagement planning stage through completion of the audit, as well as the rendering of an audit opinion via the various report options.
CO5	Recognize current auditing standards and acceptable practices, as well as the impact of audit risk on the engagement.
Course Code : 17300111	
Course Title: English Communication Lab	
CO1	Recognize the nuances of English language through audio-visual experience and group Activities.
CO2	Neutralize of accent for intelligibility.
CO3	Improve Speaking skills with clarity and confidence which in turn enhances their Employability skills.
Course Code : 17300112	
Course Title: Computer Programming Lab	

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CO1	Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming
CO2	Acquire knowledge about the basic concept of writing a program.
CO3	Recognize constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
CO4	Use of conditional expressions and looping statements to solve problems Associated with conditions and repetitions.
CO5	Use functions involving the idea of modularity.
CO6	Construct structures and unions through which derived data types can be formed
CO7	Implement file handling for permanent storage of data or record.
Course Code : 17300113	
Course Title: Digital Logic Design Lab	
CO1	Describe the architecture of modern computer.
CO2	Analyze the Performance of a computer using performance equation
CO3	Calculate the effective address of an operand by addressing modes
CO4	Understand how a computer performs arithmetic operation of positive and negative numbers.
CO5	Understand how cache mapping occurs in computer and can solve various problems related to this Secondary storage organization and problem solving.

Course Outcomes for First Year Second Semester Course	
Course Code : 17300201	
Course Title: Data Structures	
CO1	Learn how to use data structure concepts for realistic problems.
CO2	Ability to identify appropriate data structure for solving computing problems in respective language
CO3	Ability to solve problems independently and think critically.
Course Code : 17300202	
Course Title: Computer Organization	
CO1	To apply the knowledge of performance metrics to find the performance of systems.
CO2	To create an assembly language program for a microprocessor system.
CO3	To design a hardware component for an embedded system
CO4	To deal with different types of computers
CO5	To identify high performance architecture design
Course Code : 17300203	
Course Title: OOPS Through Java	
CO1	Understand of the principles and practice of object oriented analysis and design in the construction of robust, maintainable programs.
CO2	Develop object oriented constructs such as various class hierarchies, interfaces & exception handling .

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CO3	Able to implement, compile, test and run Java programs comprising more than one class, to address a particular software problem.
CO4	Demonstrate the ability to use simple data structures like arrays in a Java program.
CO5	Make use of members of classes found in the Java API
CO6	Develop various types of selection constructs in a Java program.
CO7	Know about the creation of applets & using it and application oriented knowledge on swings.
Course Code : 17300204	
Course Title: Organizational Structures and Personnel Management	
CO1	Understand the importance of organizational structure and design on internal organizational.
CO2	Understand the relationships between organization structure and the behavior of those who work in them or otherwise interact with them.
CO3	Recognize the managerial implications of organization design and change and how these are informed by the relevant theories.
CO4	Appreciate the impact of advanced technologies on the strategy and structure of organizations and how to address the changes implied by the adoption of these technologies.
CO5	Understand the Personnel Functions like position of the personnel department in the organization
Course Code : 17300205	
Course Title: Intellectual Property Rights & Professional Ethics	
CO1	Understand intellectual property rights and trademarks
CO2	Model in different views in patent law and international patent law
CO3	Identify and analyze intellectual property rights and law of trademarks
CO4	Identify the infringement of different laws basing on ownership, transfers , duration, registration and searching
CO5	Know about the importance of software quality, social networking and ethical Issues .
Course Code : 17300211	
Course Title: DATA STRUCTURES LAB	
CO1	Identify the appropriate data structure for given problem.
CO2	Design and analyze the time and space complexity of algorithm or program.
CO3	Effectively use different data structures for solving real application problems.
Course Code : 17300212	
Course Title: OOPS Through Java Lab	
CO1	Write, compiling and execute basic Java program.
CO2	Know the use of data types and variables, decision control structures: if, nested if, etc.
CO3	Understand the use loop control structures: do, while, for, etc.
CO4	Create classes and objects and use them in their program.
CO5	Know the use of OOP's concept i.e data abstraction, data hiding, encapsulation, Inheritance and polymorphism.
CO6	Create and use threads, handle exceptions and write applets.
CO7	Develop programs to create interfaces ,inner classes and wrapper classes.
Course Code : 17300213	

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Course Title: IT Workshop	
CO1	To know the process of assembling a personal computer, installation of system software like MS Windows, Linux and the required device drivers.
CO2	Understand the hardware and software level trouble shooting process, tips and tricks.
CO3	Masters in working PC to disassemble and assemble to working condition and install Windows and Linux on the same PC.
CO4	Having awareness of cyber hygiene, i.e., protecting the personal computer from getting infected with the viruses, worms and other cyber attacks.
CO5	Design in crafting professional word documents; excel spread sheets and power point presentations using the Microsoft suite of office tools and Latex.
Course Outcomes for Second Year Third Semester Course	
Course Code : 17300301	
Course Title: Probability and Statistics with R	
CO1	Use of R programming for Statistical applications.
CO2	Understand the different data structures in R.
CO3	Use Sampling and find errors using R.
CO4	Acquaint with Graphics and Charts through R Programming,
CO5	Use ANOVA classification.
Course Code : 17300302	
Course Title: Data Base Management Systems	
CO1	Master the basics of SQL and construct queries using SQL.
CO2	Analyze the difference between traditional file system and DBMS.
CO3	Work with different data base languages.
CO4	Draw various data models for data base.
CO5	Be familiar with the relational database theory, and be able to write relational algebra expressions for queries.
CO6	Design schema and normalize data.
CO7	Understand how query are being processed and executed.
CO8	Deal with online transactions and control concurrency.
CO9	Work with indexing and sorting in disk files.
CO10	Understand types of data base failures and recovery.
Course Code : 17300303	
Course Title: Operations Research	

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CO1	Be proficient with tools from optimization, probability, statistics and simulation.
CO2	Understand engineering economic analysis, including fundamental applications.
CO3	Develop tools in industry and the public sector.
CO4	Facilitate mathematical and computational modelling of real decision-making problems.
CO5	Use modelling tools and computational tools.
CO6	Develop analytic skills to evaluate the problems.
CO7	Facilitate with the design, implementation, and analysis of computational experiments.

Course Code : 17300304

Course Title: Computer Networks

CO1	Independently understand basic computer network technology.
CO2	Identify the different types of network topologies and protocols.
CO3	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
CO4	Identify the different types of network devices and their functions within a network
CO5	Understand and building the skills of subletting and routing mechanisms.
CO6	Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
CO7	Be familiar with wireless networking concepts

Course Code : 17300305

Course Title: Design & Analysis of Algorithms

CO1	Able to analyze and design algorithms and to appreciate the impact of algorithm design in practice.
CO2	Understand how the best, worst optimum case time complexity of an algorithm is defined
CO3	Know how a number of algorithms exists for fundamental problems in computer science and engineering work and compare with one another.
CO4	Know how asymptotic notation is used to provide a rough classification of algorithms
CO5	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize divide-and-conquer algorithms. Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
CO6	Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize dynamic-programming algorithms, and analyze them.

Course Code : 17300311

Course Title: Probability and Statistics with R Lab

CO1	Applying concepts of data inputting and basic statistics in R
CO2	Implementing statistical modelling in R
CO3	Implementing various functions and programming in R

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Course Code : 17300312	
Course Title: Database Management Systems Lab	
CO1	Understand SQL Fundamentals.
CO2	Perform table operations.
CO3	Work with objects in databases.
CO4	Develop Table ,View, Log & Triggers.
CO5	Use PL/SQL for working with data
CO6	Develop Embedded and Nested Queries.
Course Code : 17300313	
Course Title: Python Programming Lab	
CO1	Design, create, build, and debug Python applications.
CO2	Write and apply decision and loop structures for different applications.
CO3	Write GUI based code for applications.
CO4	Write and apply procedures, sub-procedures, and functions to create manageable code.
CO5	Create one and two dimensional arrays for sorting, calculating, and displaying of data.
Course Outcomes for Second Year Forth Semester Course	
Course Code : 17300401	
Course Title: Operating Systems	
CO1	Understand the difference between different types of modern operating systems, virtual machines and their structure of implementation and applications.
CO2	Understand the concepts of deadlock in operating systems and how they can be managed / avoided and implement them in multiprogramming system.
CO3	Understand the design and management concepts along with issues and challenges of main memory, virtual memory and file system.
CO4	Relate master system resources sharing among the users
CO5	Master issues related to file system interface and implementation, Disk management
Course Code : 17300402	
Course Title: Web Technologies	
CO1	Understand XML and how to parse and use XML data with Java
CO2	Use the knowledge for developing web pages for different applications.
CO3	Identify with the need for and be able to write validated XHTML 1.0.
CO4	Apply sound, non-browser specific web design principles.
CO5	Use JavaScript to access the DOM to reference web document object CSS properties.
CO6	Understand and apply Java script, JSP, CSS & XHTML to create dynamic XHTML.
CO7	Be aware of emerging technologies and developing W3C recommendation.
Course Code : 17300403	
Course Title: Software Engineering	
CO1	Identify the minimum requirements for the development of application.
CO2	Develop, maintain, efficient, reliable and cost effective software solutions
CO3	Critically thinking and evaluate assumptions and arguments
CO4	Understand the process to be followed in the software development life cycle.
CO5	Analyze quality of software.
Course Code : 17300404	
Course Title: Cryptography & Network Security	
CO1	Design efficient secure algorithms for message communication.

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CO2	Masters in creation of digital signatures.
CO3	Awareness about Intruders and Hackers.
CO4	Knowledge about key generation , various attacks and viruses.
Course Code : 17300461A	
Course Title: Human Computer Interaction	
CO1	Design good user interface
CO2	Understand the requirements as a user.
CO3	Understand the usage of different software tools and interaction devices in user interface.
CO4	Understand the basic navigation tools and components in windows and their usage.
CO5	Understand interaction devices in user interface.
Course Code : 17300461B	
Course Title: Cloud Computing	
CO1	Understand the systems, protocols and mechanisms to support cloud computing.
CO2	Develop applications for cloud computing.
CO3	Understand the hardware necessary for cloud computing.
CO4	Design and implement a novel cloud computing application.
CO5	Handle the security features in cloud computing.
Course Code : 17300461C	
Course Title: Mobile Computing	
CO1	Explain the basics of mobile telecommunication system
CO2	Choose the required functionality at each layer for given application
CO3	Identify solution for each functionality at each layer
CO4	Use simulator tools and design Ad hoc networks
CO5	Develop a mobile application.
Course Code : 17300411	
Course Title: OPERATING SYSTEMS LAB	
CO1	Use Unix utilities and perform basic shell control of the utilities
CO2	Use the Unix file system and file access control.
CO3	Use of an operating system to develop software
CO4	Use Linux environment efficiently
CO5	Solve problems using bash for shell scripting
Course Code : 17300412	
Course Title: Web Technologies Lab	
CO1	Design and implement a basic website.
CO2	Implement different navigation strategies.
CO3	Use client-side technologies (XHTML, CSS, forms, JavaScript, and
CO4	Use server-side technologies (Servlets and JSP) to implement websites.
CO5	Develop simple back-end database to support a website.
CO6	Recognize and evaluate website organizational structure and design elements.
CO7	Create XML applications.
Course Code : 17300421	

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Course Title: Mini Project	
CO1	Gain practical experience of working on real applications
CO2	Apply the concepts learned by them in various subjects.
CO3	Gain experience of working as a team or group.
CO4	Understand the importance of planning and designing in application design.
Course Outcomes for Third Year Fifth Semester Course	
Course Code : 17300501	
Course Title: Data Warehousing and Data Mining	
CO1	Understand why the data warehouse in addition to traditional database systems.
CO2	Perform the pre-processing of data and apply mining techniques on it.
CO3	Identify the association rules, classification and clusters in large data sets.
CO4	Solve real world problems in business .
CO5	Solve real world problems scientific information using data mining.
Course Code : 17300502	
Course Title: OOAD through UML	
CO1	Analyse the case studies.
CO2	Model in different views with respect user requirement.
CO3	Designing use case, logical, component and deployment.
CO4	Prepare document of any project.
CO5	Model a real world application by using ER-Diagrams.
Course Code : 17300503	
Course Title: Computer Graphics and Multimedia Systems	
CO1	solve a wide range of graphic design problems.
CO2	Interactive experiences for a wide range of audiences.
CO3	Use various software programs used in the creation and implementation of multi-media (interactive, motion/animation, presentation, etc.).
CO4	Known relationship between critical analysis and the practical application of design.
CO5	Develop issues related to emerging electronic technologies and graphic design.
Course Code : 17300562A	
Course Title: Software Project Management	
CO1	Capable to determine the purpose and importance of project management from the Perspectives of planning, tracking and completion of project.
CO2	Compare and differentiate organization structures and project structures.
CO3	Implement a project to manage project schedule, expenses and resources with the application of suitable project management tools.
Course Code : 17300562B	
Course Title: Data Science	
CO1	Apply fundamental algorithmic ideas to process data.
CO2	Leverage algorithmic insights in order to design novel data science algorithms.
CO3	Develop a solid background on foundations of data science algorithms.
CO4	Determine running times for common algorithms that process large-scale data.
CO5	Usage of terminology related to data science.
Course Code : 17300562C	
Course Title: Mobile Application Development	
CO1	Design, implement and evaluate a User Interface for a mobile application using J2ME.

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CO2	Create a small but realistic working mobile application for small computing devices.
CO3	Categorize the challenges posed by developing mobile applications and be able to Propose and evaluate and select appropriate solutions.
CO4	Install and configure Android application development tools.
CO5	Design and develop user Interfaces for the Android platform.
CO6	Save state information across important operating system events.
Course Code : 17300562D	
Course Title: Machine learning	
CO1	Differentiate between supervised, unsupervised, semi-supervised machine learning approaches
CO2	Discuss the decision tree algorithm and indentify and overcome the problem of Overfitting
CO3	Discuss and apply the back propagation algorithm and genetic algorithms to various problems
CO4	Apply the Bayesian concepts to machine learning
CO5	Analyse and suggest appropriate machine learning approaches for various types of problems
Course Code : 17300563A	
Course Title: Software Testing Methodologies	
CO1	Apply software testing knowledge and engineering methods.
CO2	Design and conduct a software test process for a software testing project.
CO3	Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
CO4	Use software testing methods and modern software testing tools for their testing projects.
Course Code : 17300563B	
Course Title: Artificial Intelligence	
CO1	Identify the problems that are amenable to solution by AI methods.
CO2	Identifying appropriate AI methods to solve a given problem.
CO3	Formalize a given problem in the language/framework of different AI methods.
CO4	Implementing basic AI algorithms.
CO5	Design and carry out an empirical evaluation of different algorithms on problem formalization, and state the conclusions that the evaluation supports.
Course Code : 17300563C	
Course Title: E-Commerce	
CO1	Understand modern computing infrastructures from the perspective of the internet and Organizations.
CO2	Having ability to solve theoretical and practical issues of conducting business over the internet and the Web
CO3	Reflect on general principles revealed through practical exploration of specific tools, techniques and methods in e-business.
Course Code : 17300511	
Course Title: Data Warehousing And Data Mining Lab	
CO1	Apply data mining techniques in real applications.
CO2	Decision on which concepts to be used and how to be used in applications.
CO3	Design a Conceptual, Logical, and Physical design of Data Warehouses OLAP applications and OLAP deployment.

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CO4	Design a data warehouse or data mart to present information needed by management in a form that is usable for management client.
Course Code : 17300512	
Course Title: OOAD through UML Lab	
CO1	Understand the Case studies and design the Model.
CO2	Understand how design patterns solve design problems.
CO3	Develop design solutions using creational patterns.
CO4	Construct design solutions by using structural and behavioral patterns.
CO5	Able to construct UML diagrams for static view and dynamic view of the system.
CO6	Model creational patterns by applicable patterns for given context.
CO7	Create refined model for given Scenario using structural patterns.
CO8	Able to construct behavioural patterns for given applications.
Course Outcomes for Third Year Sixth Semester Course	
Course Code : 17300601	
Course Title: BIG DATA ANALYTICS	
CO1	Understand how to leverage the insights from big data analytics
CO2	Analyze data by utilizing various statistical and data mining approaches
CO3	Perform analytics on real-time streaming data
CO4	Understand the various No SQL alternative database models
Course Code : 17300611	
Course Title: BIG DATA ANALYTICS LAB	
CO1	Able to install Pig, Hive, SPARK and configure Hadoop and HDFS
CO2	Process big data using Hadoop framework
CO3	Understand R programming basics.
CO4	Build and apply linear and logistic regression models
CO5	Perform data analysis with machine learning methods

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CO-4	To understand the concept of equalizers and types.
CO-5	To provide knowledge about wireless networks.

Course code:17241261(A)

Course Title: CMOS ANALOG AND DIGITAL IC DESIGN

CO-1	To provide knowledge about MOS design and small signal modelling of MOS devices.
CO-2	To get knowledge on both combinational and sequential MOS device modelling circuits.
CO-3	Underlying the concept dynamic logic circuits.
CO-4	To provide knowledge about semiconductor memories.
CO-5	To understand the concept of Analog CMOS Sub- circuits.

Course code:17241211

Course Title: ADVANCED COMMUNICATIONS LAB

CO-1	To understand the communications.
CO-2	To get knowledge on advanced level of communications.
CO-3	Underlying the concept dynamic communications
CO-4	To provide knowledge about advanced communications.
CO-5	To understand the concept of communications in advanced levels.



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CO4	Design a data warehouse or data mart to present information needed by management in a form that is usable for management client.
Course Code : 17300512	
Course Title: OOAD through UML Lab	
CO1	Understand the Case studies and design the Model.
CO2	Understand how design patterns solve design problems.
CO3	Develop design solutions using creational patterns.
CO4	Construct design solutions by using structural and behavioral patterns.
CO5	Able to construct UML diagrams for static view and dynamic view of the system.
CO6	Model creational patterns by applicable patterns for given context.
CO7	Create refined model for given Scenario using structural patterns.
CO8	Able to construct behavioural patterns for given applications.
Course Outcomes for Third Year Sixth Semester Course	
Course Code : 17300601	
Course Title: BIG DATA ANALYTICS	
CO1	Understand how to leverage the insights from big data analytics
CO2	Analyze data by utilizing various statistical and data mining approaches
CO3	Perform analytics on real-time streaming data
CO4	Understand the various No SQL alternative database models
Course Code : 17300611	
Course Title: BIG DATA ANALYTICS LAB	
CO1	Able to install Pig, Hive, SPARK and configure Hadoop and HDFS
CO2	Process big data using Hadoop framework
CO3	Understand R programming basics.
CO4	Build and apply linear and logistic regression models
CO5	Perform data analysis with machine learning methods



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CO-4	To study the basic Quantum mechanics, interpretation of the direct and indirect band gap in semiconductors and identify the type of semiconductor using Hall effect.
Course Code: 14199202	
Course Title: Mathematics – III	
CO-1	Solve problems in engineering domain related to Linear Algebra using matrices.
CO-2	Analyze and solve engineering problems using Laplace Series.
CO-3	Analyze and solve engineering problems using Fourier Series.
CO-4	Solve engineering problems using Complex Integration
Course code: 14199206	
Course Name: Environmental Studies	
CO-1	Gain a higher level of personal involvement and interest in understanding and solving environmental problems.
CO-2	Comprehend environmental problems from multiple perspectives with emphasis on human modern lifestyles and developmental activities
CO-3	Demonstrate knowledge relating to the biological systems involved in the major global environmental problems of the 21st century
CO-4	Recognize the interconnectedness of human dependence on the earth's ecosystems
CO-5	Influence their society in proper utilization of goods and services.
Course code: 14199211	
Course Name: English Communication Skills Lab-II	
CO-1	Communicate confidently in English in social and professional contexts with improved skills of fluency and accuracy
CO-2	Speak grammatically correct sentences employing appropriate vocabulary suitable to different contexts
CO-3	Read for various scholarly materials for information and comprehension
Course code: 14199212	
Course Name: Engineering Physics Lab	
CO-1	To impart knowledge of physical optical phenomenon like Interference, Diffraction and polarization involving design of optical instruments with higher resolution To explain the concept of dielectric constant and polarization in dielectric materials and summarize Gauss's law in the presence of dielectrics
CO-2	To interpret dielectric loss, Lorentz field and Claussius - Mosotti relation and classify the magnetic materials based on susceptibility and their temperature dependence. To apply the Gauss' Theorem for divergence and Stokes' Theorem for curl and evaluate Maxwell's displacement current and correction in Ampere's law.
CO-3	To assess the electromagnetic wave propagation in different media and its power and explain the working principle of optical fibers and its classification based on refractive index profile and mode of propagation with their applications. To classify the energy bands of semiconductors and outline the properties of n-type and p-type semiconductors.
CO-4	To study the basic Quantum mechanics, interpretation of the direct and indirect band gap in semiconductors and identify the type of semiconductor using Hall effect.


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