



## **KASIREDDY NARAYANREDDY COLLEGE OF ENGINEERING & RESEARCH.**

(Approved by AICTE & Affiliated to JNTUH)

Abdullapur (V), Abdullapurmet (M), R.R Dist, 501505, Telangana, INDIA.

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### **DEPARTMENT OF CIVIL ENGINEERING**

#### **CE301PC: SURVEYING AND GEOMATICS**

**Course Outcomes:** Course will enable the student to:

- Apply the knowledge to calculate angles, distances and levels
- Identify data collection methods and prepare field notes
- Understand the working principles of survey instruments, measurement errors and corrective measures
- Interpret survey data and compute areas and volumes, levels by different type of equipment and relate the knowledge to the modern equipment and methodologies

#### **CE303PC: STRENGTH OF MATERIALS – I**

**Course Outcome:** On completion of the course, the student will be able to:

- Describe the concepts and principles, understand the theory of elasticity including strain/displacement and Hooke's law relationships; and perform calculations, related to the strength of structured and mechanical components.
- Recognize various types loads applied on structural components of simple framing geometries and understand the nature of internal stresses that will develop within the components.
- To evaluate the strains and deformation that will result due to the elastic stresses developed within the materials for simple types of loading
- Analyze various situations involving structural members subjected to plane stresses by application of Mohr's circle of stress;
- Frame an idea to design a system, component, or process

#### **CE403PC: BUILDING MATERIALS, CONSTRUCTION AND PLANNING**

**Course Outcomes:** After the completion of the course student should be able to

- Define the Basic terminology that is used in the industry
- Categorize different building materials, properties and their uses
- Understand the Prevention of damage measures and good workmanship

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- Explain different building services

**CE405PC: HYDRAULICS AND HYDRAULIC MACHINERY**

**Course Outcomes:** At the end of the course the student will able to

Apply their knowledge of fluid mechanics in addressing problems in open channels and hydraulic machinery.

- Understand and solve problems in uniform, gradually and rapidly varied flows in open channel in steady state conditions.
- Apply dimensional analysis and to differentiate the model, prototype and similitude conditions for practical problems.
- Get the knowledge on different hydraulic machinery devices and its principles

**CE505PC: GEOTECHNICAL ENGINEERING**

**Course Outcomes:** At the end of the course the student will able to

- Characterize and classify the soils
- Able to estimate seepage, stresses under various loading conditions and compaction characteristics
- Able to analyse the compressibility of the soils
- Able to understand the strength of soils under various drainage conditions


**CE503PC: STRUCTURAL ENGINEERING – I (RCC)**

**Course Outcomes:** After the completion of the course student should be able to

- **Compare** and **Design** the singly reinforced, doubly reinforced and flanged sections.
- **Design** the axially loaded, uniaxial and biaxial bending columns.
- **Classify** the footings and **Design** the isolated square, rectangular and circular footings
- **Distinguish** and **Design** the one-way and two-way slabs.

**CE601PC: HYDROLOGY AND WATER RESOURCES ENGINEERING**

**Course Outcomes:** At the end of the course the student will be able to

  
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- Understand the different concepts and terms used in engineering hydrology
- To **identify and** explain various formulae used in estimation of surface and Ground water hydrology components
- Demonstrate their knowledge to **connect** hydrology to the field requirement

### CE603PC: FOUNDATION ENGINEERING

**Course Outcomes:** At the end of the course the student will able to

- understand the principles and methods of Geotechnical Exploration
- decide the suitability of soils and check the stability of slopes
- calculate lateral earth pressures and check the stability of retaining walls
- analyse and design the shallow and deep foundations

### CE701PC: ESTIMATION, COSTING AND PROJECT MANAGEMENT

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

- understand the technical specifications for various works to be performed for a project and how they impact the cost of a structure.
- quantify the worth of a structure by evaluating quantities of constituents, derive their cost rates and build up the overall cost of the structure.
- understand how competitive bidding works and how to submit a competitive bid proposal.
- An idea of how to optimize construction projects based on costs
- An idea how construction projects are administered with respect to contract structures and issues.
- An ability to put forward ideas and understandings to others with effective communication processes

### CE723PE: GROUND WATER HYDROLOGY (PE – IV)

**Course Outcomes:** On successful completion of this course, students should be able to:

- **Identify** different fundamental equations and concepts as applied in the Groundwater studies
- **Discuss** and derive differential equation governing groundwater flow in three dimensions
- To **solve** groundwater mathematical equations and analyze pumping tests in steady and non- steady flow cases
- **Distinguish** and understand the saline water intrusion problem in costal aquifers

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**CE811PE: SOLID WASTE MANAGEMENT (PE – V)**

**Course Outcomes:** At the end of the course the student will able to:

- Identify the physical and chemical composition of solid wastes
- Analyze the functional elements for solid waste management.
- Understand the techniques and methods used in transformation, conservation, and recovery of materials from solid wastes.
- Identify and design waste disposal systems

**CE821PE: AIRPORT, RAILWAYS, AND WATERWAYS (PE – VI)**

**Course Outcomes:** At the end of this course, the students will develop:

- An ability to design of runways and taxiways.
- An ability to design the infrastructure for large and small airports
- An ability to design various crossings and signals in Railway Projects.

An ability plan the harbors and ports projects including the infrastructure required for new ports and harbors

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**DEPARTMENT OF CIVIL ENGINEERING**

The Program Educational Objectives of the Civil Engineering undergraduate program are for graduates to achieve the following, within few years of graduation. The graduates of Civil Engineering Program will

**PEO-1:** Contribute to Nation's growth, enabling time-bound creation of world-class infrastructure in the country and delivering sustainable solutions for rural and urban development.

**PEO-2:** Pursue professional development to enhance their undergraduate degree and advance their careers.

**PEO-3:** Exhibit commitment, engage in lifelong learning and continuous improvement for enhancing their professional and personal capabilities.

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### DEPARTMENT OF CIVIL ENGINEERING

#### **Program Outcomes (POs)**

**Program Outcomes (POs)** are attributes of the graduates of the programme that are indicative of the graduates ability and competence to work as an engineering professional upon graduation. Program Outcomes are statements that describe what students are expected to know or be able to do by the time of graduation. They must relate to knowledge and skills that the students acquire from the programme. The achievement of all outcomes indicates that the student is well prepared to achieve the program educational objectives down the road. The following 12 POs have been chosen by the Civil Engineering Department .

**PO-1 : Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

**PO-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.

**PO-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.

**PO-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.

**PO-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.

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**PO-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.

**PO-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.

**PO-8 : Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO-9 : Individual or teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO-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.

**PO-11 : Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as member and leader in a team, to manage projects and in multidisciplinary environments.

**PO-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 to technological change

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**Program Specific Outcomes (PSOs)** are **specific statements** that describe the professional career accomplishments that the program is designed. The PSOs of the B.tech. program in Civil Engineering are as follows:

**PSO-1:** Capability to manage large infrastructure projects ensuring safe and cost-effective execution of projects having knowledge of fast track construction and project management.

**PSO-2:** Ability to use building software packages to calculate safe loads and stresses for designing structural members to ensure safety and serviceability.

**PSO-3:** Ability to provide innovative solutions for traffic safety and efficiency through intelligent transportation systems, and mitigate the environmental impact of construction by adopting green building concepts.

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### DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

#### EE302PC: ELECTRICAL CIRCUIT ANALYSIS

**Course Outcomes :**At the end of this course ,students will demonstrate the ability to

- Apply network theorems for the analysis of electrical circuits.
- Obtain the transient and steady-state response of electrical circuits.
- Analyze circuits in the sinusoidal steady-state(single-phase and three-phase).
- Analyze two port circuit behavior.

#### EE304PC: ELECTRICAL MACHINES-I

**Course Outcomes :**At the end of this course, students will demonstrate the ability to

- Identify different parts of a DC machine & understand its operation
- Carryout different testing methods to predetermine the efficiency of DC machines
- Understand different excitation and starting methods of DC machines
- Control the voltage and speed of a DC machines
- Analyze single phase and three phase transformers circuits.

#### EE305PC: ELECTRO MAGNETIC FIELDS

**Course Outcomes :**At the end of the course, students will demonstrate the ability

- To understand the basic laws of electromagnetism.
- To obtain the electric and magnetic fields for simple configurations under static conditions.
- To analyze time varying electric and magnetic fields.
- To understand Maxwell's equation in different forms and different media.
- To understand the propagation of EM waves.

#### EE404PC: CONTROL SYSTEMS

**Course Outcomes :**At the end of this course, students will demonstrate the ability to

- Understand the modeling of linear-time-invariant systems using transfer function and state-space representations.

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- Understand the concept of stability and its assessment for linear-time invariant systems.
- Design simple feedback controllers.

**EE405PC: POWERSYSTEM-I**

**Course Outcomes :**At the end of this course, students will demonstrate the ability to

- Understand the concepts of power systems.
- Understand the operation of conventional generating stations and renewable sources of electrical power.
- Evaluate the power tariff methods.
- Determine the electrical circuit parameters of transmission lines
- Understand the layout of substation and underground cables and corona

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### **DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

The Program Educational Objectives of the Electrical Engineering undergraduate program are for graduates to achieve the following, within few years of graduation. The graduates of Electrical Engineering Program will

**PEO-1:** Establish their careers in the field of Electrical Engineering and related areas, providing innovative and effective solutions.

**PEO-2:** Establish themselves as entrepreneur, work in research and development organization and pursue higher education

**PEO-3:** Involve in continuous learning through state-of-the-art technologies for solving societal problems using logical and flexible approaches in decision-making.

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**DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING**

**The students of undergraduate program in Electrical Engineering will have**

**PO-1:** Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

**PO-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.

**PO-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.

**PO-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.

**PO-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.

**PO-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.

**PO-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.

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**PO-8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO-9: Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO-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.

**PO-11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as member and leader in a team, to manage projects and in multidisciplinary environments.

**PO-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 to technological change.

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**PSO-1:** Ability to utilize logical and technical skills to model, simulate and analyse electrical components and systems

**PSO-2:** Empowering to provide socially acceptable technical solutions to real time electrical engineering problems with the application of modern and appropriate techniques for sustainable development.

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### DEPARTMENT OF MECHANICAL ENGINEERING

#### ME302PC: MECHANICS OF SOLIDS

##### Course Outcomes:

- Analyze the behavior of the solid bodies subjected to various types of loading;
- Apply knowledge of materials and structural elements to the analysis of simple structures;
- Undertake problem identification, formulation and solution using a range of analytical methods;
- Analyze and interpret laboratory data relating to behavior of structures and the materials they are made of, and undertake associated laboratory work individually and in teams.
- Expectation and capacity to undertake lifelong learning

#### ME304PC: PRODUCTION TECHNOLOGY

##### Course Outcomes: Student will be able to:

- Understand the idea for selecting materials for patterns.
- Know Types and allowances of patterns used in casting and analyze the components of moulds.
- Design core, core print and gating system in metal casting processes
- Understand the arc, gas, solid state and resistance welding processes.
- Develop process-maps for metal forming processes using plasticity principles.
- Identify the effect of process variables to manufacture defect free products

#### ME305PC: THERMODYNAMICS

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

- Understand and differentiate between different thermodynamic systems and processes.
- Understand and apply the laws of Thermodynamics to different types of systems undergoing various processes and to perform thermodynamic analysis.
- Understand and analyze the Thermodynamic cycles and evaluate performance parameters.
- 

#### ME306PC: PRODUCTION TECHNOLOGY LAB


##### Course Outcomes: Understanding the properties of moulding sands and pattern making.

Fabricate joints using gas welding and arc welding. Evaluate the quality of welded joints. Basic idea of press working tools and performs moulding studies on plastics.

#### ME307PC: MACHINE DRAWING PRACTICE

##### Course Outcomes:

- Preparation of engineering and working drawings with dimensions and bill of material during

  
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design and development. Developing assembly drawings using part drawings of machine components.

- Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribs.
- Types of sections – selection of section planes and drawing of sections and auxiliary sectional views. Parts not usually sectioned.
- Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and tapered features.
- Title boxes, their size, location and details - common abbreviations and their liberal usage
- Types of Drawings – working drawings for machine parts

  
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**DEPARTMENT OF MECHANICAL ENGINEERING**





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**DEPARTMENT OF MECHANICAL ENGINEERING**

The Program Educational Objectives of the Mechanical Engineering undergraduate program are for graduates to achieve the following, within few years of graduation. The graduates of Mechanical Engineering Program will

**PEO 1:** Contribute towards Nation's development through their ability to solve diverse and complex industrial problems across a broad range of design and production.

**PEO 2:** Pursue careers in government services, research organizations, industries, higher education, entrepreneurship, and professional development.

**PEO 3:** Adapt to changing scenarios of dynamic technology with the potential to solve larger societal problems using a coherent and flexible approach to decision-making.

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### DEPARTMENT OF MECHANICAL ENGINEERING

**PO 1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

**PO 2: Problem analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles mathematics, natural sciences and engineering sciences.

**PO 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.

**PO 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.

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**PO 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.

**PO 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.

**PO 8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

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Abdullapur (V), Hayathnagar (M).  
R.R. District-501 505.



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**PO 9: Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO 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.

**PO 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 multidisciplinary environments.

**PO 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 to technological change.

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**DEPARTMENT OF MECHANICAL ENGINEERING**

**PSO 1:** Capability to identify, analyze and build manufacturing and thermal systems using mechanical engineering principles and techniques.

**PSO 2:** Developing attitude to accept global challenges and apply mechanical engineering knowledge for solving problems related to design, production, and interdisciplinary fields.

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### DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

#### **EC403PC: ANALOG AND DIGITAL COMMUNICATIONS**

**Course Outcomes:** Upon completing this course, the student will be able to

- Analyze and design of various continuous wave and angle modulation and demodulation techniques
- Understand the effect of noise present in continuous wave and angle modulation techniques.
- Attain the knowledge about AM , FM Transmitters and Receivers
- Analyze and design the various Pulse Modulation Techniques.
- Understand the concepts of Digital Modulation Techniques and Baseband transmission.

#### **EC404PC: LINEAR IC APPLICATIONS**

**Course Outcomes:** Upon completing this course, the student will be able to

- A thorough understanding of operational amplifiers with linear integrated circuits.
- Attain the knowledge of functional diagrams and applications of IC 555 and IC 565
- Acquire the knowledge about the Data converters.

#### **EC405PC: ELECTRONIC CIRCUIT ANALYSIS**

**Course Outcomes:** Upon completing this course, the student will be able to

- Design the multistage amplifiers and understand the concepts of High Frequency Analysis of Transistors.
- Utilize the Concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations
- Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications.
- Design Multivibrators and sweep circuits for various applications.

#### **EC503PC: CONTROL SYSTEMS**

**Course Outcomes:** At the end of this course, students will demonstrate the ability to

- Understand the modeling of linear-time-invariant systems using transfer function and statespace representations.
- Understand the concept of stability and its assessment for linear-time invariant systems.
- Design simple feedback controllers.

#### **EC513PE: ELECTRONIC MEASUREMENTS AND INSTRUMENTATION**

**Course Outcomes:** Upon completing this course, the student will be able to

1. Measure electrical parameters with different meters and understand the basic definition of

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measuring parameters.

2. Use various types of signal generators, signal analyzers for generating and analyzing various real-time signals.
3. Operate an Oscilloscope to measure various signals.
4. Measure various physical parameters by appropriately selecting the transducers.

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION  
ENGINEERING**

The Program Educational Objectives of the Electronics and Communication Engineering undergraduate program are for graduates to achieve the following, within few years of graduation. The graduates of Electronics and Communication Engineering Program will

**PEO 1:** Be engaged in successful careers in industry through their strong technical, hands-on, critical thinking, and team player skills.

**PEO 2:** Pursue professional development to enhance their undergraduate degree and advance their careers

**PEO 3:** Involve in continuous learning through state-of-the-art technologies for solving societal problems using logical and flexible approaches in decision-making.

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION  
ENGINEERING**

The statements of student outcomes (POs) for B.tech. ECE program are listed below.

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

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

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

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

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

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

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

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

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

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

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

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

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION**  
**ENGINEERING**

The PSOs of the B.tech. program in Electronics and Communication Engineering are as follows:

**PSO1:** Capability to analyze and apply modern tools and techniques for integrating electronics hardwares and softwares.

**PSO2:** Inculcating attitude to design and develop electronics & communication systems using the concepts of embedded technologies, fabrication and IoTs for contemporary needs.

  
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### DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

#### **CS304PC: COMPUTER ORGANIZATION AND ARCHITECTURE**

##### **Course Outcomes:**

- Understand the basics of instructions sets and their impact on processor design.
- Demonstrate an understanding of the design of the functional units of a digital computer system.
- Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
- Design a pipeline for consistent execution of instructions with minimum hazards.
- Recognize and manipulate representations of numbers stored in digital computers

#### **CS305PC: OBJECT ORIENTED PROGRAMMING USING C++**

##### **Course Outcomes:**

- Able to develop programs with reusability
- Develop programs for file handling
- Handle exceptions in programming
- Develop applications for a range of problems using object-oriented programming techniques

#### **CS403PC: OPERATING SYSTEMS**

##### **Course Outcomes:**

- Will be able to control access to a computer and the files that may be shared
- Demonstrate the knowledge of the components of computer and their respective roles in computing.
- Ability to recognize and resolve user problems with standard operating environments.
- Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.

#### **CS404PC: DATABASE MANAGEMENT SYSTEMS**

##### **Course Outcomes:**

- Gain knowledge of fundamentals of DBMS, database design and normal forms
- Master the basics of SQL for retrieval and management of data.
- Be acquainted with the basics of transaction processing and concurrency control.
- Familiarity with database storage structures and access techniques

#### **CS405PC: JAVA PROGRAMMING**

##### **Course Outcomes:**

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- Able to solve problems using java collection framework and I/o classes.

  
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- Able to develop multithreaded applications with synchronization.
- Able to develop applets for web applications.
- Able to design GUI based applications

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### **DEPARTMENT OF COMPUTER SCIENCE ENGINEERING**

The Program Educational Objectives of the Computer Science & Engineering undergraduate program are for graduates to achieve the following, within few years of graduation. The graduates of Computer Science & Engineering Program will

**PEO 1:** Engage in successful careers in industry, academia, and public service, by applying the acquired knowledge of Science, Mathematics and Engineering, providing technical leadership for their business, profession and community

**PEO 2:** Establish themselves as entrepreneur, work in research and development organization and pursue higher education

**PEO 3:** Exhibit commitment and engage in lifelong learning for enhancing their professional and personal capabilities.

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### DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

**PO 1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

**PO 2: Problem analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles mathematics, natural sciences and engineering sciences.

**PO 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.

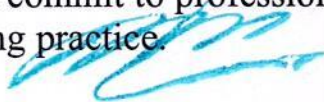
**PO 4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

**PO 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.

**PO 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.

**PO 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.

**PO 8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

  
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**PO 9: Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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**DEPARTMENT OF COMPUTER SCIENCE ENGINEERING**

**PSO 1:** Exhibit attitude for continuous learning and deliver efficient solutions for emerging challenges in the computation domain.

**PSO 2:** Apply standard software engineering principles to develop viable solutions for Information Technology Enabled Services (ITES).

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### DEPARTMENT OF COMPUTER SCIENCE ENGINEERING(DATA SCIENCE)

#### **CS302PC: DATA STRUCTURES**

##### **Course Outcomes:**

- Ability to select the data structures that efficiently model the information in a problem.
- Ability to assess efficiency trade-offs among different data structure implementations or combinations.
- Implement and know the application of algorithms for sorting and pattern matching.
- Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, and AVL-trees.

#### **MA313BS: MATHEMATICAL AND STATISTICAL FOUNDATIONS**

**Course Outcomes:** After learning the contents of this course, the student must be able to

- Apply the number theory concepts to cryptography domain
- Apply the concepts of probability and distributions to some case studies
- Correlate the material of one unit to the material in other units
- Resolve the potential misconceptions and hazards in each topic of study.

#### **CS304PC: COMPUTER ORGANIZATION AND ARCHITECTURE**

##### **Course Outcomes:**

- Understand the basics of instructions sets and their impact on processor design.
- Demonstrate an understanding of the design of the functional units of a digital computer system.
- Evaluate cost performance and design trade-offs in designing and constructing a computer processor including memory.
- Design a pipeline for consistent execution of instructions with minimum hazards.
- Recognize and manipulate representations of numbers stored in digital computers

#### **CS311PC: PYTHON PROGRAMMING**

##### **Course Outcomes:**

- Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
- Demonstrate proficiency in handling Strings and File Systems.
- Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Implement exemplary applications related to Network Programming, Web Services and Databases in Python.

  
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**CS307PC: DATA STRUCTURES LAB**

**Course Outcomes:**

- Ability to develop C programs for computing and real-life applications using basic elements like control statements, arrays, functions, pointers and strings, and data structures like stacks, queues and linked lists.
- Ability to Implement searching and sorting algorithms

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### DEPARTMENT OF COMPUTER SCIENCE ENGINEERING(AIML)

#### DESIGN AND ANALYSIS OF ALGORITHMS

##### Course Outcomes:

1. Ability to analyze the performance of algorithms
2. Ability to choose appropriate data structures and algorithm design methods for a specified application
3. Ability to understand how the choice of data structures and the algorithm design methods Impact the performance of programs

#### MACHINE LEARNING

##### Course Outcomes:

- Understand the concepts of computational intelligence like machine learning
- Ability to get the skill to apply machine learning techniques to address the real time problems in different areas
- Understand the Neural Networks and its usage in machine learning application.

#### COMPUTER NETWORKS

##### Course Outcomes

1. Gain the knowledge of the basic computer network technology.
2. Gain the knowledge of the functions of each layer in the OSI and TCP/IP reference model.
3. Obtain the skills of subnetting and routing mechanisms.
4. Familiarity with the essential protocols of computer networks, and how they can be applied in network design and implementation.

#### COMPILER DESIGN

##### Course Outcomes:

- Demonstrate the ability to design a compiler given a set of language features.
- Demonstrate the the knowledge of patterns, tokens & regular expressions for lexical analysis.
- Acquire skills in using lex tool & yacc tool for develeoping a scanner and parser.
- Design and implement LL and LR parsers
- Design algorithms to do code optimization in order to improve the performance of a program in terms of space and time complexity.
- Design algorithms to generate machine code.

#### GRAPH THEORY (Professional Elective – I)

##### Course Outcomes:

- Know some important classes of graph theoretic problems;
- Be able to formulate and prove central theorems about trees, matching, connectivity, colouring

  
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and planar graphs;

- Be able to describe and apply some basic algorithms for graphs;
- Be able to use graph theory as a modelling tool.

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### **DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION**

#### **22MBA01: MANAGEMENT AND ORGANIZATIONAL BEHAVIOR**

**Course Outcomes:** Students will be able to:

- Gain understanding of the Concepts of Management, its Evolution, Functions and the Theories contributed by various Management Thinkers.
- Learn the process of planning, goal setting and the process of decision making with the help of various models.
- Learn the processes of Organizing and Controlling with the help of various Organizational Structures.
- Appreciate the relevance of Individual and group behaviour in an organization and the role of Culture and dynamics
- Identify different Leadership Styles, Skills and the Theories of Motivation

#### **22MBA02: BUSINESS ECONOMICS**

**Course Outcomes:** Students will be able to

- Understand the Concepts and Principles of Business Economics.
- Learn various concepts and practical applications of Demand and Supply viz. Laws, Types, Elasticity, Forecasting and Equilibrium.
- Learn concepts and applications related to Production and Cost of a firm.
- Learn the features of various Market Structures along with the Decision-making with regards to Price and Output in Short and Long Terms.
- Understand the concepts of Pricing Practices, Theory of Firm and Managerial & Behavioral Theories of a Firm

#### **22MBA03: FINANCIAL REPORTING AND ANALYSIS**

**Course Outcomes:** Students will be able to

- Understand the Concepts and Principles of Accounting.
- Understand the Accounting Process in detail.
- Learn various aspects in depreciation, Inventory and Goodwill.
- Analyze the Working Capital and Flow of Funds and Cash into the Business
- Prepare, analyze and Interpret Financial Statements.

#### **22MBA04: RESEARCH METHODOLOGY AND STATISTICAL ANALYSIS**

**Course Outcomes:** Students will be able to:

- Gain a conceptual overview of Research and the relevant concepts to Research.
- Learn the different types of Research Designs, Data Collection Tools and Procedures.
- Use different methods of representing data through Graphs and Tables; gain an overview of Statistics and relevant concepts and conduct Small Sample Tests.
- Learn to solve mathematical problems related to ANOVA (One-way and Two-way),

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Correlation and Regression.

- Learn the application of Time Series and Index Numbers; appreciate the need for preparing and presenting a structured Research Report.

### **22MBA05: LEGAL AND BUSINESS ENVIRONMENT**

**Course Outcomes:** Students will be able to:

- Understand the Business Laws related to Incorporation of a company.
- Learn the Law of Contract & Sale of Goods
- Learn the salient features of Negotiable Instruments Act 1881
- Learn the Reforms Undertaken by the Government with respect to the challenging business environments. Gain insights of the Regulatory Framework in India

  
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**DEPARTMENT OF MASTER OF BUSINESS ADMINISTRATION**

The PEOs are **broad statements** that describe the career and professional accomplishments that the program is preparing . The PEOs of the MBA program are as follows:

The graduates after successful completion of their MBA Program will be able:

**PEO1:** To develop themselves as successful management professionals with a sound business and entrepreneurial acumen facilitating a promising career in the various management domains.

**PEO 2:** To develop the professional competence for astute decision making, organization skills, planning and its efficient implementation, research, data analysis and interpretation and a solution finding approach.

**PEO 3:** To be known for their team player qualities to handle diversity and the leadership skills to make sound decisions while working with peers in an inter-disciplinary environment with people of cross-cultural attributes

**PEO 4:** To be adaptable to new technology, innovations and changes in world economy through lifelong learning and a flexible mindset

**PEO 5:** To be responsible citizens with flawless ethical conduct that will empower the business organizations with their high integrity, moral values, social effectiveness and legal business intelligence

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Program Outcomes (POs) are **attributes of the graduates** of the program that are indicative of the graduates' ability and competence to work as a management professional upon graduation. Program Outcomes are statements that describe what students are expected to know or be able to do by the time of graduation. They must relate to knowledge and skills that they acquire from the program. The achievement of all outcomes indicates that the student is well prepared to achieve the program educational objectives down the road. The following 6 POs have been chosen by the MBA Department

**PO 1:** Apply knowledge of management theories and practice to solve business problems.

**PO 2:** Foster Analytical and critical thinking abilities for data-based decision making

**PO 3:** Develop value based leadership ability

**PO 4:** Understand, analyze and communicate global, economic, legal, and ethical aspects of business.

**PO 5:** Lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.

**PO 6:** Develop innovative and entrepreneurial mindset.

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**PSO 1:** Developing skills among graduates through hands-on learning methods essential to successfully manage and lead businesses across the globe.

**PSO 2:** Providing opportunities to students for competing in corporate world characterized by diversity, rapid technological development, and a fiercely competitive marketplace.

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