

AURORA'S TECHNOLOGICAL AND RESEARCH INSTITUTE

Parvathapur, uppal, Hyd.

DEPARTMENT OF CIVIL ENGINEERING

Year	Semester	Regulation	Course Code	Course Name	Course Output
I-YEAR	I SEM	R16	01	MATHEMATICS-I	After learning the contents of this paper the student must be able to: 1. Solve linear system equation 2. Determine the Eigen values and vectors of a matrix 3. Determine the power series expansion of a function 4. Estimate the maxima and minima of multivariable functions 5. Solve any given first order ordinary differential equation 6. Solve any higher order linear ordinary differential equation with constant coefficients
I-YEAR	I SEM	R16	01	MATHEMATICS-II	After learning the contents of this paper the student must be able to: 1. Solve linear differential equations using Laplace transforms 2. Evaluate multiple integrals and improper integrals 3. Convert line integrals to area integrals 4. Convert surface integrals to volume integrals 5. Determine potential functions for irrotational force fields
I-YEAR	I SEM	R16	01	ENGINEERING PHYSICS	After learning the contents of this paper the student must be able to: 1. Solve engineering problems using the concepts of wave and particle nature of radiant energy 2. Understand the use of lasers as light sources for low and high energy applications 3. Understand the nature and characterization of acoustic design, nuclear accelerators and new materials 4. Apply the concepts of light in optical fibers, light wave communication systems, and holography and for sensing physical parameters 5. Construct a quantum mechanical model to explain the behaviour of a system at microscopic level

I-YEAR	I SEM	R16	01	COMPUTER PROGRAMMING IN C	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> 1. Develop algorithms for mathematical and scientific problems 2. Explore alternate algorithmic approaches to problem solving 3. Understand the components of computing systems 4. Choose data types and structures to solve mathematical and scientific problem 5. Develop modular programs using control structures 6. Write programs to solve real world problems using object oriented features
I-YEAR	I SEM	R16	01	ENGINEERING MECHANICS	<p>After this course, the student will be able to:</p> <ol style="list-style-type: none"> 1.Explain and predict physical phenomena and thus to lay the foundation for engineering application. 2.It support many subjects in manufacturing of various products and projections like missiles, launching rockets, radar communication structure, trusses, crane, elevator, conveyor belt, cargo ships, submarine.
I-YEAR	I SEM	R16	01	ENGINEERING GRAPHICS	<p>After this course, the student will be able to:</p> <ol style="list-style-type: none"> 1.Ability to prepare working drawings to communicate the ideas and information. 2.Ability to read, understand and interpret engineering drawings.
I-YEAR	I SEM	R16	01	ENGINEERING PHYSICS LAB	<p>At the end of the course, the student will be able to:</p> <ol style="list-style-type: none"> 1. Use CRO, signal generator, spectrometer, polarimeter and GM counter for making measurements 2. Test optical components using principles of interference and diffraction of light 3. Determine the selectivity parameters in electrical circuits 4. Determine the width of narrow slits, spacing between close rulings using lasers and appreciate the accuracy in measurements
I-YEAR	I SEM	R16	01	COMPUTER PROGRAMMING IN C LAB	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> 1. Design and test programs to solve mathematical and scientific problems 2. Develop and test programs using control structures 3. Implement modular programs using functions 4. Develop programs using classes

II YEAR	I SEM	R16	01	MATHEMATICS-IV	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> 1. Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem 2. find the Taylor's and Laurent's series expansion of complex functions 3. The bilinear transformation 4. Express any periodic function in term of sines and cosines 5. Express a non-periodic function as integral representation 6. analyze one dimensional wave and heat equation
II YEAR	I SEM	R16	01	STRENGTH OF MATERIALS-I	<p>At the end of the course, the student will be able to:</p> <ol style="list-style-type: none"> 1. Analyze the statically determinate and indeterminate problems. 2. Determine the stresses and strains in the members subjected to axial, bending. 3. Evaluate the slope and deflection of beams subjected to loads. 4. Determine the principal stresses and strains in structural members.
II YEAR	I SEM	R16	01	FLUID MECHANICS-I	<p>At the end of the course, the student will be able to:</p> <ol style="list-style-type: none"> 1. Apply conservation laws to derive governing equations of fluid flows. 2. Compute hydrostatic and hydrodynamic forces. 3. Analyze and design simple pipe systems. 4. Apply principles of dimensional analysis to design experiments. 5. Compute drag and lift coefficients.
II YEAR	I SEM	R16	01	BUILDING MATERIAL, CONSTRUCTION AND PLANNING	<p>At the end of the course, the student will be able to:</p> <p>Identify various building materials and select suitable materials to be used in construction, how to place formwork, standards in building planning</p>
II YEAR	I SEM	R16	01	SURVEYING	<p>At the end of the course, the student will be able to:</p> <ol style="list-style-type: none"> 1. Calculate angles, distances and levels 2. Identify data collection methods and prepare field notes 3. Understand the working principles of survey instruments 4. Estimate measurement errors and apply corrections 5. Interpret survey data and compute areas and volumes

II YEAR	I SEM	R16	01	SURVEYING LAB – I	At the end of the course, the student will be able to: Practically able to draw plans & maps to determine the areas before taking up any civil engineering works.
II YEAR	I SEM	R16	01	COMPUTER AIDED DESIGN – I LAB	At the end of the course, the student will be able to: Master the usage of Autocad commands for drawing 2D & 3D building drawings required for different civil engg applications. 1. Introduction to computer aided drafting 2. Software for CAD – Introduction to different softwares 3. Practice exercises on CAD software 4. Drawing of plans of buildings using software a) Single storied buildings b) multi storied buildings 5. Developing sections and elevations for a) Single storied buildings b) multi storied buildings 6. Detailing of building components like Doors, Windows, Roof Trusses etc. using CAD softwares 7. Exercises on development of working drawings of buildings
II YEAR	I SEM	R16	01	STRENGTH OF MATERIAL LAB	At the end of the course, the student will be able to: 1. Conduct tension test on Materials like steel etc. 2. Conduct compression tests on spring, wood and concrete 3. Conduct flexural and torsion test to determine elastic constants 4. Determine hardness of metals

II YEAR	I SEM	R16	01	GENDER SENSITIZATION	<ol style="list-style-type: none"> 1. Students will have developed a better understanding of important issues related to gender in contemporary India. 2. Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film. 3. Students will attain a finer grasp of how gender discrimination works in our society and how to counter it. 4. Students will acquire insight into the gendered division of labour and its relation to politics and economics. 5. Men and women students and professionals will be better equipped to work and live together as equals. 6. Students will develop a sense of appreciation of women in all walks of life. 7. Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.
III YEAR	I SEM	R15	01	CONCRETE TECHNOLOGY	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> 1. Identify Quality Control tests on concrete making materials 2. Understand the behavior of fresh and hardened concrete 3. Design concrete mixes as per IS and ACI codes 4. Understand the durability requirements of concrete 5. Understand the need for special concretes
III YEAR	I SEM	R15	01	REINFORCED CONCRETE STRUCTURES DESIGN & DRAWING	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> 1. Design the Reinforced Concrete beams using limit state 2. Design Reinforced Concrete slabs 3. Design the Reinforced Concrete Columns and footings 4. Design structures for serviceability 5. Design stair cases, retaining wall

III YEAR	I SEM	R15	01	ENGINEERING GEOLOGY	At the end of the course, the student will be able to: 1. Importance of geology and related terminology 2. Petrology - Weathering of rocks 3. Minerology 4. Structural geology 5. Importance of Geology in construction of dams, reservoirs and tunnels
III YEAR	I SEM	R15	01	GEOTECHNICAL ENGINEERING	At the end of the course, the student will be able to: 1. basics of soil concepts, 2. soil relationship with other terms, 3. strength of soil, 4. water movement in soil and its applications
III YEAR	I SEM	R15	01	WATER RESOURCES ENGINEERING – I	At the end of the course, the student will be able to: 1.Acquire pre requisite knowledge of hydrology for the irrigation engineering, 2.Measurement of rainfall, 3.Understand the concept of design of canal 4.Method of irrigation 5.Water requirement of crops
III YEAR	I SEM	R15	01	OPEN ELECTIVE: DISASTER MANAGEMENT	At the end of the course, the student will be able to: 1. Understand how learning and knowing about disasters 2. A basic understanding of Prevention, Mitigation, Preparedness, Response and Recovery 3. Describe different types of natural and man- made disasters. Work theoretically and practically in the processes of disaster management (disaster risk reduction, response, and recovery) 4. Describe endogenous and exogenous hazards their harmful effects to the environment.
III YEAR	I SEM	R15	01	FLUID MECHANICS &HYDRAULIC MACHINERY AND LAB	At the end of the course, the student will be able to: 1. Apply basic fluid mechanics principles in the analysis and design of pipe flow. 2. Apply dimensional analysis for design of experimental procedures 3. Calibrate flow measuring devices used in pipes, channels and tanks 4. Determine fluid and flow properties 5. Characterize laminar and turbulent flows
III YEAR	I SEM	R15	01	ENGINEERING GEOLOGY LAB	At the end of the course, the student will be able to: 1. Student can identify a mineral using microscopic and megascopic identification. 2. Student can identify a rock using microscopic and megascopic identification. 3. Student can interpret a geological map showing tilted beds, faults, uniformities.

					4. To apply geologic concepts and approaches on rock engineering projects.
IV YEAR	I SEM	R13	01	GIS & REMOTE SENSING	After learning the contents of this paper the student must be able to: 1. to acquire the complete information about a target from a remote distance with out touching the physically for various global and spatial purposes. 2. Data Models - Raster and Vector data 3. Digitising, Scanning, Data Conversion, Data Interpretation
IV YEAR	I SEM	R13	01	INDUSTRIAL WASTE WATER TREATMENT	After learning the contents of this paper the student must be able to: 1.The candidate will clearly understand the difference between Domestic wastewater and Industrial wastewater. 2.Learning regarding the characteristics of Industrial wastewater. 3.To know regarding Methods of Industrial wastewater treatment : Pre, Primary, Secondary and Advanced. 4.Characteristics and Composition of Various Industrial waste waters. 5.Knowledge on Common Effluent Treatment plants
IV YEAR	I SEM	R13	01	WATER RESOURCES ENGINEERING - II	After learning the contents of this paper the student must be able to: 1. Gain knowledge on dams and reservoir 2. Difference between dams and reservoir 3. Types of dams 4. Knowing detailed about structure of dams.
IV YEAR	I SEM	R13	01	ESTIMATION & COSTING	After learning the contents of this paper the student must be able to: 1. analyse the approximate cost of any engineering structure, 2. to estimate the quantity of materials & Labours.
IV YEAR	I SEM	R13	01	TRANSPORTATION ENGINEERING - II	After learning the contents of this paper the student must be able to: 1. Learn about rail track(permanent ways) 2. Airport runway, 3. Difference of Harbour and Port, 4. Intelligent Transport System in various transportation System.

IV YEAR	I SEM	R13	01	WATERSHED MANAGEMENT	After learning the contents of this paper the student must be able to: 1.study the relevant characteristics of a watershed 2.sustainable distribution of its resources and 3.the process of creating and implementing plans, programs, and projects to sustain and enhance watershed
IV YEAR	I SEM	R13	01	CONCRETE & HIGHWAY MATERIALS LAB	After learning the contents of this paper the student must be able to: 1.To identify Grades in Bitumen, 2.to find the cement and water consistency 3.Mix Design of Concrete,workability.
IV YEAR	I SEM	R13	01	ENVIRONMENTAL ENGINEERING LAB	After learning the contents of this paper the student must be able to: 1. Determine physical, chemical and biological characteristics of water and wastewater 2. Determine optimum dosage of coagulant 3. Determine break - point chlorination 4. Assess the quality of water and wastewater