



NRI INSTITUTE OF TECHNOLOGY

(Approved by AICTE, New Delhi :: Affiliated to JNTUK, Kakinada)
POTHAVARAPPADU (V), (via) Nunna, Agiripalli (M), Krishna District, A.P., PIN : 521 212
Ph : 08656-324999 Website : nrigroupofcolleges.com e-mail : nrigroupofcolleges@gmail.com

DEPARTMENT OF CIVIL ENGINEERING

Course Name:	English - I	Course Index:	C111
REGULATION:	NR1A18	YEAR-SEM:	I-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C111.1	Use grammar accurately in various formal and functional contexts.
C111.2	Build good vocabulary and develop the ability to use in various contexts.
C111.3	Comprehend, analyze and evaluate texts critically.
C111.4	Develop effective reading and writing skills to enhance communicative competence.
C111.5	Help the students to inculcate and apply human values and professional ethics in their academic, professional and social lives.
C111.6	Read texts for pleasure and analyse them critically.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENGINEERING MATHEMATICS-I	Course Index:	C112
REGULATION:	NRIA18	YEAR-SEM:	I-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C112.1	Student will be able to <ul style="list-style-type: none">➤ solve the linear system of homogeneous and non-homogeneous equations by applying using technology to facilitate row reduction determine the rank .
C112.2	Student will be able to <ul style="list-style-type: none">➤ write eigenvalues and eigenvectors, diagonal form and different factorizations of a matrix .➤ identify special properties of a matrix, such as positive definite, etc., and use this information to facilitate the calculation of matrix characteristics.
C112.3	Students will be able to <ul style="list-style-type: none">➤ find an approximate root of algebraic and transcendental equations by applying Bisection, Regula-Falsi, Iteration and Newton-raphson methods.➤ find the function values without knowing function by applying interpolation(equal/unequal) techniques with the help of data..
C112.4	Students will be able to <ul style="list-style-type: none">➤ evaluate the definite integrals without knowing integrand by Trapezoidal, Simpson's 1/3rd & 3/8th rules.➤ solve initial value ordinary differential equations by applying Taylor's series, Pickard's, Euler's, Modified Euler's & Runge-Kutta methods.
C112.5	Student will be able to <ul style="list-style-type: none">➤ find partial derivatives numerically and symbolically and use them to analyze and interpret the way a function varies. .➤ acquire the Knowledge maxima and minima of functions of several variable .➤ Utilize Jacobian of a coordinate transformation to deal with the problems in change of variables .
C112.6	Student will be able to <ul style="list-style-type: none">➤ examine the properties of Laplace transformation .➤ apply the Laplace and inverse Laplace transformations for different types of functions .➤ evaluate ordinary differential equations by using Laplace transformation technique .

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENGINEERING CHEMISTRY	Course Index:	C113
REGULATION:	NRIA18	YEAR-SEM:	I-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C113.1	understand and apply polymers and plastic technologies along with their utilization to solve the problems of the society.
C113.2	Know cells and sensors utilized in many instruments in solving and applying to batteries and fuel cells.
C113.3	Understand electrochemical cells which is essential in understanding corrosion along with the methods of controlling
C113.4	Know about water and its hardness, boiler troubles and problems associated with the environment and its sustainability.
C113.5	Understand fuels and energy, their advantages & disadvantages should be known to solve and understand engineering problems.
C113.6	Know the design and analysis of materials should be understood in solving the complex problems of the society.

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Course Name:	ENGINEERING MECHANICS	Course Index:	C114
REGULATION:	NR1A18	YEAR-SEM:	I-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C114.1	Construct free body diagrams and develop appropriate equilibrium equations.
C114.2	Analyze system with concepts of friction & Determine the position of centroid.
C114.3	Determine moment of inertia for Composite Sections.
C114.4	Analyzing the rigid bodies under translation and rotation with and without considering forces.
C114.5	Apply Newton's laws and conservation laws to elastic collisions and motion of rigid bodies.
C114.6	Apply D'Alembert's principle, work-energy method and Impulse Momentum principle to solve dynamics problems.



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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENVIRONMENTAL STUDIES	Course Index:	C115
REGULATION:	NR1A18	YEAR-SEM:	I-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C115.1	Infer the existence of ecosystems in maintaining ecological balance.
C115.2	Recall the importance of biodiversity and its conservation.
C115.3	Summarize the role of natural resources for the sustenance of life on earth and recognize the need to conserve them.
C115.4	Identify the environmental pollutants and the abatement devices to be used.
C115.5	Interpret environmental related acts and social issues.
C115.6	Illustrate the importance of sustainability in the progress of a nation.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	English Communication Skills Lab-I	Course Index:	C116
REGULATION:	NRIA18	YEAR-SEM:	I-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C116.1	Understand the importance of communication skills and instill the need for life-long learning.
C116.2	Express themselves fluently and appropriately in social and professional contexts.
C116.3	Make sense of both verbal and non-verbal messages through selected listening activities.
C116.4	Aware of the need of pronunciation and intonation in improving their speaking skills.



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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENGINEERING CHEMISTRY LAB	Course Index:	C117
REGULATION:	NRIA18	YEAR-SEM:	I-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C117.1	Know the basic laboratory fundamentals and their knowledge and analysis of substances can solve some of the problems of the society.
C117.2	Understand neutralization reaction between acids & bases and alkalinity of water is performed and gains the knowledge in neutralization process.
C117.3	Know redox reactions are the most observed reactions in chemistry & nature and exposed to few of them.
C117.4	Understand complexometric reactions carried out by them as experiments and solve some of the engineering problems.
C117.5	Understand different ions in the environment and their identification & estimation which enable them to assess the environmental problems.
C117.6	Know conductivity and potentials in analysis of materials and should be able to develop and analyze the materials.

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Course Name:	Professional English-II	Course Index:	C121
REGULATION:	NR1A18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C121.1	Recognize the importance of the role of communication in the competitive world.
C121.2	Acquire the competence to write effectively in various formal and academic contexts.
C121.3	Acquire the jargon used in business communication and technical communication.
C121.4	Develop the ability to evaluate texts by inferring the implied sense of such texts and apply such knowledge globally.
C121.5	Gain knowledge about the significance of the universal human values through expression of human feelings of compassion and right understanding.
C121.6	Understand the importance of making meaningful connections between the grammar being introduced and how it works in the writing being taught.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENGINEERING MATHEMATICS-II	Course Index:	C122
REGULATION:	NR1A18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C119.1	Student will be able to <ul style="list-style-type: none">➤ find the General/Particular solutions of first order and first degree ordinary differential equations by apply different methods.➤ find orthogonal trajectories of the given family of curves.
C119.2	Student will be able to <ul style="list-style-type: none">➤ identify the essential characteristics of linear differential equations with constant coefficients .➤ solve the linear differential equations with constant coefficients by appropriate method .
C119.3	Student will be able to <ul style="list-style-type: none">➤ evaluate double integrals of functions of several variables in two dimensions using Cartesian and polar coordinates.➤ evaluate areas bounded by region by apply double integration techniques .➤ evaluate volume of solids by apply triple integration techniques .
C119.4	Student will be able to <ul style="list-style-type: none">➤ find length of the arc, volume of solid of revolution and surface area of solid of revolution.
C119.5	Student will be able to <ul style="list-style-type: none">➤ apply ∇ to Scalar and vector point functions .➤ illustrate the physical interpretation of Gradient, Divergence and Curl .
C119.6	Student will be able to <ul style="list-style-type: none">➤ find the work done in moving a particle along the path over a force field .➤ evaluate the rates of fluid flow along and across curves.➤ apply Green's, Stokes and Divergence theorem in evaluation of double and triple integrals.

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Course Name:	ENGINEERING PHYSICS	Course Index:	C123
REGULATION:	NRIA18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C123.1	Impart Knowledge of Physical Optics phenomena like Interference, Diffraction and Polarization involving required to design instruments with higher resolution.
C123.2	Teach Concepts of coherent sources, its realization and utility optical instrumentation.
C123.3	Study the Structure-property relationship exhibited by solid crystal materials for their utility.
C123.4	Know the generation and propagation of sound in architectural design
C123.5	Understand about the production and detection of ultrasonic waves and its application in various fields.
C123.6	To impart the knowledge of electric and magnetic materials with characteristic utility in appliances.

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Course Name:	ENGINEERING DRAWING	Course Index:	C124
REGULATION:	NR1A18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C124.1	Graphically construct and understand the importance of mathematical curves, Polygons & Scales in Engineering applications
C124.2	Draw the basic views related to projections of Points and Lines
C124.3	Visualize and draw the orthographic projection of planes & solids at various positions with different reference planes.
C124.4	Understand the transformation of orthographic views to Isometric views and vice versa.
C124.5	Extract information from drawings and geometric models to solve engineering problems.
C124.6	Improve their technical communication skill in the form of communicative drawings.

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Course Name:	PROGRAMMING AND PROBLEM SOLVING WITH C	Course Index:	C125
REGULATION:	NRIA18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C125.1	Acquiring knowledge of basic terminologies, basic idea of writing and executing programs.
C125.2	Understanding working of various control statements.
C125.3	Apply concepts of Arrays, Modular Programming in solving problems.
C125.4	Apply and analyze the concepts of pointers and dynamic memory allocation.
C125.5	Understanding and Analyzing the concepts of strings and working of string manipulation functions.
C125.6	Understand and applying different user defined data types, their usage and the concepts of files and file handling functions.



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Course Name:	English Communication Skills Lab-II	Course Index:	C126
REGULATION:	NR1A18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C126.1	Attain better understanding of the nuances of English language to put into use in various situation and events.
C126.2	Acquire speaking skills with clarity and confidence which in turn enhances their employability skills.
C126.3	Communicate and present their ideas and sources accurately and effectively.
C126.4	Enhance their employability skills and critical thinking skills with participation in mock interviews and group discussions.

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Course Name:	Engineering Physics Lab	Course Index:	C127
REGULATION:	NRIA18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C127.1	Understand principle, concept, working of an instrument and can compare results with theoretical calculations.
C127.2	Analyze the physical principle involved in the various instruments; also relate the principle to new application.
C127.3	Understand design of an instrument with targeted accuracy for physical measurements.
C127.4	Develop skills to impart practical knowledge in real time solution.
C127.5	Acquires the Practical knowledge in the areas of optics, mechanics, Electricity and magnetism.
C127.6	Think innovatively and also improve the creative skills that are essential for engineering.



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Course Name:	PROGRAMMING AND PROBLEM SOLVING WITH C LAB	Course Index:	C128
REGULATION:	NR1A18	YEAR-SEM:	I-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C128.1	Understand C programming development environment, compiling, debugging, linking and executing a program using the development environment
C128.2	Program solutions for problems using conditional controlled statements
C128.3	Differentiate the in-built and user defined functions and able to apply modular programming concepts in programming.
C128.4	Analyze and program the concepts and applications of arrays, pointers and dynamic memory allocation.
C128.5	Apply in-built string manipulation functions and design user-defined string manipulation functions.
C128.6	Analyze and program the concepts of structures and apply the in-built concepts of files and file handling functions.



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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	COMPLEX VARIABLES AND FOURIER SERIES	Course Index:	C211
REGULATION:	NRIA18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C211.1	Write an analytic function if either real part or imaginary part is known and by using Cauchy-Riemann equations or apply Milne-Thompson method (L3)
C211.2	Evaluate the integral of complex function over the region bounded by the closed curves by apply either Cauchy-Goursat theorem or Cauchy's integral formula or Cauchy's Residue theorem (L5)
C211.3	Write the infinite series expansion of complex function by apply Taylor's/Maclaurin's/Laurent's series (L3)
C211.4	Write a Fourier series expansion of a periodic function by using Euler's formulae (L3)
C211.5	Solve the Partial difference equations (L3)
C211.6	Solve one dimensional wave and heat equations by using partial differential equations (L3)



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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	STRENGTH OF MATERIALS	Course Index:	C212
REGULATION:	NRIA18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C212.1	Understand the concepts of stress, strain, generalized Hooke's law, elastic moduli and strain energy.
C212.2	Develop shear force and bending moment diagrams for different load cases.
C212.3	Compute the flexural stresses for different load cases and different cross-sections. Determine shear stresses for different cross-sections.
C212.4	Knowledge of bending concepts and calculation of section modulus and for determination of stresses developed in the beams and deflections due to various loading conditions
C212.5	Understand the basic concepts of Principal stresses developed in a member when it is subjected to stresses along different axes.
C212.6	Can Analyze members subjected to torsion, combined torsion and bending moment & asses stresses in different engineering applications like springs subjected to different loading conditions

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	FLUID MECHANICS	Course Index:	C213
REGULATION:	NRIA18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C213.1	Understand the principles of fluid statics, kinematics and dynamics
C213.2	Familiarize basic terms used in fluid mechanics
C213.3	Understand flow characteristics and classify the flows
C213.4	Apply the continuity, momentum and energy principles
C213.5	Estimate various losses in flow through channels
C213.6	Understand fundamentals of kinematics and equations Cartesian coordinates.

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Course Name:	SURVEYING & GEOMATICS	Course Index:	C214
REGULATION:	NRIA18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C214.1	Understand basics of surveying and identifying the needs of surveying.
C214.2	Apply the knowledge, techniques and survey tools in engineering practices
C214.3	Calculate angles, distances and levels.
C214.4	Translate the knowledge gained for implementation infrastructure facilities.
C214.5	Correlate knowledge to frontiers like Hydrography, Electronic Distance Measurement, Global Positioning System, Photogrammetry and Remote Sensing.
C214.6	Identify data collection methods and prepare field notes. Estimate errors in measurements and apply corrections

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Course Name:	BUILDING PLANNING & DRAWING	Course Index:	C215
REGULATION:	NR1A18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C215.1	Student should be able to plan various buildings as per the building by-laws.
C215.2	Student should know the minimum standards for various parts of buildings & characteristics.
C215.3	The student should be able to distinguish the relation between the plan, elevation and cross section and identify the form and functions among the buildings.
C215.4	The student is expected to learn the skills of drawing building elements and plan the buildings as per requirements.
C215.5	Student should be able to understand various brick masonry & building elements standard drawings.
C215.6	Student should be able to develop drawing of building plan, section and elevation.

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Course Name:	BUILDING CONSTRUCTION PRACTICE	Course Index:	C216
REGULATION:	NR1A18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C216.1	Get the knowledge of different construction materials and their properties
C216.2	Know the classification of aggregates and their structural requirements.
C216.3	Understand properties and the components of lime and cement
C216.4	Understand the types of masonry , uses of timber and its properties
C216.5	Identify components of building and types of floors and roof
C216.6	Gain the knowledge of proofing materials and formworks

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Course Name:	SURVEYING LAB	Course Index:	C217
REGULATION:	NRIA18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C217.1	Conduct survey and collect field data.
C217.2	Prepare field notes from survey data
C217.3	Interpret survey data and compute areas and volumes.

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Course Name:	STRENGTH OF MATERIALS LAB	Course Index:	C218
REGULATION:	NRIA18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C218.1	Conduct tension test on steel
C218.2	Conduct compression tests on spring, wood, brick and concrete
C218.3	Conduct flexural and torsion test to determine elastic constants
C218.4	Determine hardness of metals

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Course Name:	PROFESSIONAL ETHICS AND HUMAN VALUES	Course Index:	C219
REGULATION:	NRIA18	YEAR-SEM:	II-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C219.1	Grooms themselves as ethical, responsible and societal beings.
C219.2	Discuss ethics in society and apply the ethical issues related to engineering.
C219.3	Exhibit the understanding of ethical theories in professional environment.
C219.4	Recognize their role as social experimenters (engineers) and comprehend codes of ethics.
C219.5	Identify the risks likely to come across in the professional world, analyzing them and find solutions.
C219.6	Realize the responsibilities and rights of engineers in the society.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	PROBABILITY AND STATISTICS	Course Index:	C221
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C221.1	Find the measures of central tendency and relation between them.(L1)
C221.2	Evaluate the correlation coefficient, rank coefficient and regression.(L5)
C221.3	Understand probabilities of events and expectations of random variables for elementary problems.(L2)
C221.4	Solve problems related to binomial and passion distribution.(L3)
C221.5	Compare situations in which it is appropriate to consider the relevance of the Normal distribution.(L4)
C221.6	Construct hypothesis and carryout appropriate tests to checks its acceptability.(L3)

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	CONCRETE TECHNOLOGY	Course Index:	C222
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C222.1	Understand the basic concepts of concrete.
C222.2	Realize the importance of quality of concrete
C222.3	Familiarize the basic ingredients of concrete and their role in the production of concrete and its behaviour in the field.
C222.4	Test the fresh concrete properties and the hardened concrete properties.
C222.5	Evaluate the ingredients of concrete through lab test results. design the concrete mix
C222.6	familiarize the basic concepts of special concrete and their production and Applications. Understand the behavior of concrete in various environments.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	HYDRAULIC ENGINEERING	Course Index:	C223
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C223.1	Understand characteristics of laminar and turbulent flows.
C223.2	Analyze characteristics for uniform flows in open channels.
C223.3	Analyze characteristics for non-uniform flows in open channels.
C223.4	Design different types of turbines
C223.5	Design of centrifugal and multi stage pumps.
C223.6	Design of reciprocating pump

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENGINEERING GEOLOGY	Course Index:	C224
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C224.1	Gain basic knowledge on characteristics of rocks and minerals.
C224.2	Identify and differentiate rocks using geological classification.
C224.3	Apply concepts of structural geology for civil engineering structures.
C224.4	Understand the seismic zones of India.
C224.5	Understanding about Geophysical investigation methods & Carryout geo physical investigations using various methods
C224.6	Investigate the project site for mega/mini civil engineering projects. Site selection for mega engineering projects like Dams, Tunnels, disposal sites etc.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	STRUCTURAL ANALYSIS	Course Index:	C225
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C225.1	Apply Rankine's & Euler's theories for analysis of columns & struts
C225.2	Analyze indeterminate propped cantilever beams
C225.3	Analyze fixed beams using compatibility method
C225.4	Analyze continuous beams using Clapeyron's theorem of three moments Analysis
C225.5	Analyze continuous beams using slope deflection equation
C225.6	Identify the behavior of structures due to the expected loads, including the moving loads, acting on the structure. Estimate the bending moment and shear forces in beams for different fixity conditions



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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	FLUID MECHANICS & HYDRAULIC MACHINES LAB	Course Index:	C226
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C226.1	To impart the experimental skills in flow measurement and real fluid flow problems
C226.2	To impart experimental skills to verify the performance characteristics of pumps and turbines

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Course Name:	ENGINEERING GEOLOGY LAB	Course Index:	C227
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C227.1	Identify minerals and rocks
C227.2	Measure strike and dip of the bedding planes
C227.3	Interpret geological maps

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Course Name:	ADVANCED SURVEYING LAB	Course Index:	C228
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C228.1	Conduct survey and collect field data.
C228.2	Prepare field notes from survey data
C228.3	Interpret survey data and compute areas and volumes.

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Course Name:	SURVEY CAMP	Course Index:	C229
REGULATION:	NRIA18	YEAR-SEM:	II-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C229.1	1. Conduct survey and collect field data.
C229.2	2. Prepare field notes from survey data
C229.3	3. Interpret survey data and compute areas and volumes.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Managerial Science	Course Index:	C311
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C311.1	Make use of acquired the knowledge on functional management
C311.2	Make use of acquired the knowledge on project management
C311.3	Make use of acquired the knowledge on strategic management
C311.4	Recall the concepts of functional management
C311.5	Recall the concepts of project management
C311.6	Recall the concepts of strategic management

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Engineering Geology	Course Index:	C312
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C312.1	Identify and classify the geological minerals
C312.2	Measure the rock strengths of various rocks
C312.3	Classify and measure the earthquake prone areas to practice the hazards zonation
C312.4	Prepare, analyses and interpret the Engineering Geologic maps
C312.5	Test the geological material to check the suitability of civil engineering project construction
C312.6	Test the ground to check the suitability of civil engineering project construction



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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Structural Analysis- II	Course Index:	C313
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C313.1	Differentiate determinate & Indeterminate structures of arches
C313.2	Carryout lateral loads of structures
C313.3	Analyze cable & suspension bridge structures
C313.4	Analyze structures of Moment distribution method
C313.5	Analyze structures using Kani's method
C313.6	Analyze structures using Matrix method

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Design & Drawing of Reinforced Concrete Structures	Course Index:	C314
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C314.1	Work on different types of design philosophies
C314.2	Carryout analysis and design of flexural members and detailing of singly and doubly reinforced members
C314.3	Carryout analysis and design of flexural members and detailing of Tee and L beams
C314.4	Design structures subjected to shear, bond and torsion
C314.5	Design different type of slabs
C314.6	Design different type of compression members and footings

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Transportation Engineering-II	Course Index:	C315
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C315.1	Know about planning and functions of railway, railway tracks
C315.2	Study geometric design of track
C315.3	Understand points, crossing and signaling system
C315.4	Design and plan airport, air craft characteristics
C315.5	Design airport geometrics and airfield pavements.
C315.6	Plan, construct and maintain Docks and Harbours.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Concrete Technology Lab	Course Index:	C316
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C316.1	Determine the consistency and fineness of cement.
C316.2	Determine the setting times of cement.
C316.3	Determine the specific gravity and soundness of cement.
C316.4	Determine the compressive strength of cement.
C316.5	Determine the workability of cement concrete by compaction factor, slump and Vee – Bee tests
C316.6	Determine the specific gravity of coarse aggregate and fine aggregate by Sieve analysis.
C316.7	Determine the bulking of sand
C316.8	Understand the non-destructive testing procedures on concrete.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Geology Lab	Course Index:	C317
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C317.1	Identify mega-scopic minerals & properties
C317.2	Identify mega-scopic rock & properties
C317.3	Identify the site parameters such as contour, slope & aspects for topography
C317.4	Know the occurrence of materials using strike & dip problems

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Control Systems Lab	Course Index:	C318
REGULATION:	R16	YEAR-SEM:	III-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C318.1	Ability to test aggregates and judge the suitability of materials for the road construction
C318.2	Ability to test the given bitumen samples and judge their suitability for the road construction
C318.3	Ability to obtain the optimum bitumen content for the mix design
C318.4	Ability to determine the traffic volume, speed and parking characteristics.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	DESIGN AND DRAWING OF STEEL STRUCTURES	Course Index:	C321
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C321.1	Work with relevant IS codes
C321.2	Carryout analysis and design of flexural members and detailing
C321.3	Design compression members of different types with connection detailing
C321.4	Design Plate Girder with connection detailing
C321.5	Design Gantry Girder with connection detailing
C321.6	Produce the drawings pertaining to different components of steel structures

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	GEOTECHNICAL ENGINEERING – I	Course Index:	C322
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C322.1	Know about the Soil formation and clay mineralogy
C322.2	Know the definition of the various parameters related to soil mechanics and establish their inter-relationships.
C322.3	know the methods of determination of the various index properties of the soils
C322.4	know the classification of soils
C322.5	know the importance of the different engineering
C322.6	The student should be able to apply the above concepts in day-to-day civil engineering practice.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENVIRONMENTAL ENGINEERING - I	Course Index:	C323
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C323.1	Plan and design the water and distribution networks and sewerage systems
C323.2	Plan and design the water and sewerage systems
C323.3	Identify the water source and select proper intake structure
C323.4	Characterisation of water
C323.5	Select the appropriate appurtenances in the water supply
C323.6	Selection of suitable treatment flow for raw water treatments

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	WATER RESOURCES ENGINEERING-I	Course Index:	C324
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C324.1	be able to quantify major hydrologic components and apply key concepts to several practical areas of engineering hydrology and related design aspects
C324.2	Develop Intensity-Duration-Frequency and Depth-Area Duration curves to design hydraulic structures.
C324.3	develop unit hydrograph and synthetic hydrograph
C324.4	be able to estimate flood magnitude and carry out flood routing.
C324.5	be able to determine aquifer parameters and yield of wells.
C324.6	be able to model hydrologic processes

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	Waste Water Management	Course Index:	C325
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C325.1	Plan and design the sewerage systems
C325.2	Characterization of sewage
C325.3	Select the appropriate appurtenances in the sewerage systems
C325.4	Select the suitable treatment flow for sewage treatment
C325.5	Identify the critical point of pollution in a river for a specific amount of pollutant
C325.6	Know about Effluent disposal method and realize the importance of regulations in the disposal of effluents in rivers



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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	GEOTECHNICAL ENGINEERING LAB	Course Index:	C326
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C326.1	Determine index properties of soil and classify them.
C326.2	Determine permeability of soils.
C326.3	Determine Compaction, Consolidation and shear strength characteristics

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ENVIRONMENTAL ENGINEERING LAB	Course Index:	C327
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C327.1	Estimation some important characteristics of water and wastewater in the laboratory
C327.2	Draw some conclusion and decide whether the water is potable or not.
C327.3	Decide whether the water body is polluted or not with reference to the state parameters in the list of experiments
C327.4	Estimation of the strength of the sewage in terms of BOD and COD

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Course Name:	COMPUTER AIDED ENGINEERING LABORATORY	Course Index:	C328
REGULATION:	R16	YEAR-SEM:	III-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C328.1	Make use of energy meter and wattmeter for calibration.
C328.2	Illustrate the three phase reactive power measurement.
C328.3	Analyze the PMMC ammeter and voltmeter for calculating choke coil parameters
C328.4	Evaluate electrical parameters using different DC and AC bridges.
C328.5	Test the dielectric strength of insulating oil.
C328.6	Determine the characteristics of LVDT and Capacitive pick-up.

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Course Name:	ENVIRONMENTAL ENGINEERING -II	Course Index:	C411
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C411.1	Plan and design the sewerage systems
C411.2	Select the appropriate appurtenances in the sewerage systems
C411.3	Analyze sewage and suggest and design suitable treatment system for sewage treatment
C411.4	Identify the critical point of pollution in a river for a specific amount of pollutant disposal into the river
C411.5	Suggest a suitable disposal method with respect to effluent standards
C411.6	

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Course Name:	WATER RESOURCES ENGINEERING-II	Course Index:	C412
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C412.1	Estimate irrigation water requirements
C412.2	Design irrigation canals and canal network
C412.3	Plan an irrigation system & Design irrigation canal structures
C412.4	Plan and design diversion head works
C412.5	Analyse stability of gravity and earth dams
C412.6	Design ogee spillways and energy dissipation works

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	GEOTECHNICAL ENGINEERING – II	Course Index:	C413
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C413.1	Understand the various types of shallow foundations
C413.2	Decide on their location based on soil characteristics.
C413.3	Compute the magnitude of foundation settlement to decide the size of the foundation
C413.4	Use the field test data and arrive at the bearing capacity.
C413.5	Understand the types – different shapes of well & Design Criteria
C413.6	Design Piles based on the principles of bearing capacity.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	REMOTE SENSING AND GIS	Course Index:	C414
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C414.1	Understand the Basic concepts of remote sensing - Characteristics
C414.2	Be familiar with ground, air and satellite based sensor platforms.
C414.3	Interpret the aerial photographs and satellite imageries
C414.4	Create and input spatial data for GIS application
C414.5	Apply RS and GIS concepts in water resources engineering
C414.6	Applications of various satellite data

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	GROUND IMPROVEMENT TECHNIQUES	Course Index:	C415
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C415.1	Possess the knowledge of various methods of ground improvement
C415.2	Possess the knowledge to define suitable ground improvement techniques to different field situations
C415.3	Design a reinforced earth embankment and check its stability.
C415.4	Possess the knowledge of various functions of Geosynthetics
C415.5	Understand the applications of Geosynthetics
C415.6	Understand the concepts and applications of grouting

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	GROUND WATER DEVELOPMENT	Course Index:	C416
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C416.1	Estimate aquifer parameters and yield of wells
C416.2	Analyse radial flow towards wells in confined and unconfined aquifers & Design wells and understand the construction practices.
C416.3	Interpret geophysical exploration data for scientific source finding of aquifers.
C416.4	Determine the process of artificial recharge for increasing groundwater potential.
C416.5	Take effective measures for controlling saline water intrusion.
C416.6	Apply appropriate measures for groundwater management

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	IPR & PATENTS	Course Index:	C417
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C417.1	Understand the need for Intellectual Property Rights and its importance
C417.2	Study of Information Technology Act 2000 and classification of Cybercrimes
C417.3	Study of Copyrights Act and its registrations process
C417.4	Study of Patents Act and it's infringement
C417.5	Study of Trademarks Act and it's registration formalities
C417.6	Understand the importance of Trade secrets and maintaining trade secrets

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	GIS & CAD LAB	Course Index:	C418
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C418.1	Work comfortably on GIS software
C418.2	Digitize and create thematic map and extract important features
C418.3	Develop digital elevation model
C418.4	Use structural analysis software to analyze and design 2D and 3D frames
C418.5	Design and analyze retaining wall and simple towers using CADD software.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	IRRIGATION DESIGN AND DRAWING	Course Index:	C419
REGULATION:	R16	YEAR-SEM:	IV-I

The student will be able to:

CO INDEX	COURSE OUTCOME
C421.1	Design and draft the details of Surplus weir
C421.2	Design and draft the details of Tank sluice with a tower head
C421.3	Design and draft the details of Canal drop-Notch type
C421.4	Design and draft the details of Canal regulator
C421.5	Design and draft the details of Under tunnel
C421.6	Design and draft the details of Syphon aqueduct type III

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	ESTIMATION SPECIFICATION & CONTRACTS	Course Index:	C421
REGULATION:	R16	YEAR-SEM:	IV-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C422.1	Determine the quantities of different components of buildings.
C422.2	Find the cost of various building components.
C422.3	Finalizing the value of structures.
C422.4	Possess knowledge of Contracts – Types of contract
C422.5	Estimate the Buildings using individual wall method.
C422.6	Estimate the Buildings using centre line method.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	CONSTRUCTION TECHNOLOGY AND MANAGEMENT	Course Index:	C422
REGULATION:	R16	YEAR-SEM:	IV-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C423.1	Appreciate the importance of construction planning
C423.2	Understand the functioning of various earth moving equipment
C423.3	Apply the gained knowledge to Project Evaluation and Review Technique
C423.4	Know the methods of production of aggregate products and concreting and usage of machinery required for the works
C423.5	Apply the gained knowledge to project management and construction techniques
C423.6	Understand various Construction methods

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	PRESTRESSED CONCRETE	Course Index:	C423
REGULATION:	R16	YEAR-SEM:	IV-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C424.1	Understand the Basic concepts of Prestressing
C424.2	Understand the different methods of prestressing
C424.3	Estimate effective prestress including the short and long term losses
C424.4	Analyze and design prestressed concrete beams under flexure
C424.5	Analyze and design prestressed concrete beams under shear & torsion
C424.6	Understand the relevant IS Codal provisions for prestressed concrete

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	SOLID AND HAZARDOUS WASTE MANAGEMENT	Course Index:	C424
REGULATION:	R16	YEAR-SEM:	IV-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C425.1	Understand Goals and objectives of solid waste management- Classification
C425.2	Design the collection systems of solid waste of a town
C425.3	Design treatment of municipal solid waste and landfill
C425.4	Know the criteria for selection of landfill
C425.5	Characterise the solid waste and design a composting facility
C425.6	Know the Method of treatment and disposal of Hazardous wastes.

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DEPARTMENT OF CIVIL ENGINEERING

Course Name:	PROJECT WORK	Course Index:	C425
REGULATION:	R16	YEAR-SEM:	IV-II

The student will be able to:

CO INDEX	COURSE OUTCOME
C4211.1	Apply all levels of Engineering knowledge in solving the Engineering problems.
C4211.2	Work together with team spirit.
C4211.3	Use Civil Engineering software at least one.
C4211.4	Document the projects

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