

# Course Outcomes (COs)

# 2018-19

### **COURSE DETAILS**

<b>Course Name</b>	CALCULUS AND LINEAR ALGEBRA
<b>Course Code/Course Index</b>	18MAT11 –C101
<b>Academic Year</b>	2018-19
<b>Semester</b>	I

#### **Course outcomes (COs)**

C101.1	Apply the knowledge of calculus to solve problems related to polar curves and its applications in determining the bentness of a curve.
C101.2	Learn the notion of partial differentiation to calculate rates of change of multivariate functions and solve problems related to composite functions and Jacobian's.
C101.3	Apply the concept of change of order of integration and variables to evaluate multiple integrals and their usage in computing the area and volumes.
C101.4	Solve first order linear/nonlinear differential equation analytically using standard methods.
C101.5	Make use of matrix theory for solving system of linear equations and compute Eigen values and Eigen vectors required for matrix diagonalization process.

### **COURSE DETAILS**

<b>Course Name</b>	ENGINEERING PHYSICS
<b>Course Code/Course Index</b>	18PHY12/22 / C-102
<b>Academic Year</b>	2018-19
<b>Semester</b>	I/II

#### **Course outcomes (COs)**

C102.1	Understand various types of oscillations and their implications, the role of Shock waves in various fields and recognize the elastic properties of materials for engineering applications
C102.2	Realize the interrelation between time varying electric field and magnetic field, the transverse nature of the EM waves and their role in optical fiber communication
C102.3	Compute Eigen values, Eigen functions, momentum of Atomic and subatomic particles using Time independent 1-D Schrodinger's wave equation
C102.4	Apprehend theoretical background of laser, construction and working of different types of laser and its applications in different fields
C102.5	Understand various electrical and thermal properties of materials like conductors, semiconductors and dielectrics using different theoretical models

### COURSE DETAILS

<b>Course Name</b>	BASIC ELECTRICAL ENGINEERING
<b>Course Code/Course Index</b>	18ELE13/23: C-103
<b>Academic Year</b>	2018-19
<b>Semester</b>	I/II

#### Course outcomes (COs)

<b>C103.1</b>	Analyse the behaviour of three looped DC circuit using Ohms law and Kirchhoff's Laws, discuss the generation of single-phase AC.
<b>C103.2</b>	Infer the phasor relationship between voltage and current in series and parallel combination of single-phase R-L-C circuit. Identify the relationship between line and phase quantities in a three-phase AC circuit.
<b>C103.3</b>	Illustrate the concept of transformers in transmission and distribution of electric power. Recognize the need for electrical safety rules and standards.
<b>C103.4</b>	Outline the relation between terminal voltage, load voltage, flux linkage, torque and speed in DC Motors and Generators.
<b>C103.5</b>	Apply the working principle of synchronous and induction motor for industrial applications and analyze relationship between speed and frequency.

### COURSE DETAILS

<b>Course Name</b>	ELEMENTS OF CIVIL ENGINEERING AND MECHANICS
<b>Course Code/Course Index</b>	18CV14/24 : C104
<b>Academic Year</b>	2018-19
<b>Semester</b>	1/2

#### Course Outcomes:

<b>C104.1</b>	Describe the basics of civil engineering, its scope of study, knowledge about roads, bridges and dams and also the action of forces, moments and couple.
<b>C104.2</b>	Compute the resultant forces and the effect of equilibrium in concurrent force system and action of friction in various bodies.
<b>C104.3</b>	Compute the resultant forces and the effect of equilibrium in non concurrent force system and study of support reaction in beams.
<b>C104.4</b>	Locate the centroid and compute moment of inertia of composite, plane and curved figures
<b>C104.5</b>	Analyse the basics concept of kinematics to know the motion of particles and to evaluate their speed, time, acceleration etc.

### COURSE DETAILS

<b>Course Name</b>	ENGINEERING GRAPHICS
<b>Course Code/Course Index</b>	18EGDL15/25: C-105
<b>Academic Year</b>	2018-19
<b>Semester</b>	I & II

**Course Outcomes:**

C105.1	Students will be able to visualize and draw orthographic projections of points and lines
C105.2	Students will be able to visualize and draw orthographic projections of points planes
C105.3	Students will be able to visualize and draw orthographic projection of solids
C105.4	Students will be able to visualize and draw isometric views of solids and combination of solids
C105.5	Students will be able to visualize and draw development of lateral surfaces of solids

### **COURSE DETAILS**

<b>Course Name</b>	ENGINEERING PHYSICS LABORATORY
<b>Course Code/Course Index</b>	18PHYL16/26 : C-106
<b>Academic Year</b>	2018-19

**Course outcomes:**

C106.1	Apprehend the concepts of interference of light, diffraction of light, Fermi energy and magnetic effect of current
C106.2	Understand the principles of operations of optical fibers and semiconductor devices such as Photodiode, and NPN transistor using simple circuits
C106.3	Determine elastic moduli and moment of inertia of given materials with the help of suggested procedures
C106.4	Recognize the resonance concept and its practical applications
C106.5	Understand the importance of measurement procedure, honest recording and representing the data, reproduction of final results

### **COURSE DETAILS**

<b>Course Name</b>	BASIC ELECTRICAL ENGINEERING LABORATORY
<b>Course Code/Course Index</b>	18EEL18/28 : C107
<b>Academic Year</b>	2018-19

**Course outcomes:**

C107.1	Recognize and Demonstrate the fundamentals of AC and DC supply, fuse, MCB, earth resistance and two-way and three-way control of lamp.
C107.2	Evaluate current and voltage using Ohms law and Kirchhoff's Laws for the given two-looped DC circuit, measure resistance and inductance of choke coil, power and power factor of incandescent lamp, fluorescent lamp, and LED lamp.
C107.3	Analyse the relationship between phase and line quantities and calculate the total power in a three-phase circuit using two wattmeter method.
C107.4	Demonstrate and identify the parts of the UPS, DC machines, Induction machine and Synchronous machine.

### **COURSE DETAILS**

<b>Course Name</b>	TECHNICAL ENGLISH - I
<b>Course Code/Course Index</b>	18EGH18/28 : C108
<b>Academic Year</b>	2018-19

**Course outcomes:**

C108.1	Use grammatical english and essentials of language skills and identify the nuances of phonetics, intonation and flawless pronunciation
C108.2	Implement english vocabulary at command and language proficiency
C108.3	Identify common errors in spoken and written communication
C108.4	Understand and improve the non verbal communication and kinesics
C108.5	Perform well in campus recruitment, engineering and all general competitive examinations

### **COURSE DETAILS**

<b>Course Name</b>	ADVANCED CALCULUS AND NUMERICAL METHODS
<b>Course Code/Course Index</b>	18MAT11 / C-109
<b>Academic Year</b>	2018 -19
<b>Semester</b>	II

**Course outcomes:**

C109.1	Illustrate the applications of multivariate calculus to understand the solenoidal and irrotational vectors and also exhibit the inter dependence of line, surface and volume integrals.
C109.2	Demonstrate various physical models through higher order differential equations and solve such linear ordinary differential equations.
C109.3	Construct a variety of partial differential equations and solution by exact methods/method of separation of variables.
C109.4	Explain the applications of infinite series and obtain series solution of ordinary differential equations.
C109.5	Apply the knowledge of numerical methods in the modeling of various physical and engineering phenomena

### **COURSE DETAILS**

<b>Course Name</b>	ENGINEERING CHEMISTRY
<b>Course Code/Course Index</b>	18CHE12/22 : C110
<b>Academic Year</b>	2018-19
<b>Semester</b>	I & II

**Course outcomes (COs)**

C110.1	Use of free energy in equilibria, rationalize bulk properties and processes using thermodynamic considerations, electrochemical energy systems
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C110.2	Causes & effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion, wear, tear, impact etc. by electroplating and electroless plating.
C110.3	Production & consumption of energy for industrialization of country and living standards of people. Electrochemical and concentration cells. Classical, modern batteries and fuel cells. Utilization of solar energy for different useful forms of energy.
C110.4	Environmental pollution, waste management and water chemistry
C110.5	Different techniques of instrumental methods of analysis. Fundamental principles of nanomaterials

### COURSE DETAILS

<b>Course Name</b>	C PROGRAMMING FOR PROBLEM SOLVING
<b>Course Code/Course Index</b>	18CPS13/23 / C-111
<b>Academic Year</b>	2018 -19
<b>Semester</b>	I/II

#### Course outcomes (COs)

C111.1	Understand the basics of computers, algorithms, syntax and semantics of C programming language
C111.2	Construct a programming solution to the given problem using branching and looping concepts.
C111.3	Construct the programming solutions for searching and sorting algorithms using the concepts of Arrays and String Handling
C111.4	Design and develop the modular programming skills for the given problem using User Defined Function and Recursion function.
C111.5	Analyze the concepts of Pointers, Structures and Preprocessor Directives.

### COURSE DETAILS

<b>Course Name</b>	BASIC ELECTRONICS
<b>Course Code/Course Index</b>	18ELN14- C-112
<b>Academic Year</b>	2018-19
<b>Semester</b>	I/II

#### Course outcomes (COs)

<b>C112.1</b>	Understand the basic operation of semiconductor diodes and their applications and to learn IC voltage regulators.
<b>C112.2</b>	Understand the fundamentals and analyze the operation of FET's and SCR's
<b>C112.3</b>	Understand characteristics and parameters of operational amplifier and to design basic applications.
<b>C112.4</b>	Analyze the application of BJT in switching, amplifier and oscillator application and to learn 555 timer IC.
<b>C112.5</b>	Learn fundamentals of digital logics, construct simple combinational and sequential logic circuits and Describe the basic principle of operation of communication system.

**COURSE DETAILS**

<b>Course Name</b>	ELEMENTS OF MECHANICAL ENGINEERING
<b>Course Code/Course Index</b>	18ME15/25 : C113
<b>Academic Year</b>	2018-19
<b>Semester</b>	I/II

**Course outcomes (COs)**

<b>C113.1</b>	Students shall demonstrate knowledge associated with various Energy and different kind of boilers
<b>C113.2</b>	Identifying different kinds of energy conversions by using Prime movers such as turbines and I C engines.
<b>C113.3</b>	Learn the operation of Metal removal process using Lathe, drilling, milling, robotics and automation.
<b>C113.4</b>	Fair understanding of application and usage of various engineering materials.
<b>C113.5</b>	To understand the principles of Refrigeration and Air conditioning systems

**COURSE DETAILS**

<b>Course Name</b>	C PROGRAMMING LABORATORY
<b>Course Code/Course Index</b>	18CPL17/27 : C-114
<b>Academic Year</b>	2018-19

**Course outcomes:**

C114.1	Understand the basics of computers, syntax and semantics of C programming language.
C114.2	Demonstrate the different techniques of using branching and looping statements.
C114.3	Understand the concepts of string handling and arrays. Design and develop modular programming skills.
C114.4	Understand the basics of structures and pointers.

**COURSE DETAILS**

<b>Course Name</b>	ENGINEERING CHEMISTRY LABORATORY
<b>Course Code/Course Index</b>	18CHEL16 / 26 – C115
<b>Academic Year</b>	2018-19

**Course outcomes:**

C115.1	Handling different types of instruments for analysis of materials using small quantities of materials involved for quick and accurate results.
C115.2	Carrying out different types of titrations for estimation of concerned materials using comparatively more quantities of materials for good results.

**COURSE DETAILS**

<b>Course Name</b>	TECHNICAL ENGLISH - II
<b>Course Code/Course Index</b>	18EGH18/28 : C116
<b>Academic Year</b>	2018-19

**Course outcomes:**

C116.1	Identify Common errors in spoken and written communication
C116.2	Get familiarized with english vocabulary and language proficiency
C116.3	Improve the nature and style of sensible writing and acquire employment and workplace communication skills
C116.4	Improve their technical communication skills through technical reading and writing practices
C116.5	Perform well in the campus recruitment, engineering and all other general competitive examinations.

**COURSE DETAILS**

<b>Course Name</b>	TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES
<b>Course Code/Course Index</b>	18MAT31 / C-201

**Course outcomes (COs)**

C201.1	Apply Laplace transform and inverse Laplace transform in solving differential/integral equation arising in network analysis, control systems and other fields of engineering.
C201.2	Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field y.
C201.3	Make us of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.
C201.4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
C201.5	Determine the externals of functional using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

**COURSE DETAILS**

<b>Course Name</b>	STRENGTH OF MATERIALS
<b>Course Code/Course Index</b>	18CV32 / C-202

**Course outcomes (COs)**

<b>C202.1</b>	Evaluate the basic concepts of the stresses and strains for different materials and strength of structural elements.
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<b>C202.2</b>	Calculate the development of internal forces and resistance mechanism for one dimensional and two dimensional structural elements.
<b>C202.3</b>	Calculate the shear force and Bending Moment for different loading conditions on structural elements.
<b>C202.4</b>	Evaluate the bending and shear stresses developed in the beam and also member subjected to torsion.
<b>C202.5</b>	Evaluate the deflection of beams and also failure theories of columns.

### **COURSE DETAILS**

<b>Course Name</b>	<b>FLUID MECHANICS</b>
<b>Course Code</b>	<b>18CV33/C-203</b>

#### **Course outcomes:**

<b>C203.1</b>	Understand fundamental properties of fluids and fluid Continuum.
<b>C203.2</b>	Analyze and solve problems on hydrostatics, including practical Applications
<b>C203.3</b>	Apply principles of mathematics to represent kinematic concepts related to fluid flow. Enumerate fundamental laws of fluid mechanics- conservation of mass, conservation of linear momentum, & the Bernoulli's principle for practical applications
<b>C203.4</b>	Evaluate the discharge through the weirs, notches, orifices and mouthpieces
<b>C203.5</b>	Analyze the major and minor losses in pipes.

### **COURSE DETAILS**

<b>Course Name</b>	<b>BUILDING MATERIALS AND CONSTRUCTION</b>
<b>Course Code/Course Index</b>	<b>18CV34 / C-204</b>

#### **Course outcomes (COs)**

<b>C204.1</b>	Select suitable building materials and test it before using it for construction work.
<b>C204.2</b>	Construct suitable foundation depend on type of soil and choose masonry according to nature of work
<b>C204.3</b>	Categorize the components of building according to their function and distinguish between floor and roof.
<b>C204.4</b>	Classify door, windows, ventilators, staircases, and formwork according to their use, location, materials, and functions.
<b>C204.5</b>	Compare plastering, pointing, painting and damp proofing which influence on internal and external appearance of structure.

### **COURSE DETAILS**

<b>Course Name</b>	<b>BASIC SURVEYING</b>
<b>Course Code/Course Index</b>	<b>18CV35 / C-205</b>

#### **Course outcomes (COs)**

<b>C205.1</b>	Develop a sound knowledge of fundamental principles of Geodetics.
<b>C205.2</b>	Measure of vertical and horizontal plane, linear and angular dimensions to arrive at solutions to basic surveying problems.
<b>C205.3</b>	Measure of bearings for traversing using compass.
<b>C205.4</b>	Determine the reduced levels of the points from staff readings using auto level.
<b>C205.5</b>	Analyze the obtained spatial data and compute areas and volumes. Represent 3D data on plane figures as contours.

### **COURSE DETAILS**

<b>Course Name</b>	ENGINEERING GEOLOGY
<b>Course Code</b>	18CV36/ C-206

#### **Course outcomes:**

<b>C206.1</b>	Apply geological knowledge its role in Civil Engineering Practice
<b>C206.2</b>	Utilize the knowledge on durability and competence of foundation rocks, and confidence enough to use the best building materials.
<b>C206.3</b>	Plan enough for the safety, stability, economy and life of the structures that they construct.
<b>C206.4</b>	Assess to solve various issues related to ground water exploration, build up dams, bridges, tunnels which are often confronted with ground water problems.
<b>C206.5</b>	Make Use of GIS, GPS and remote sensing as a latest tool in different civil engineering construction

### **COURSE DETAILS**

<b>Course Name</b>	COMPUTER AIDED BUILDING PLANNING & DRAWING
<b>Course Code/Course Index</b>	18CVL37/ 207

#### **Course outcomes:**

<b>C207.1</b>	Use of the fundamental features of AutoCAD.
<b>C207.2</b>	Use the precision drafting tools in to develop accurate technical drawings.
<b>C207.3</b>	Develop, read and interpret the drawings various components of civil engineering structures in a detailed and visually impressive manner and professional set up.
<b>C207.4</b>	Plan and design a residential or public building as per the given requirements, develop working and submission drawings for building along with knowing the procedures for submission of drawings.

### **COURSE DETAILS**

<b>Course Name</b>	BUILDING MATERIALS TESTING LABORATORY
<b>Course Code/Course Index</b>	18CVL38 / C-208

**Course outcomes:**

<b>C208.1</b>	Reproduce the knowledge of mathematics and engineering in finding the strength in compression, tension, shear and torsion
<b>C208.2</b>	Examine the physical properties of various materials to evaluate strength characteristics
<b>C208.3</b>	Identify, formulate and solve engineering problems of structural elements subjected to flexure
<b>C208.4</b>	Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to

**COURSE DETAILS**

<b>Course Name</b>	CONSTITUTION OF INDIA, PROFESSIONAL ETHICS AND CYBER LAW
<b>Course Code/Course Index</b>	18CPC39/49 / C-209

**Course outcomes:**

<b>C209.1</b>	Have constitutional knowledge and legal literacy.
<b>C209.2</b>	Understand Engineering and Professional ethics and responsibilities of Engineers
<b>C209.3</b>	Understand the cybercrimes and cyber laws for cyber safety measures.
<b>C209.4</b>	Have constitutional knowledge and legal literacy.

**COURSE DETAILS**

<b>Course Name</b>	COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS
<b>Course Code</b>	18MAT41 / C-210

**Course outcomes**

<b>C210.1</b>	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory
<b>C210.2</b>	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing
<b>C210.3</b>	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field
<b>C210.4</b>	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
<b>C210.5</b>	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

**COURSE DETAILS**

<b>Course Name</b>	Analysis of Determinate Structures
<b>Course Code</b>	18CV42 / C211

**Course outcomes:**

<b>C211.1</b>	Identify different forms of structural systems and construct ILD.
<b>C211.2</b>	Analyse the beams and trusses subjected to moving loads
<b>C211.3</b>	Evaluate the deflection of the cantilever, simply supported and overhanging beams by different methods
<b>C211.4</b>	Explain the energy principles and energy theorems and its applications to determine the deflections of trusses and bent frames
<b>C211.5</b>	Determine the stress resultants in arches and cables

### **COURSE DETAILS**

<b>Course Name</b>	APPLIED HYDRAULICS
<b>Course Code</b>	18CV43/ C-212

**Course outcomes (COs)**

C212.1	Apply dimensional analysis to develop mathematical modeling and compute the parametric values in prototype by analyzing the corresponding model parameters
C212.2	Identify the open channels of various cross sections including optimum design sections
C212.3	Apply Energy concepts to fluid in open channel sections, Calculate Energy dissipation, Compute water profiles at different conditions
C212.4	Analyze the performance of Turbines for various design data
C212.5	Evaluate the performance of pumps for various design data

### **COURSE DETAILS**

<b>Course Name</b>	CONCRETE TECHNOLOGY
<b>Course Code/Course Index</b>	18CV44 / C-213

**Course outcomes (COs)**

C213.1	Select suitable materials which influence on quality of concrete and Understand the Influence of chemical and mineral admixtures on the properties of concrete
C213.2	Develop good workable concrete for construction and identifying the bad and good practice in making concrete

C213.3	Evaluate the performance of concrete in compression, tension, bond, elasticity which are greatly influence on water-cement ratio and gel-space ratio.
C213.4	Design concrete mix using BIS standards to satisfy the durability requirements
C213.5	Perceive a knowledge on present and future revolutionary advancement in concrete and concrete technology

### **COURSE DETAILS**

<b>Course Name</b>	ADVANCED SURVEYING
<b>Course Code/Course Index</b>	18CV45 / C-214

#### **Course outcomes (COs)**

C214.1	Apply geometric principles to arrive at solutions to surveying problems.
C214.2	Capture geodetic data to process and perform analysis for survey problems with the use of electronic instruments.
C214.3	Design and implement the different types of curves for deviating type of alignments
C214.4	Determine the positions of celestial bodies and calculate the distance between the bodies.
C214.5	Use of modern survey instruments and applies the knowledge of GIS in transportation and town planning.

### **COURSE DETAILS**

<b>Course Name</b>	WATER SUPPLY & TREATMENT ENGINEERING
<b>Course Code</b>	18CV46 / C-215

#### **Course outcomes:**

<b>C215.1</b>	Analyze the variation of water demand and to estimate water requirement for a community.
<b>C215.2</b>	Evaluate the available sources of water, quantitatively and qualitatively and make appropriate choice for a community.
<b>C215.3</b>	Determine the drinking water quality standards and to illustrate qualitative analysis of water.
<b>C215.4</b>	Design of physical, chemical and biological treatment methods to ensure safe and potable water Supply.
<b>C215.5</b>	Plan the basic structure of drinking water supply systems and design the component systems of water treatment facilities

### **COURSE DETAILS**

<b>Course Name</b>	ENGINEERING GEOLOGY LABORATORY
<b>Course Code/Course Index</b>	18CVL47 / C-216

**Course outcomes:**

<b>C216.1</b>	Identify the minerals, rocks and utilize them effectively in Civil Engineering practices.
<b>C216.2</b>	Interpret subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone by using geophysical methods.
<b>C216.3</b>	Interpret and understand the geological conditions of the area for implementation of Civil Engineering projects.
<b>C216.4</b>	Adapt the techniques in the interpretation of topographical map and LANDSAT Imageries to find out the lineaments and other structural features for the given area.

**COURSE DETAILS**

<b>Course Name</b>	FLUID MECHANICS AND HYDRAULIC MACHINES LABORATORY
<b>Course Code/Course Index</b>	18CVL48 / C-217

**Course outcomes:**

<b>C217.1</b>	Apply the knowledge in finding friction factor for different pipes and also determine coefficients of vertical orifice
<b>C217.2</b>	Determine the rate of flow by notches and weirs
<b>C217.3</b>	Estimate the rate of flow by Venturimeter, Orificemeter and Venturiflume
<b>C217.4</b>	Interpret the output results obtained from impact of jet, pumps, turbine to check the performance

**COURSE DETAILS**

<b>Course Name</b>	VYAVAHARIKA KANNADA (KANNADA FOR COMMUNICATION)
<b>Course Code/Course Index</b>	18KVK39/49: C2181

**Course outcomes (COs)**

<b>C2181.1</b>	Understand the grammar in Kannada language and their awareness
<b>C2181.2</b>	Build communication skills in day to day activities
<b>C2181.3</b>	Develop interest on Kannada Language and Literature

**COURSE DETAILS**

<b>Course Name</b>	AADALITHA KANNADA (KANNADA FOR ADMINISTRATION)
<b>Course Code/Course Index</b>	18KAK39/49: C2182

**Course outcomes (COs)**

<b>C2182.1</b>	□□□□ □□□□□□□□□□□□□□□□□□□□□□ □□□□ □□□□□ □□□□□ □□□□□□□□□□.
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**COURSE DETAILS**

<b>Course Name</b>	CONSTRUCTION MANAGEMENT & ENTREPRENEURSHIP
<b>Course Code/Course Index</b>	18CV51 / C-301

**Course outcomes (COs)**

C301.1	Apply the construction management process and development of project plan.
C301.2	Build the skills needed to manage human resources and materials.
C301.3	Solve variety of issues that are encountered by professional in discharging professional duties.
C301.4	Make use of the role of economics in the decision making process and perform the calculations in regard to interest formulas.
C301.5	Apply the professional obligations effectively with global outlook.

**COURSE DETAILS**

<b>Course Name</b>	ANALYSIS OF INDETERMINATE STRUCTURES
<b>Course Code/Course Index</b>	18CV52 / C-302

**Course outcomes (COs)**

<b>C302.1</b>	Determine the moment in indeterminate beams and frames of varying cross section using slope deflection method.
<b>C302.2</b>	Determine the moment in indeterminate beams and frames of no sway and sway using moment distribution method.
<b>C302.3</b>	Analyze the beams and frames by Kani's method.
<b>C302.4</b>	Analyze the beams and frames using flexibility matrix method.
<b>C302.5</b>	Analyze the beams and indeterminate frames using stiffness matrix method.

**COURSE DETAILS**

<b>Course Name</b>	DESIGN OF RC STRUCTURAL ELEMENTS
<b>Course Code/Course Index</b>	18CV53 / C-303

**Course outcomes (COs)**

C303.1	Explain the design philosophy and principles.
C303.2	Solve the engineering problems of RC elements subjected to flexure, shear and torsion.
C303.3	Adapt the procedural knowledge in designs of RC structural elements such as beams and slabs.
C303.4	Utilize the concept of design of RC structural elements such as slabs and staircase for different cases.
C303.5	Utilize the concept of design of RC structural elements such as Column & footings. Also Utilize professional and ethical responsibility in the direction of safe and economic structures

**COURSE DETAILS**

<b>Course Name</b>	BASIC GEOTECHNICAL ENGINEERING
<b>Course Code/Course Index</b>	18CV54/C304

**Course outcomes:**

<b>C304.1</b>	Make use of the procedures to determine index properties of any type of soil, classify and list the soil based on its index properties
<b>C304.2</b>	Determine compaction characteristics of soil and apply that knowledge to assess field compaction procedures
<b>C304.3</b>	Estimate permeability property of soils and acquire conceptual knowledge about stresses due to seepage and effective stress; Also acquire ability to estimate seepage losses across hydraulic structure
<b>C304.4</b>	Evaluate shear strength parameters of different types of soils using the data of different shear tests and comprehend Mohr-Coulomb failure theory.
<b>C304.5</b>	Solve practical problems related to estimation of consolidation settlement of soil deposits also time required for the same financing concepts.

**COURSE DETAILS**

<b>Course Name</b>	MUNICIPAL WASTEWATER ENGINEERING
<b>Course Code/Course Index</b>	18CV55 / C-305

**Course outcomes (COs)**



<b>C305.1</b>	Select the appropriate sewer appurtenances and materials in sewer network.
<b>C305.2</b>	Design the different components of sewer networks and methods of disposal of treated effluents.
<b>C305.3</b>	Analyze the different characteristics of wastewater and to understand the different treatment units.
<b>C305.4</b>	Design the various biological treatment units
<b>C305.5</b>	Design various Advanced Oxidation Process (AOPs) and low cost treatment units for rural sanitation.

### **COURSE DETAILS**

<b>Course Name</b>	HIGHWAY ENGINEERING
<b>Course Code/Course Index</b>	18CV56 / C-306

#### **Course outcomes (COs)**

<b>C306.1</b>	Make use of the knowledge of highway development programs and the concepts of selection of various alternative proposals.
<b>C306.2</b>	Make use of the concepts of various surveys for proposing new alignment and realignment projects and design of road geometrics.
<b>C306.3</b>	Evaluate the engineering properties of the materials and suggest the suitability of the same for pavement construction and Design structural components of pavement and drainage.
<b>C306.4</b>	Apply knowledge on Mix Design of soil aggregate mixes and Pavement Construction methodology in construction
<b>C306.5</b>	Evaluate the highway economics by few select methods and also will have a basic knowledge of various highway financing concepts.

### **COURSE DETAILS**

<b>Course Name</b>	SURVEYING PRACTICE
<b>Course Code</b>	18CVL57 / C-307

#### **Course outcomes:**

<b>C307.1</b>	Apply the basic principles of engineering surveying for linear measurements.
<b>C307.2</b>	Use the compass to measure magnetic bearings and carry out traversing.
<b>C307.3</b>	Perceive effectively field procedures required for a professional surveyor to carry out levelling process.
<b>C307.4</b>	Use of instruments like theodolite to measure horizontal and vertical angles and conventional surveying instruments necessary for engineering practice.

**COURSE DETAILS**

<b>Course Name</b>	CONCRETE & HIGHWAY MATERIALS LABORATORY
<b>Course Code</b>	18CVL58 / C-308

**Course outcomes:**

<b>C308.1</b>	Examine the quality and suitability of cement for construction work
<b>C308.2</b>	Analyze appropriate concrete mix and Determine strength and quality of concrete
<b>C308.3</b>	Make use of knowledge acquired on road aggregates and bitumen for their suitability as road material.
<b>C308.4</b>	Determine the suitability of soil as sub grade materials.

**COURSE DETAILS**

<b>Course Name</b>	ENVIRONMENTAL STUDIES
<b>Course Code/Course Index</b>	18CIV59 / C-309

**Course outcomes (COs)**

C309.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale.
C309.2	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.
C309.3	Develop critical thinking and observation skills, and apply them to the analysis of a problem or question related to the environment.
C309.4	Build the Global environmental concerns and the individual responsibility to protect environment with environmental protection laws and education.
C309.5	Analyze and evaluate strategies, technologies, and methods for sustainable management of environmental systems and for the remediation or restoration of degraded environments.

**COURSE DETAILS**

<b>Course Name</b>	DESIGN OF STEEL STRUCTURAL ELEMENTS
<b>Course Code/Course Index</b>	18CV61 / C-310

**Course outcomes (COs)**

C310.1	Utilize the knowledge of steel structures, Advantages and Disadvantages of steel structures, steel code provisions and plastic behaviour of structural steel
C310.2	Make use of the concept of bolted and welded connections, failure mechanisms and to design against the failures

C310.3	Design of compression members, built-up columns and columns splices across different practical situations
C310.4	Design the tension members, simple slab base and gusseted base
C310.5	Utilize the concept of laterally supported and un-supported steel beams and its design

### **COURSE DETAILS**

<b>Course Name</b>	APPLIED GEOTECHNICAL ENGINEERING
<b>Course Code/Course Index</b>	18CV62 / C-311

#### **Course outcomes (COs)**

<b>C311.1</b>	Plan and execute geotechnical site investigation program for different civil engineering projects.
<b>C311.2</b>	Analyze the stress distribution and compute settlement in various types of soils.
<b>C311.3</b>	Estimate factor of safety against failure of slopes and to compute lateral pressure distribution behind earth retaining structures
<b>C311.4</b>	Determine bearing capacity of soil and to achieve proficiency in proportioning various types of footing
<b>C311.5</b>	Estimating load carrying capacity of single and group of piles

### **COURSE DETAILS**

<b>Course Name</b>	HYDROLOGY AND IRRIGATION ENGINEERING
<b>Course Code/Course Index</b>	18CV63 / C-312

#### **Course outcomes (COs)**

<b>C312.1</b>	Describe hydrologic cycle and analyse the rainfall data
<b>C312.2</b>	Compute the losses from precipitation
<b>C312.3</b>	Develop rainfall - runoff relationship analyse the hydrographs and their components
<b>C312.4</b>	Interpret the basic requirements of irrigation, crops and various irrigation techniques
<b>C312.5</b>	Discuss the methodology of computing the canal capacity, and reservoir capacity

### **COURSE DETAILS**

<b>Course Name</b>	ALTERNATIVE BUILDING MATERIALS
<b>Course Code/Course Index</b>	18CV643 / C-3133

#### **Course outcomes (COs)**

C3133.1	Solve the problems of Environmental issues concerned to building materials and cost effective building technologies
C3133.2	Identify appropriate type of masonry unit and mortar, design of structural masonry under axial compression.
C3133.3	Identify the various alternative building materials and suggest agro and industrial wastes in manufacturing of building.
C3133.4	Recommend various types of alternative building technologies and design of energy efficient building by considering local climatic condition and building material.
C3133.5	Identify new technologies for manufacture of alternative building materials and Suggest basic cost saving techniques in planning, design and construction.

### **COURSE DETAILS**

<b>Course Name</b>	REMOTE SENSING & GIS
<b>Course Code/Course Index</b>	18CV651 / C-3141

#### **Course outcomes (COs)**

<b>C3141.1</b>	Make use of data and delineate various elements from the satellite imagery using their spectral signature.
<b>C3141.2</b>	Analyze different features of ground information to create raster or vector data.
<b>C3141.3</b>	Take part in digital classification and create different thematic maps for solving specific problems.
<b>C3141.4</b>	Build decision based GIS analysis on thematic maps for planning & management.
<b>C3141.5</b>	Apply the modern tool of Remote Sensing and GIS in Natural Resource Management

### **COURSE DETAILS**

<b>Course Name</b>	SOFTWARE APPLICATION LABORATORY
<b>Course Code/Course Index</b>	18CVL66/ C-315

#### **Course outcomes:**

<b>C315.1</b>	Make use of the industry software in professional setup for analysis and design of a structures
<b>C315.2</b>	Understand the elements of finite element modelling, specifications of loads and boundary conditions, performing and interpretation of results for final design
<b>C315.3</b>	Interpreting topographical map to study the features of the area using QGIS and Google earth
<b>C315.4</b>	Develop customized automation tools using excel for various civil engineering projects

### **COURSE DETAILS**

<b>Course Name</b>	ENVIRONMENTAL ENGINEERING LABORATORY
<b>Course Code/Course Index</b>	18CVL67 / C-316

**Course outcomes:**

<b>C316.1</b>	Acquire capability to conduct experiments and estimate the concentration of different parameters.
<b>C316.2</b>	Determine the chemical, physical and biological characteristics of water and wastewater.
<b>C316.3</b>	Determine the optimum dosage of coagulant, Residual chlorine and available chlorine
<b>C316.4</b>	Determination of Nitrates and Iron by Spectrophotometer.

### **COURSE DETAILS**

<b>Course Name</b>	EXTENSIVE SURVEY PROJECT /CAMP
<b>Course Code/Course Index</b>	18CVP68 / C-317

**Course outcomes:**

<b>C317.1</b>	Apply skills to handle conventional & modern surveying equipments for location of objects and setting out works.
<b>C317.2</b>	Interpret and analyze data to prepare drawings and reports of engineering projects like water supply, highway and irrigation and town planning.
<b>C317.3</b>	Apply the technical difficulties at site and managerial skills to tackling them in completing the assigned survey work.
<b>C317.4</b>	Function as a team member imparting networking, communicating effectively in gaining lifelong learning process.