

St. Xavier's Catholic College of Engineering, Chunkankadai, Nagercoil - 629003.

2020 -- 2021

Course Outcomes

Program:B.E. Civil Engineering

Semester:1

<p style="text-align: center;">Course:Physics and Chemistry Laboratory-[BS8161]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Determine different modulli of elasticity used in day to day engineering applications.</p> <p>CO2 : Estimate the optical parameters of visible and laser sources slong with their applications in various fields.</p> <p>CO3 : Calculate the thickness of wire and wavelength of light using air wedge and spectrometer.</p> <p>CO4 : Determine the water quality parameters (DO, Chloride, Cu content, Alkalinity, and hardness) of the water sample Analyse quantitatively the metals (Fe, Na, Cu) in the given sample using potentiometer ,</p> <p>CO5 : flame photometer and understant how conductometric better than volumetric titrations and the skill to do the experiment.</p>
<p style="text-align: center;">Course:Engineering Chemistry-[CY8151]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Describe the methods of water purification</p> <p>CO2 : Define the terms in phase rule and adsorption</p> <p>CO3 : Explain the types of energy resources</p> <p>CO4 : Determine the composition and characterisation of fuels and alloys</p> <p>CO5 : Classify the types of water,fuels and alloys</p>
<p style="text-align: center;">Course:Problem Solving and Python Programming-[GE8151]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 :Describe the concepts of algorithm, data types, operators, conditional statements and files.</p> <p>CO2 :Write and execute simple Python programs</p> <p>CO3 :Develop Python programs for complex problems</p> <p>CO4 :Apply basic and compound data types, functions and files to implement Python programs</p> <p>CO5 :Design and analyse algorithms, modules and packages</p>
<p style="text-align: center;">Course:Engineering Graphics-[GE8152]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Understand the fundamentals and standards of Engineering graphics</p> <p>CO2 : Apply freehand sketching of basic geometrical constructions and multiple views of objects.</p> <p>CO3 : Analyze orthographic projections of lines and plane surfaces.</p> <p>CO4 : Analyze projections and solids and development of surfaces.</p> <p>CO5 : Analyze isometric and perspective sections of simple solids.</p>
<p style="text-align: center;">Course:Problem Solving and Python Programming Laboratory-[GE8161]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Write, test and debug simple Python Programs</p> <p>CO2 : Implement Python Programs with conditionals and looping statements</p> <p>CO3 : Develope Python Programs using functions</p>

CO4 : Use Python lists,tuples ,dictionaries for representing compound data
CO5 : Read and write data from/to files and write programs using python packages

Course:Communicative English-[HS8151]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Learn vocabulary, skim and scan passages and share information related to one/oneself/family and friends.
CO2 : Improve their telephonic conversation skills, general reading and free writing skills and language skills through preposition and conjunction.
CO3 : Acquire language skills through degrees of comparison, pronouns and direct indirect questions, comprehend short and long passages, describe products and express opinions.
CO4 : Improve their language skills through reading, draft e-mails and personal letters and use correct tenses in the language usage.
CO5 : Write short essays and dialogues and participate in group activities.

Course:Engineering Mathematics - I-[MA8151]

Upon completion of the course, the students will.../ will be able to...

- CO1 : defines the fundamentals of differential calculus
CO2 : defines the various concepts of functions of several variables with maxima and minima concepts
CO3 : analysis of integral calculus with bi-parts and bernoulli's formulae
CO4 : application of multiple integrals using single, double, triple, arwea under the given curve and the volume enclosed by the given curve
CO5 : application of the basic and the advanced application of differential equation with constant and variable coefficients

Course:Engineering Physics-[PH8151]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Students will be able to describe the basics of Properties of matter, Waves, Laser, Optical fibers and Thermal behavior of materials to improve their engineering knowledge.
CO2 : Students will be able to mention the Advanced Physics concepts of quantum theory and the Characteristics of crystalline materials.
CO3 : Students will be able to illustrate Bending of beams, Oscillations, Thermal expansion joints and Fiber optic sensors to assess societal and safety issues.
CO4 : Students will be able to summarize the Types of optical fibers and losses associated with them, Wave equations, Crystal growth techniques and imperfections of crystals.
CO5 : Students will be able to determine the Moduli of elasticity of different materials, Eigen value and Eigen function of particles, Working of thermal devices and Functioning of Scanning Tunneling Microscope to enhance the development of society.

Semester:2

Course:Basic Electrical and Electronics Engineering-[BE8251]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Illustrate the operation of AC & DC Circuits
CO2 : Explain the operation of Electrical Machines
CO3 : Ability to identify Semiconductor Devices
CO4 : Apply the Digital Electronics for domestic Application
CO5 : Explain the operation of communication System

Course:Engineering Practices Lab-[GE8261]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Understand wiring procedures practically
- CO2 : Understand all the fundamental concepts involving electrical Engineering
- CO3 : Handle basic electrical and electronics equipments
- CO4 : Understand all the fundamental concepts involving Electronics Engineering
- CO5 : Assemble basic electronic Components

Course:Environmental Sciences and Engineering-[GE8291]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Acquire knowledge about importance of environment education and ecosystem
- CO2 : Understand that environmental pollution and its prevention
- CO3 : Develop knowledge for the conservation of natural resources
- CO4 : Analyze social and environmental problems
- CO5 : Become aware of the need to control population for sustainable development

Course:Engineering Mechanics-[GE8292]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Illustrate force and moments of particles in space
- CO2 : Analyze the rigid body in equilibrium.
- CO3 : Estimate the properties of surfaces and solids.
- CO4 : Analyze the dynamics of particles with respect to displacements
- CO5 : Illustrate friction and its effect on elements of simple rigid bodies

Course:Technical English-[HS8251]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Read technical texts and write area- specific texts effortlessly.
- CO2 : Listen and comprehend lectures and talks in their area of specialization successfully.
- CO3 : Speak appropriately and effectively in varied formal and informal contexts.
- CO4 : Write reports and winning job applications.
- CO5 : Participate in Group discussions

Course:Engineering Mathematics II-[MA8251]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Define the basic concepts of matrices, vectors, analytic function and Laplace transform.
- CO2 : Explain the properties of matrices and vector differential operators.
- CO3 : Understand the basics of Laplace transform for elementary functions and line integral of analytic functions.
- CO4 : Apply diagonalization of matrices in quadratic form and Laplace transform in differential equations.
- CO5 : Evaluate analytic function, vector and complex integration using various methods.

Course:Physics for Civil Engineering-[PH8201]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Describe the basics of thermal behavior of materials, sound absorbing materials and new engineering materials to improve their engineering knowledge.
- CO2 : Mention the Advanced prevention and safety measures of hazards and various design and measurements of light effects.
- CO3 : Illustrate the importance of lighting design, designing of newer materials and analysis of hazards to assess societal and safety issues.
- CO4 : Summarize the factors affecting acoustics of buildings and thermal performance of

buildings. Determine the heat gain and loss of different materials, measurement of day light and CO5 : sound absorption coefficient of materials, identify the different properties of ceramics and different estimation techniques of hazards to enhance the development of society.

Course:Computer Aided Building Drawing-[CE8211]

Upon completion of the course, the students will.../ will be able to...
CO1 : Draft the plan, elevation and sectional views of the buildings, industrial structures, and framed buildings using computer software.
CO2 : Students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
CO3 : Acquire the knowledge in Computer aided drafting using Auto CAD software Apply the concept of plan, elevation and sectional views of buildings in accordance with
CO4 : development and control rules satisfying orientation and functional requirements as per National Building Code
CO5 : Understand the AutoCAD commands for drawing 2D building drawings required for different civil engineering applications.

Semester:3

Course:Strength of Materials I-[CE8301]

Upon completion of the course, the students will.../ will be able to...
CO1 : Describe the theory of stress, strain, forces, moment, torsion, deflection, principal stresses and principal plane.
CO2 : Determine Shear force and bending moment in beams and understand concept of theory of simple bending.
CO3 : Compute elastic constants, deflection, bending and torsional behavior of shaft and springs.
CO4 : Analyze the beams, trusses, shaft and springs using alternate methods.
CO5 : Draw shear force and bending moment diagram for beams and Mohr's circle for principal plane

Course:Fluid Mechanics-[CE8302]

Upon completion of the course, the students will.../ will be able to...
CO1 : Describe the concept of fluid properties in static, kinematic and dynamic equilibrium, pipe flow, boundary layer formation and model studies.
CO2 : Illustrate fluid laws and theorems pertaining to loss of fluid head.
CO3 : Identify and compare the characteristics of fluids in static kinematic and dynamic equilibrium, types of flow, boundary layer and model analysis.
CO4 : Calculate the flow characteristics and pressure of fluid passing through closed pipes and open channels.
CO5 : Evaluate the hydrostatic pressure of fluids, model studies and static, kinematic and dynamic equilibrium of fluids.

Course:Surveying-[CE8351]

Upon completion of the course, the students will.../ will be able to...
CO1 : Describe the principles and surveying techniques related to conventional and modern surveying.
CO2 : Compare the methods of surveying and error sources in time systems.
CO3 : Compute the bearings, levels, distances, and corrected values from the observed errors.

CO4 : Interpret the electronic surveying methods over conventional techniques.
CO5 : Plot the entire place using GPS by carrying out field work in surveying.

Course:Surveying Laboratory-[CE8361]

Upon completion of the course, the students will.../ will be able to...

CO1 : Illustrate the survey and collect field data
CO2 : Develop and Prepare field notes from survey data
CO3 : Interpret survey data and compute areas and volumes
CO4 : Relate the different methods and their procedure for levelling.
CO5 : Determine angle and distancebetween two points

Course:Construction Materials-[CE8391]

Upon completion of the course, the students will.../ will be able to...

CO1 : Check the quality of stones, bricksand concrete blocks including the manufacturing process
CO2 : Check the quality of cement, lime, aggregate and mortar
CO3 : Manufacturing concrete
CO4 : Define the properties of timber, plywood, veneer, steel, thermocol,and aluminium
CO5 : Select Required Modern Materials

Course:Engineering Geology-[CE8392]

Upon completion of the course, the students will.../ will be able to...

CO1 : Determine the importance of geology and geological features with engineering technology.
CO2 : Classify faults, folds and joints in rocks.
CO3 : Describe the types of rocks, their distribution and uses.
CO4 : Enumerate the geological methods to study the structure of rocks in earth crust.
CO5 : Differentiate dams, tunnels, bridges and reservoir for making of their engineering importance.

Course:Interpersonal Skills / Listening and Speaking-[HS8381]

Upon completion of the course, the students will.../ will be able to...

CO1 : Listen and respond appropriately
CO2 : Participate in group discussions
CO3 : Make effective presentations
CO4 : Speak clearly with proper stress and intonation
CO5 : Participate confidently and appropriately in conversations both formal and informal

Course:Transforms and Partial Differential Equations-[MA8353]

Upon completion of the course, the students will.../ will be able to...

CO1 : Solve first, second order homogeneous and non-homogeneous partial differential equations using standard methods and Fourier series method
CO2 : Find the Fourier series of a given function satisfying Dirchlet's condition
CO3 : Determine Fourier transform and z transforms of some standard functions
CO4 : Apply Fourier transform to evaluate certain definite Integrals and z transform to solve difference equations
CO5 : Formation of partial differential equations and difference equations

Course:Construction Materials Laboratory-[CE8311]

Upon completion of the course, the students will.../ will be able to...

CO1 : The students will have the required knowledge in the area of testing of construction materials and components of construction elements experimentally.
CO2 : Gain knowledge on construction materials, properties, testing methods

- CO3 : Student knows the techniques to characterize various construction materials through relevant tests.
- CO4 : Students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
- CO5 : Understand the behaviour of fresh and hardened concrete members.

Semester:4

Course:Construction Techniques and Practices-[CE8401]
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : know the different construction techniques and structural systems</p> <p>CO2 : Understand various techniques and practices on masonry construction, flooring, and roofing.</p> <p>CO3 : Plan the requirements for substructure construction.</p> <p>CO4 : Know the methods and techniques involved in the construction of various types of super structures</p> <p>CO5 : Plan the requirements for superstructure construction</p>
Course:Strength of Materials II-[CE8402]
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Interpret the basic concepts of strain energy and deflection of determinate beams, rigidly jointed and pin jointed plane frames</p> <p>CO2 : Analyze fixed beams, propped cantilever beams and continuous beams and to draw shear force as well as bending moment diagram</p> <p>CO3 : Determine the load carrying capacity and stresses induced in columns and to analyze thin cylinders and thick cylinders</p> <p>CO4 : Apply the different theories of failures on many practical cases</p> <p>CO5 : Choose proper method in designing of beams subjected to unsymmetrical bending curved bars in industries</p>
Course:Applied Hydraulic Engineering-[CE8403]
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Define the properties of uniform flow, gradually varied flow and rapidly varied flow.</p> <p>CO2 : compare the working principles and characteristics of hydraulic machines.</p> <p>CO3 : Solve the problems related to flow properties and hydraulic machines.</p> <p>CO4 : choose the best channel sections based on the uniform flow and hydraulic machines based on efficiency.</p> <p>CO5 : Estimate the flow profiles and energy dissipation.</p>
Course:Concrete Technology-[CE8404]
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Describe the materials, admixtures and properties and principles of mix design of concrete.</p> <p>CO2 : Make use of suitable materials, admixtures and mix proportion required for the preparation of concrete.</p> <p>CO3 : Analyze the properties of concrete and their effects due to the addition of admixtures.</p> <p>CO4 : Prioritize the types of cement, special concretes and properties of fresh and hardened concrete.</p> <p>CO5 : Develop concrete mix design for the required strength.</p>

Course:Strength of Materials Laboratory-[CE8481]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Understand the basic concepts of stress, strain, deformation, and material behaviour under different types of loading (axial, torsion, bending).
- CO2 : Demonstrate the testing of different materials under the action of tensile load, compressive load, double shear and torsion
- CO3 : Calculate the young's modulus of steel and wooden materials by conducting deflection testing.
- CO4 : Determine the stiffness of open coil and closed coil springs by applying compressive and tensile load respectively.
- CO5 : Make use of equipment to assess special strength characteristics such as toughness and hardness experimentally.

Course:Soil Mechanics-[CE8491]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Students are able to Characterize and classify Soils and also Determine Index properties of soil
- CO2 : Students are able to analyze the effect of water and the concept of stress and permeability in soil
- CO3 : Students are able to Compute and Analyze the Consolidation Settlement
- CO4 : Students are able to Identify shear strength Parameters for field condition
- CO5 : Students are able to Understand the concept of stability analysis of slope protection as per soil condition

Course:Hydraulic Engineering Laboratory-[CE8461]

Upon completion of the course, the students will.../ will be able to...

- CO1 : To understand the concept of flow measuring devices.
- CO2 : Estimate the frictional losses in pipes and fittings.
- CO3 : Estimate the performance of pumps for specific applications.
- CO4 : Evaluate the performance of turbines based on flow and head.
- CO5 : Compute the meta centric height of floating body.

Course:Numerical Methods-[MA8491]

Upon completion of the course, the students will.../ will be able to...

- CO1 :Familiarize with numerical solution of equations
- CO2 :Compute eigen values, eigen vectors and inverse of matrices using numerical methods
- CO3 :Understand the techniques of interpolation and approximation
- CO4 :Know different methods in numerical differentiation and integration
- CO5 :Apply various numerical techniques to solve ODE and PDE

Semester:5

Course:Design of Reinforced Cement Concrete Elements-[CE8501]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Describe the guiding principles of the serviceability limit state and the ultimate limit state concepts.
- CO2 : Summarize the fundamental mechanics of reinforced concrete and the empirical assumption made for analysis.
- CO3 : Determine the fundamental machines to the design of RC beams, slabs and column by limit

state methods.
 CO4 : Differentiate and check the strength and failure mode of structural element.
 CO5 : Generate the basic structural elements like beams, columns slabs, footing and staircase according to IS code.

Course:Water and Waste Water Analysis Laboratory-[CE8512]

Upon completion of the course, the students will.../ will be able to...
 CO1 : Determine the physical, chemical and biological characteristics of water and waste water.
 CO2 : Compute the dosage requirement for coagulation process.
 CO3 : Interpret the pollution concentration in water and waste water.
 CO4 : Analyse the physico-chemical and biological parameters of water with regard to the water quality requirements.
 CO5 : Examine the growth of micro-organisms in waste water.

Course:Foundation Engineering-[CE8591]

Upon completion of the course, the students will.../ will be able to...
 CO1 : Interpret the processes in site investigation and selection of foundation
 CO2 : Summarize the importance of bearing capacity of soil regarding the shallow foundation
 CO3 : Design the footings in soil according to the diverse types of loads acting
 CO4 : Analyze the lateral stability of pile foundation
 CO5 : Evaluate the design parameters of retaining walls in construction

Course:Water Supply Engineering-[EN8491]

Upon completion of the course, the students will.../ will be able to...
 CO1 : Define the drinking water supply systems, including water transport, treatment and distribution.
 CO2 : Describe the structure and components of drinking water supply systems, including water transport, treatment and distribution.
 CO3 : Demonstrate the unit operations and processes in water supply and treatment.
 CO4 : Design the functional units of water supply, treatment and distribution.
 CO5 : Interpret the elements of water quality, supply, treatment and their relation to public health, and water supply project alternatives.

Course:Geographic Information System (EL-I)-[GI8014]

Upon completion of the course, the students will.../ will be able to...
 CO1 : Define the fundamentals of GIS, history of GIS, database structures, data input methods and basic aspects of data quality.
 CO2 : Compare the raster and vector data models, open source and proprietary software, topology and non-topology.
 CO3 : Demonstrate E-R models and raster, vector data models in GIS.
 CO4 : Check the datum projection, interoperability, data quality and raster- vector conversion in data input and output.
 CO5 : Generate ER diagram, spatial data models, GPS data integration and data output models.

Course:Environment and Agriculture (Open EL-I)-[OAI551]

Upon completion of the course, the students will.../ will be able to...
 CO1 : Interpret the environment concerns on agriculture with water shortage and globalization.
 CO2 : Analyze the Erosion, deposition in irrigation systems on agricultural drainage and downstream impacts

- CO3 : Monitor Global warming that changes environment in Ecosystem
- CO4 : Coordinate ecological diversity, wild life and agriculture and their impacts on the environment on Pollination crisis
- CO5 : Check the global environmental governance on mega farms and vertical farms with virtual water trade and its impacts on local environment

Course:Soil Mechanics Laboratory-[CE8511]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Prepare soil samples for testing, performing the test, collecting and analyzing data according to ASTM.
- CO2 : Apply the laboratory results to problem identification, quantification, and basic soil mechanics related design problem.
- CO3 : Demonstrate the ability to write clear technical lab reports.
- CO4 : Perform common soil tests to identify physical and mechanical properties of soils.
- CO5 : Evaluate the soil mechanics tests and determines which test is needed in designing civil engineering projects.

Semester:6

Course:Ground Improvement Techniques (EL-II)-[CE8001]

Upon completion of the course, the students will.../ will be able to...

- Interpret the use of ground improvement techniques in engineering, seepage analysis,
- CO1 : mechanical modification techniques of cohesion-less and cohesive soils, role of geotextiles and grouting equipment and stabilization of soil.
- CO2 : Identify and compare the geotechnical problems in variety of soils and methods of dewatering and stabilization for varying site conditions.
- CO3 : Examine the problematic soil and suggest suitable remedial measures based on the requirement of project
- CO4 : Evaluate the deficiencies if any in the deposits of a project area and capable of providing alternate methods to improve its character.
- CO5 : Design drainage, dewatering systems and reinforced earth retaining structures for complex civil engineering problems

Course:Air Pollution and Control Engineering-[CE8005]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Identify the major sources and sinks of air pollutants.
- CO2 : Understand the key chemical transformations of air pollutants.
- CO3 : Relate air pollution and noise pollution regulation and its scientific basis.
- CO4 : Analyze the different stacks and their plume patterns
- CO5 : Describe the engineering solutions to various air pollution problems.

Course:Structural Analysis II-[CE8602]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Describe the theory of influence line, arches, suspension cables and plastic analysis.
- CO2 : Distinguish the methods of analysis of arches, suspension bridges with stiffening girders, determinate and indeterminate beams frames and trusses.
- CO3 : Compute critical stresses concentrated and moving loads, absolute maximum bending moment, Settlement and temperature effects of cable and shape factor.
- CO4 : Analyze the beams, frames, trusses, arches and suspension bridges using alternate

<p>methods.</p> <p>CO5 : Draw influence lines for statically determinate structures and indeterminate structure.</p>
<p>Course:Irrigation Engineering-[CE8603]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Define the need, development, merits, and demerits of irrigation, Regime theory and crop season.</p> <p>CO2 : Estimate various Efficiencies,Evapo transpiration and Consumptive use</p> <p>CO3 : Demonstrate the Modernisation techniques and Management techniques</p> <p>CO4 : Design various Irrigation Structures.</p> <p>CO5 : Plan various Irrigation methods, Scheduling and Distribution methods.</p>
<p>Course:Highway Engineering-[CE8604]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Define the planning, design, construction, evaluation and maintenance aspects of highways.</p> <p>CO2 : Describe the planning, design, construction, evaluation and maintenance of highways.</p> <p>CO3 : Demonstrate the structure, construction methods, evaluation of pavements and testing of highway materials.</p> <p>CO4 : Appraise the conventional and modern materials and methods of construction of pavements.</p> <p>CO5 : Design the geometrics and the layers of flexible and rigid pavements.</p>
<p>Course:Wastewater Engineering-[EN8592]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Estimate sewage generation, sewerage systems and wastewater collection.</p> <p>CO2 : Explain the basic concept of unit processes and operation.</p> <p>CO3 : Design the conventional unit processes and operations for the treatment of water and wastewater.</p> <p>CO4 : Select the conventional waste management and Secondary treatment processes.</p> <p>CO5 : Discuss the method of sludge disposal and health safety and sustainability, disposal standards, effluent standards.</p>
<p>Course:Professional Communication-[HS8581]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Make effective Presentations.</p> <p>CO2 : Participate confidently in Group Discussion.</p> <p>CO3 : Attend job interviews and be successful in them.</p> <p>CO4 : Develop adequate Soft skills required for the work place.</p> <p>CO5 : Develop a long term career- plan -Making career changes.</p>
<p>Course:Design of Steel Structural Elements-[CE8601]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Summarize basics of steel structural systems and its elements, its classifications and its advantages over reinforced concrete elements</p> <p>CO2 : Classify the types of steel sections based on the various geometrical properties.</p> <p>CO3 : Select a suitable type of connection and the corresponding design parameters for a particular joint for the different combinations of loads.</p> <p>CO4 : Outline the step by step procedure to design tension, compression and flexural members under various circumstances.</p> <p>CO5 : Justify the adoption of steel sections for a particular structural elements following various</p>

checking conditions
Course:Highway Engineering Laboratory-[CE8611]
Upon completion of the course, the students will.../ will be able to...
CO1 : Know the properties of aggregates and bitumen by performing tests.
CO2 : Outline the properties of bituminous mixes by performing tests on it.
CO3 : Evaluate the pavement condition by Benkelman Beam method
CO4 : Demonstrate the application of field testing equipment
CO5 : Test the road aggregates and bitumen for their suitability as road material
Course:Irrigation and Environmental Engineering Drawing-[CE8612]
Upon completion of the course, the students will.../ will be able to...
CO1 :Demonstrate the basic perception of environmental and irrigation engineering structures.
CO2 :Evaluate the principles in the designing of structure.
CO3 :Illustrate the engineering concepts in the substructure construction techniques.
CO4 :Apply the safety principles to avoid risk in the construction sequences.
CO5 :Examine the knowledge about the various roles of engineers in theconstruction

Semester:7

Course:Pavement Engineering(EL-III)-[CE8006]
Upon completion of the course, the students will.../ will be able to...
CO1 : Demonstrate types of pavement, causes of distress and methods of stabilization of pavement.
CO2 : Make use of suitable methods to assess the quality and serviceability of roads.
CO3 : Examine the factors influencing the design of flexible and rigid pavement.
CO4 : Evaluate the performance, stresses and deflections in pavements.
CO5 : Design flexible and rigid pavements based on IRC guidelines.
Course:Estimation, Costing and Valuation Engineering-[CE8701]
Upon completion of the course, the students will.../ will be able to...
CO1 : Infer the importance of estimation of quantities of items of work involved in buildings and details in plans, document, and valuation, and discriminate specification
CO2 : Identify the current rates for items of work and book value for property
CO3 : Compare the present values of buildings and the depreciation rate of buildings
CO4 : Assess the contract document and prepare estimation, specification for the proposed work
CO5 : Formulate specification, tender document and design basis report based on the requirement
Course:Railways, Air Ports,Docks and Harbour Engineering-[CE8702]
Upon completion of the course, the students will.../ will be able to...
CO1 : Define the concepts of planning, design, construction, and maintenance of railways, airports and harbours.
CO2 : Describe the planning, design, construction, and maintenance aspects of railways, airports and harbours.
CO3 : Demonstrate the structural components, layouts and design aspects of railways, airports and harbours.
CO4 : Appraise the conventional and modern methods of construction and maintenance of railway tracks.
CO5 : Design the geometrics of railways, airports and harbours.

Course:Testing of Materials (Open EL-II)-[OML751]
Upon completion of the course, the students will.../ will be able to...
CO1 : Understanding of professional and ethical responsibility in the areas of material testing.
CO2 : Understand the mathematics and engineering in calculating the mechanical properties of structural materials.
CO3 : Apply the techniques, skills and modern engineering tools necessary for engineering.
CO4 : Analyse the function on multi-disciplinary teams in the area of materials testing.
CO5 : Create to communicate effectively the mechanical properties of materials.
Course:Creative and Innovative Project (Activity Based -Subject Related)-[CE8711]
Upon completion of the course, the students will.../ will be able to...
To develop the ability to solve a specific problem right from its identification and
CO1 : literature review till the successful solution of the same. To train the students in preparing project reports and to face reviews and viva voce examination
Course:Industrial Training (4 weeks During VI Semester ? Summer)-[CE8712]
Upon completion of the course, the students will.../ will be able to...
CO1 : To understand the concept of development and implementation of new techniques.

Semester:8

Course:Maintenance, Repair and Rehabilitation of Structures (EL-V)-[CE8020]
Upon completion of the course, the students will.../ will be able to...
CO1 : Summarize the importance of maintenance, effects in structures due to climate and temperature variations, techniques for repair and their protection methods.
CO2 : Demonstrate the causes for deterioration and the repairing techniques to improve the service life of the structures elements.
CO3 : Identify the damaged structure and maintain the engineering structures safely and effectively.
CO4 : Categorize suitable type of concrete to strengthen the structures and the modern techniques and equipment being adopted for the demolition of large and hazardous structure in safe manner.
CO5 : Assess the quality and durability of concrete and adopt suitable repair techniques and protection methods.
Course:Prefabricated Structures (EL-V)-[CE8022]
Upon completion of the course, the students will.../ will be able to...
CO1 : State the standardization, structural components, joints and tolerance system of prefabrication.
CO2 : Illustrate the production, construction of structural members, detailing and codal provisions.
CO3 : Summarize the effects of abnormal loads and codal provisions..
CO4 : Differentiate the erection processes, large panel construction and joint flexibility in prefabrication.
CO5 : Interpret the Design principles of the structural members, expansion joints, connections and abnormal loads.
Course:Professional Ethics in Engineering (EL-IV)-[GE8076]
Upon completion of the course, the students will.../ will be able to...
CO1 : Demonstrate the basic perception of professional, industrial standards, codes of ethics

and role of professional ethics in engineering.

CO2 : Develop the ethical principles for making of moral judgements.

CO3 : Illustrate the engineering ethics and human values in the personal and professional life.

CO4 : Apply the safety principles to avoid risk by being aware of their responsibilities and rights.

CO5 : Examine the knowledge about the various roles of engineers in the professional life.

Course:Structural Design and Drawing-[CE8703]

Upon completion of the course, the students will.../ will be able to...

Gain a solid background on the working principles of various engineering structures such

CO1 : as Retaining Walls, flat slabs, reinforced concrete and steel bridges, reinforced concrete and steel water tanks, the various steel trusses and gantry girders and their elements.

CO2 : Calculate the different kinds of external loads acting on the structures.

CO3 : Analyse the structures in order to obtain the internal forces induced due to various load combinations.

CO4 : Identify the critical elements/region having maximum amount of internal forces.

CO5 : Do Design and detailing of structures by manual drawing, as per the specifications of

Indian standard code books available for various structures.

Course:Project Work-[CE8811]

Upon completion of the course, the students will.../ will be able to...

CO1 : Take up any challenging practical problems and find solution by formulating proper methodology.

St. Xavier's Catholic College of Engineering, Chunkankadai, Nagercoil - 629003.

2020 -- 2021 ODD Semester

Course Outcomes, CO-PO and CO-PSO Mapping

Program:M.E. Construction Engineering and Management

Semester:1

<p style="text-align: center;">Course:Modern Construction Materials-[CN5101]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : students will have the knowledge of different types of concrete such as high strength, high performances polymer concrete etc</p> <p>CO2 : students will have the knowledge of modern construction metals to be used in the field.</p> <p>CO3 : They know about the plastics FRP composites and their property</p> <p>CO4 : They know about the properties of flooring and façade materials.</p> <p>CO5 : They gain the knowledge of applications of different smart materials and modern materials in construction field.</p>
<p style="text-align: center;">Course:Statistical Methods for Engineers-[MA5165]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Describe characteristics of estimators , method of maximum likelihood estimation and method of moments</p> <p>CO2 : Use statistical tests in testing hypotheses on data.</p> <p>CO3 : Concept of linear regression, correlation, and its applications</p> <p>CO4 : List the guidelines for designing experiments and recognize the key historical figures in Design of Experiments.</p> <p>CO5 : Perform exploratory analysis of multivariate data, such as multivariate normal density, calculating descriptive statistics, testing for multivariate normality.</p>
<p style="text-align: center;">Course:Construction Planning, Scheduling and Control-[CN5103]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Define the basic concepts of planning, scheduling, accounting, quality control, safety and organization of data in construction</p> <p>CO2 : Describe the planning concepts, scheduling procedures, cost and quality control, safety concerns, and data organization in construction</p> <p>CO3 : Demonstrate project planning, scheduling and organization of data in databases</p> <p>CO4 : Interpret scheduling techniques, quality control and safety in construction</p> <p>CO5 : Generate construction plans, schedules, codings and budgets of construction projects</p>
<p style="text-align: center;">Course:Advanced Concrete Technology (EL-I)-[CN5001]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Discuss the concrete ingredient and its influencing at gaining strength</p> <p>CO2 : Experimenting the various test conducted for concrete and concrete making materials</p> <p>CO3 : Design the concrete mix design as per IS codes.</p> <p>CO4 : Explain the application and the use of special concrete and the special methods of concreting and their properties</p> <p>CO5 : Describe the manufacturing of concrete.</p>
<p style="text-align: center;">Course:Quantitative Techniques in management-[CN5003]</p> <p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Define operations research, production management, financial management and cost concepts</p> <p>CO2 : Understand other concepts regarding estimation, planning, scheduling and accounting</p>

CO4 : know the various quantitative methods applied to the elements of management

Course:Construction Equipment-[CN5102]

Upon completion of the course, the students will.../ will be able to...

CO1 : Demonstrate the principles of Construction Equipment's and Management.

CO2 : Classify the Equipment for Earthwork and Other Construction Equipment.

CO3 : Estimate the cost of equipment and the amount of depreciation.

CO4 : Illustrate the components of Asphalt and Concrete Plants.

CO5 : Compare the Materials Handling Equipment.

Semester:2

Course:Computer Applications in Construction Engineering and Planning-[CN5203]

Upon completion of the course, the students will.../ will be able to...

CO1 : To describe the basic concept of computer applications in construction management and planning

CO2 : To articulate the computer applications in construction management and planning.

CO3 : To analyze the applications of software in construction management and planning.

CO4 : To predict the application of software in construction management

CO5 : To validate the application of software in construction management

Course:Advanced Construction Techniques-[CN5201]

Upon completion of the course, the students will.../ will be able to...

CO1 : Demonstrate the basic perception of modern construction in engineering.

CO2 : Evaluate the principles of the super structure constructions.

CO3 : Illustrate the engineering concepts in the substructure construction techniques.

CO4 : Apply the safety principles to avoid risk in the demolition and construction sequences.

CO5 : Examine the knowledge about the various roles of engineers in the construction.

Course:Economics and Finance Management in Construction-[CN5204]

Upon completion of the course, the students will.../ will be able to...

CO1 : Define the basics of construction economics and finance including comparing and evaluating alternative proposals, management of funds, and management accounting.

CO2 : Describe the concepts of construction economics and finance including comparing and evaluating alternative proposals, management of funds, and management accounting.

CO3 : Demonstrate cash flow diagrams, and cash flow and funds flow statements.

CO4 : Interpret the interest rates and, the methods of comparing alternative proposals and depreciation

CO5 : Generate cash flow and funds flow statements.

Course:Construction Project Management-[CN5006]

Upon completion of the course, the students will.../ will be able to...

CO1 : understand the owners perspectives , evolution of management and organizations

CO2 : understand the planning objectives in management

CO3 : understand the construction process in the field.

CO4 : understand the various labour ,material utilization

CO5 : understand various cost estimation.

Course:Construction Personal Management-[CN5007]

Upon completion of the course, the students will.../ will be able to...

CO1 : Define the various processes in manpower planning, organizational and human resource

<p>management.</p> <p>CO2 : Describe the various welfare and development policies and methods in construction.</p> <p>CO3 : Demonstrate the importance of management at management at organizational level and its impacts.</p> <p>CO4 : Appraise the concept on TQM and need for automation in construction.</p> <p>CO5 : Define the various insurances , housing and pension schemes in construction industry.</p>
<p>Course:Contract Laws and Regulations-[CN5202]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Define the Basic concept & Terminology of law of contract</p> <p>CO2 : Describe the procedure for contract ,Tender , Arbitration</p> <p>CO3 : Distinguish among the various process involved in contract Formation</p> <p>CO4 : Identify the relevant legal aspects ,legal requirements and provision</p> <p>CO5 : Explain the law of labour regulations</p>
<p>Course:Advanced Construction Engineering and Computing Techniques Laboratory-[CN5211]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : The students will have the required knowledge in the area of testing of construction materials and components of construction elements experimentally</p> <p>CO2 : Gain knowledge on construction materials, properties, testing methods</p> <p>CO3 : Student knows the techniques to characterize various construction materials through relevant tests.</p> <p>CO4 : Students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.</p> <p>CO5 : Understand the quantity takeoff and simulation models for projects.</p>

Semester:3

<p>Course:Resource Management and Control in Construction (EL-VI)-[CN5010]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : Identify the resources and it's usage in construction Industry</p> <p>CO2 : Describe the needs of labours management</p> <p>CO3 : Demonstrate the selection of material and equipment</p> <p>CO4 : Determine the flow of time in construction projects</p> <p>CO5 : Formulate the allocation levelling of resources</p>
<p>Course:Project Safety Management (EL-V)-[CN5011]</p>
<p>Upon completion of the course, the students will.../ will be able to...</p> <p>CO1 : explain the theoretical basis for the different methods and tools in use to identify, analyse and evaluate accident risks and remedial actions.</p> <p>CO2 : choose and assess appropriate methods and tools for a systematic and efficient accident prevention work in industrial organisations and projects.</p> <p>CO3 : apply accident models for analysis of accidents ,methods for accident investigation at different levels, methods for safety audits.</p> <p>CO4 : analyse incident databases, choose and recommend efficient preventive measures.</p> <p>CO5 : solve practical task in operational safety management and recognize principles behind Norwegian and European safety legislation.</p>
<p>Course:Quality Control and Assurance in Construction-[CN5301]</p>

Upon completion of the course, the students will.../ will be able to...

CO1 : Describe about the quality management in construction.

CO2 : Enumerate quality systems in construction.

CO3 : Determine quality planning in construction

CO4 : Implement quality assurance in construction.

CO5 : Illustrate quality improvement techniques in construction

Course:Practical Training II (2 Weeks)-[CN5311]

Upon completion of the course, the students will.../ will be able to...

CO1 : To understand the concept of development and implementation of new techniques.

Course:Seminar-[CN5312]

Upon completion of the course, the students will.../ will be able to...

CO1 : Show competence in identifying relevant information, defining and explaining topics under discussion.

CO2 : Speak clearly and audibly in a manner appropriate to the subject, ask appropriate questions, respond to a range of questions, and take part in meaningful discussion to reach a shared understanding.

CO3 : Demonstrate the ability to pay close attention to what others say and respond constructively.

CO4 : Present information in a well-structured, and logical sequence, respond respectfully to opposing ideas, and develop the ability to synthesize, evaluate and reflect on information.

CO5 : Demonstrate through asking appropriate questions, the understanding of discussions and spark further discussion.

Course:Project Work (Phase I)-[CN5313]

Upon completion of the course, the students will.../ will be able to...

CO1 : The students will able to acquire sufficient knowledge in the related area and identify the systematic approach to carryout their phase ii project in a well manner.

Semester:4

Course:Practical Training -III-[CN5411]

Upon completion of the course, the students will.../ will be able to...

CO1 : To understand the concept of development and implementation of new techniques.

Course:Project Work (Phase-II)-[CN5412]

Upon completion of the course, the students will.../ will be able to...

CO1 : On completion of this course, the students will be in a position to manage construction industry efficiently and also pursue the research activities in a systematic way.

St. Xavier's Catholic College of Engineering, Chunkankadai, Nagercoil - 629003.

2020 -- 2021 ODD Semester

Course Outcomes, CO-PO and CO-PSO Mapping

Program:M.E. Structural Engineering

Semester: 1

Course:Advanced Mathematical Methods-[MA5151]	
Upon completion of the course, the students will.../ will be able to...	
CO1 :	Apply Laplace and Fourier transforms to initial value, initial –boundary value and boundary value problems in Partial Differential Equations.
CO2 :	Maximize and minimize the functional that occur in various branches of Engineering Disciplines. Construct conformal mappings between various domains and use of conformal mapping in
CO3 :	studying problems in physics and engineering particularly to fluid flow and heat flow problems.
CO4 :	Understand tensor algebra and its applications in applied sciences and engineering and develops ability to solve mathematical problems involving tensors
CO5 :	use tensor analysis as a tool in the field of applied sciences and related fields.
Course:Maintenance and Rehabilitation of Structures (EL-I)-[ST5001]	
Upon completion of the course, the students will.../ will be able to...	
CO1 :	Monitor distress and find causes
CO2 :	Recognize cracks and repair
CO3 :	Identify moisture source and preventive measure
CO4 :	Identify causes and deterioration and remedial measures
CO5 :	Demonstrate the strengthening of existing structures
Course:Advanced Concrete Structures-[ST5101]	
Upon completion of the course, the students will.../ will be able to...	
CO1 :	Knowledge in the design of reinforced concrete members and structures
CO2 :	Perform analysis and design of reinforced concrete members and connections.
CO3 :	Design and detailing of special structures
CO4 :	Interpret plastic behavior of structures
CO5 :	Identify the relevant ductile detailing to withstand earthquake loads
Course:Prefabricated Structures (EL-II)-[ST5002]	
Upon completion of the course, the students will.../ will be able to...	
CO1 :	Define the design principles associated with the prefabricated structures and the various components used for the construction.
CO2 :	Describe the methods, materials and equipments used for the components and joints in a prefabricated structure
CO3 :	Interpret the various technologies used from the manufacturing process to the installation process.
CO4 :	Explain the various types available in each prefabricated component and the mechanisms of transfer of loads and deflection.
CO5 :	Design floors, stairs,roof,walls and industrial buildings and various joints for the connections.
Course:Dynamics of Structures-[ST5102]	
Upon completion of the course, the students will.../ will be able to...	
CO1 :	Define the basics of dynamics, equation of motion for SDOF and MDOF and modal

super position method and modal analysis.
CO2 : Calculate the dynamic responses due to diverse types of dynamic loads.
CO3 : Interpret the dynamic performances of MDOF regarding to masses and stiffnesses and the contribution of each mode in total response.
CO4 : Students will be familiar with the selection of method suitable for analyzing continuous and other complex structures.
CO5 : Students will be aware of the various numerical methods available for analyzing nonlinear system and systems with randomly distributed load.

Course:Theory of Elasticity and Plasticity-[ST5103]

Upon completion of the course, the students will.../ will be able to...
CO1 : Analyze the fundamentals of stress and strain and formulate the compatibility equations.
CO2 : Illustrate plane stress and plane strain conditions and solve real life problems.
CO3 : Analyse torsional behavior of thin walled closed and open sections.
CO4 : Describe the methods of analysis and solution by finite difference method.
CO5 : Compare various theories of failure and apply the principles of plasticity to solve complex problems

Semester:2

Course:Prestressed Concrete-[ST5009]

Upon completion of the course, the students will.../ will be able to...
CO1 : Demonstrate the fundamentals of prestressing, flexural members, continuous beams, tension and compression members and composite structures.
CO2 : Relate the concept of Composite members with practical application
CO3 : Analyse the structural elements of prestressed and composite members.
CO4 : Evaluate the losses and deflection, shear and torsion, and stresses in water tanks and other prestressed members.
CO5 : Design continuous beams by understanding the concept of concordant cable profile and other structural elements.

Course:Wind and Cyclone Effects on Structures-[ST5010]

Upon completion of the course, the students will.../ will be able to...
CO1 : Describe the behavior of wind and cyclone effects on various types of structures.
CO2 : Make use of various code provisions for the design of structures for wind load.
CO3 : Analyse the effects of wind and cyclone on low rise and tall buildings.
CO4 : Assess the static and dynamic effects on flexible and rigid structures through wind tunnel studies.
CO5 : Design high rise structures subjected wind load, even structures exposed to cyclone.

Course:Advanced Steel Structures-[ST5201]

Upon completion of the course, the students will.../ will be able to...
CO1 : Able to design the structural members subjected to combined forces
CO2 : Perform analysis and design of bolted connections of industrial structures.
CO3 : Design and detailing of industrial buildings.
CO4 : Interpret plastic behavior of structures
CO5 : Identify the relevant detailing and design light gauge steel structures as per codal provisions.

Course:Stability of Structures-[ST5202]
Upon completion of the course, the students will.../ will be able to... CO1 : Understanding the buckling effect of structural elements CO2 : Understanding the mathematical problems in structural elements CO3 : Applying differential equation and different methods in structural elements CO4 : Analysis of buckling effect of beam, column, and plate CO5 : Create to communicate inelastic behavior of different methods
Course:Earthquake Analysis and Design of Structures-[ST5301]
Upon completion of the course, the students will.../ will be able to... CO1 : Knowledge on various earthquake resistance techniques in different structures CO2 : Summarize and compare the various methods of dynamic loading CO3 : Compute the vibration behavior in structural and non-structural member CO4 : Differentiate the seismic motion in various structure. CO5 : Evaluate seismic hazards from past Earthquake.
Course:Experimental Techniques-[ST5203]
Upon completion of the course, the students will.../ will be able to... CO1 : Knowledge about measurement and its principle CO2 : Identify the distress using various equipments CO3 : Acquire skills for carrying out tests and ensure safety of the structures CO4 : Operate various vibration measuring instruments a d analyze the structures . CO5 : Evluate the models using direct and indirect modelling
Course:Finite Element Analysis of Structures-[ST5204]
Upon completion of the course, the students will.../ will be able to... CO1 : To study the basics of finite element analysis, its approximation, tackling errors induced and the step by step procedure involved in analysing various structures. CO2 : To understand the pioneer methods to finite element analysis and their comparison. CO3 : To apply the finite element analysis procedure on various structures in order to calculate the internal forces CO4 : To interpret the results by varying the various parameterS CO5 : To evaluate the static as well as dynamics performances of various structures using any finite element analysis software
Course:Advanced Structural Engineering Laboratory-[ST5211]
Upon completion of the course, the students will.../ will be able to... CO1 : Students will able to cast and test Reinforced concrete beams for strength and deformation behavior. CO2 : Gain knowledge about the effects of admixtures in workability. CO3 : Analyze the behavior of rolled steel beams under different loading condition. CO4 : Apply non-destructing testing of concrete in existing structures CO5 : Evaluate the strength behavior of the column and beam model.

Semester:3

Course:Design of Steel Concrete Composite Structures-[ST5014]
Upon completion of the course, the students will.../ will be able to... CO1 : Generalize the knowledge in design concrete composite elements and structures. CO2 : Understanding the behavior of concrete composite elements and structures

- CO3 : Applying knowledge in design of composite beams, columns, trusses and box girder bridges
- CO4 : Analysis the position to design composite beams, columns, trusses and box - girder bridges including the related connections.
- CO5 : Create exposure on case studies related to steel - concrete constructions of buildings.

Course:Design of Bridges-[ST5015]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Describe the bridge components and Design methods of solid deck slab
- CO2 : Analyse slab and beams and find maximum bending moment
- CO3 : Design slab and beams for maximum bending moment
- CO4 : Calculate the forces on the steel bridge and Design its components
- CO5 : List the types of foundation, Bearing of bridge and design its components.

Course:Earthquake Analysis and Design of Structures-[ST5301]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Knowledge on various earthquake resistance techniques in different structures
- CO2 : Summarize and compare the various methods of dynamic loading
- CO3 : Compute the vibration behavior in structural and non-structural member
- CO4 : Differentiate the seismic motion in various structure.
- CO5 : Evaluate seismic hazards from past Earthquake.

Course:Practical Training II (2 weeks)-[ST5311]

Upon completion of the course, the students will.../ will be able to...

- CO1 : To understand the concept of development and implementation of existing as well as new techniques.

Course:Seminar-[ST5312]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Show competence in identifying relevant information, defining and explaining topics under discussion.
Speak clearly and audibly in a manner appropriate to the subject, ask appropriate
- CO2 : questions, respond to a range of questions, and take part in meaningful discussion to reach a shared understanding
- CO3 : Demonstrate the ability to pay close attention to what others say and respond constructively
- CO4 : Present information in a well-structured, and logical sequence, respond respectfully to opposing ideas, and develop the ability to synthesize, evaluate and reflect on information.
- CO5 : Demonstrate through asking appropriate questions, the understanding of discussions and spark further discussion.

Course:Project Work (Phase I)-[ST5313]

Upon completion of the course, the students will.../ will be able to...

- CO1 : Identify a specific problem for the current need of the society and collecting information related to the same through detailed review of literature.
- CO2 : Develop the methodology to solve the identified problem.
- CO3 : Preparing project reports and to face reviews and viva-voce examination

Semester:4

Course:Practical Training -III-[ST5411]

Upon completion of the course, the students will.../ will be able to...

CO1 : To understand the concept of development and implementation of existing as well as new techniques

Course:Project Work (Phase-II)-[ST5412]

Upon completion of the course, the students will.../ will be able to...

CO1 : Identified problem based on the formulated methodology

CO2 : Develop skills to analyze and discuss the test results, and make conclusions