



# The Kavery Engineering College

(Approved by AICTE, New Delhi & Affiliated to Anna University)  
Mecheri, Mettur Tk. Salem Dt - 636 453.

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## DEPARTMENT OF CIVIL ENGINEERING

### PROGRAMME: B.E. CIVIL ENGINEERING

#### VISION

- ❖ To attain global recognition as a Commendable centre for quality Engineering Education and Research

#### MISSION

- ❖ To equip the graduates to meet the sustainable development of Construction Industry for the betterment of the society.
- ❖ To provide quality education for the graduates to execute traditional and Ethical Civil Engineering Practices.
- ❖ To enable successful Professional Engineers to meet the Industrial challenges.

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- ❖ Gain knowledge and skills in Civil engineering which will enable them to have a career and professional accomplishment in the public or private sector organizations
- ❖ Become consultants on complex real life Civil Engineering problems related to Infrastructure development especially housing, construction, water supply, sewerage, transport, spatial planning.
- ❖ Become entrepreneurs and develop processes and technologies to meet desired infrastructure needs of society and formulate solutions that are technically sound, Economically feasible, and socially acceptable.
- ❖ Perform investigation for solving Civil Engineering problems by conducting research using modern equipment and software tools.
- ❖ Function in multi-disciplinary teams and advocate policies, systems, processes and equipment to support Civil Engineering.

#### PROGRAM OUTCOMES (POs)

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



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engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

- ❖ Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- ❖ Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- ❖ Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
- ❖ The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- ❖ Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- ❖ Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- ❖ Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- ❖ Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- ❖ Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- ❖ Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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## PROGRAM SPECIFIC OUTCOMES (PSOs)

- ❖ Demonstrate in-depth knowledge of Civil Engineering discipline, with an ability to evaluate, analyze and synthesize existing and new knowledge.
- ❖ Critically analyze complex Civil Engineering problems, apply independent judgment for synthesizing information and make innovative advances in a theoretical, practical and policy context.
- ❖ Issues Conceptualize and solve Civil Engineering problems, evaluate potential solutions and arrive at technically feasible, economically viable and environmentally sound solutions with due consideration of health, safety, and socio cultural factors.

## COURSE OUTCOMES (COs)

<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	HS8151
<b>Subject Name</b>	Communicative English
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Read articles of a general kind in magazines and newspapers.</li><li>• Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.</li><li>• Comprehend conversations and short talks delivered in English.</li><li>• Write short essays of a general kind and personal letters and emails in English.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	MA8151
<b>Subject Name</b>	Engineering Mathematics – I
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Use both the limit definition and rules of differentiation to differentiate functions.</li><li>• Apply differentiation to solve maxima and minima problems.</li></ul>



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	<p>the Fundamental Theorem of Calculus.</p> <ul style="list-style-type: none"><li>• Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.</li><li>• Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.</li><li>• Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.</li><li>• Apply various techniques in solving differential equations.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	PH8151
<b>Subject Name</b>	Engineering Physics
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• The students will gain knowledge on the basics of properties of matter and its applications.</li><li>• The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics.</li><li>• The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.</li><li>• The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.</li><li>• The students will understand the basics of crystals, their structures and different crystal growth techniques.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	CY8151



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<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	GE8151
<b>Subject Name</b>	Problem Solving and Python Programming
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Develop algorithmic solutions to simple computational problems.</li><li>• Read, write, execute by hand simple Python programs.</li><li>• Structure simple Python programs for solving problems.</li><li>• Decompose a Python program into functions.</li><li>• Represent compound data using Python lists, tuples, dictionaries.</li><li>• Read and write data from/to files in Python Programs.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	GE8152
<b>Subject Name</b>	Engineering Graphics
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Familiarize with the fundamentals and standards of Engineering graphics.</li><li>• Perform freehand sketching of basic geometrical constructions and multiple views of objects.</li><li>• Project orthographic projections of lines and plane surfaces.</li><li>• Draw projections and solids and development of surfaces.</li><li>• Visualize and to project isometric and perspective sections of simple solids.</li></ul>



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<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	GE8161
<b>Subject Name</b>	Problem Solving And Python Programming Laboratory
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Write, test, and debug simple Python programs.</li><li>• Implement Python programs with conditionals and loops.</li><li>• Develop Python programs step-wise by defining functions and calling them.</li><li>• Use Python lists, tuples, dictionaries for representing compound data.</li><li>• Read and write data from/to files in Python.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	01
<b>Subject Code</b>	BS8161
<b>Subject Name</b>	Physics And Chemistry Laboratory
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Apply principles of elasticity, optics and thermal properties for engineering applications.</li><li>• The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	02
<b>Subject Code</b>	HS8251
<b>Subject Name</b>	Technical English
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Read technical texts and write area- specific texts effortlessly.</li><li>• Listen and comprehend lectures and talks in their area of specialization successfully.</li></ul>



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	informal contexts. <ul style="list-style-type: none"><li>• Write reports and winning job applications.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	02
<b>Subject Code</b>	MA8251
<b>Subject Name</b>	Engineering Mathematics – II
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.</li><li>• Gradient, divergence and curl of a vector point function and related identities.</li><li>• Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.</li><li>• Analytic functions, conformal mapping and complex integration.</li><li>• Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	02
<b>Subject Code</b>	PH8201
<b>Subject Name</b>	Physics for Civil Engineering
<b>Course Outcome</b>	Upon completion of this course, <ul style="list-style-type: none"><li>• The students will have knowledge on the thermal performance of buildings,</li><li>• The students will acquire knowledge on the acoustic properties of buildings,</li><li>• The students will get knowledge on various lighting designs</li></ul>



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	<ul style="list-style-type: none"><li>• The students will gain knowledge on the properties and performance of engineering materials, and</li><li>• The students will understand the hazards of buildings.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	02
<b>Subject Code</b>	BE8253
<b>Subject Name</b>	Basic Electrical, Electronics and Instrumentation Engineering
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Understand electric circuits and working principles of electrical machines.</li><li>• Understand the concepts of various electronic devices.</li><li>• Choose appropriate instruments for electrical measurement for a specific application.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	02
<b>Subject Code</b>	GE8291
<b>Subject Name</b>	Environmental Science and Engineering
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.</li><li>• Public awareness of environmental is at infant stage.</li><li>• Ignorance and incomplete knowledge has lead to misconceptions.</li><li>• Development and improvement in std. of living has lead to serious environmental disasters.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	02





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<b>Subject Code</b>	GE8292
<b>Subject Name</b>	Engineering Mechanics
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Illustrate the vectorial and scalar representation of forces and moments.</li><li>• Analyse the rigid body in equilibrium.</li><li>• Evaluate the properties of surfaces and solids.</li><li>• Calculate dynamic forces exerted in rigid body.</li><li>• Determine the friction and the effects by the laws of friction.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	02
<b>Subject Code</b>	GE8261
<b>Subject Name</b>	Engineering Practices Laboratory
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Fabricate carpentry components and pipe connections including plumbing works.</li><li>• Use welding equipments to join the structures.</li><li>• Carry out the basic machining operations.</li><li>• Make the models using sheet metal works.</li><li>• Illustrate on centrifugal pump, air conditioner, operations of smithy, foundary and fittings.</li><li>• Carry out basic home electrical works and appliances.</li><li>• Measure the electrical quantities.</li><li>• Elaborate on the components, gates, soldering practices.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	02
<b>Subject Code</b>	CE8211
<b>Subject Name</b>	Computer Aided Building Drawing
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• The students will be able to draft the plan elevation and sectional</li></ul>



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	using computer software.
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<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	MA8353
<b>Sub Name</b>	Transforms And Partial Differential Equations
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Understand how to solve the given standard partial differential equations.</li><li>• Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.</li><li>• Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.</li><li>• Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.</li><li>• Use the effective mathematical tools for the solutions</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	CE8301
<b>Sub Name</b>	Strength of Materials I



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<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Understand the concepts of stress and strain, principal stresses and principal planes.</li><li>• Determine Shear force and bending moment in beams and understand concept of theory of simple bending.</li><li>• Calculate the deflection of beams by different methods and selection of method for determining slope or deflection.</li><li>• Apply basic equation of torsion in design of circular shafts and helical springs.</li><li>• Analyze the pin jointed plane and space trusses</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	CE8302
<b>Sub Name</b>	Fluid Mechanics
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.</li><li>• Understand and solve the problems related to equation of motion.</li><li>• Gain knowledge about dimensional and model analysis.</li><li>• Learn types of flow and losses of flow in pipes.</li><li>• Understand and solve the boundary layer problems.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	CE8351



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<b>Sub Name</b>	Surveying
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• The use of various surveying instruments and mapping</li><li>• Measuring Horizontal angle and vertical angle using different instruments</li><li>• Methods of Leveling and setting Levels with different instruments</li><li>• Concepts of astronomical surveying and methods to determine time, longitude, latitude and azimuth</li><li>• Concept and principle of modern surveying.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	CE8391
<b>Sub Name</b>	Construction Materials
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Compare the properties of most common and advanced building materials.</li><li>• understand the typical and potential applications of lime, cement and aggregates</li><li>• Know the production of concrete and also the method of placing and making of concrete elements.</li><li>• understand the applications of timbers and other materials</li><li>• Understand the importance of modern material for construction.</li></ul>



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<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	CE8392
<b>Sub Name</b>	Engineering Geology
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies.</li><li>• Will get basics knowledge on properties of minerals.</li><li>• Gain knowledge about types of rocks, their distribution and uses.</li><li>• Will understand the methods of study on geological structure.</li><li>• Will understand the application of geological investigation in projects such as dams, tunnels, bridges, roads, airport and harbor</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	CE8311
<b>Sub Name</b>	Construction Materials Laboratory
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>➤ The students will have the required knowledge in the area of testing of construction materials and components of construction elements experimentally.</li></ul>

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<b>Sub Code</b>	<b>CE8361</b>
<b>Sub Name</b>	<b>Surveying Laboratory</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Students completing this course would have acquired practical knowledge on handling basic survey instruments including Theodolite, Tachometry, Total Station and GPS and have adequate knowledge to carryout Triangulation and Astronomical surveying including general field marking for various engineering projects and Location of site etc.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	03
<b>Sub Code</b>	HS8381
<b>Sub Name</b>	Interpersonal Skills / Listening & Speaking
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Listen and respond appropriately.</li><li>• Participate in group discussions</li><li>• Make effective presentations</li><li>• Participate confidently and appropriately in conversations both formal and informal</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	04
<b>Sub Code</b>	MA8491
<b>Sub Name</b>	NUMERICAL METHODS



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<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>➤ Understand the basic concepts and techniques of solving algebraic and transcendental equations.</li> <li>➤ Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.</li> <li>➤ Apply the numerical techniques of differentiation and integration for engineering problems.</li> <li>➤ Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.</li> <li>➤ Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.</li> </ul>
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<b>Regulation</b>	2017
<b>Sem</b>	04
<b>Sub Code</b>	<b>CE8401</b>
<b>Sub Name</b>	<b>Construction Techniques And Practices</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"> <li>• know the different construction techniques and structural systems</li> <li>• Understand various techniques and practices on masonry construction, flooring, and roofing.</li> <li>• Plan the requirements for substructure construction.</li> <li>• Know the methods and techniques involved in the construction of various types of super structures</li> <li>• Select, maintain and operate hand and power tools and equipment used in the building construction sites</li> </ul>

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<b>Sem</b>	04
<b>Sub Code</b>	<b>CE8402</b>
<b>Sub Name</b>	<b>Strength Of Materials II</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>➤ Determine the strain energy and compute the deflection of determinate beams, frames and trusses using energy principles.</li><li>➤ Analyze propped cantilever, fixed beams and continuous beams using theorem of three moment equation for external loadings and support settlements.</li><li>➤ find the load carrying capacity of columns and stresses induced in columns and cylinders</li><li>➤ Determine principal stresses and planes for an element in three dimensional state of stress and study various theories of failure</li><li>➤ Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and find the stresses in curved beams.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	04
<b>Sub Code</b>	<b>CE8403</b>
<b>Sub Name</b>	<b>Applied Hydraulic Engineering</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>➤ Apply their knowledge of fluid mechanics in addressing problems in open channels.</li><li>➤ Able to identify a effective section for flow in different cross sections.</li><li>➤ To solve problems in uniform, gradually and rapidly varied flows in steady state conditions.</li><li>➤ Understand the principles, working and application of turbines.</li><li>➤ Understand the principles, working and application of pumps.</li></ul>





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<b>Regulation</b>	2017
<b>Sem</b>	04
<b>Sub Code</b>	<b>CE8404</b>
<b>Sub Name</b>	<b>Concrete Technology</b>
<b>Course Outcome</b>	Students will be able to understand <ul style="list-style-type: none"><li>➤ The various requirements of cement, aggregates and water for making concrete</li><li>➤ The effect of admixtures on properties of concrete</li><li>➤ The concept and procedure of mix design as per IS method</li><li>➤ The properties of concrete at fresh and hardened state</li><li>➤ The importance and application of special concretes.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	04
<b>Sub Code</b>	<b>CE8491</b>
<b>Sub Name</b>	<b>Soil Mechanics</b>
<b>Course Outcome</b>	Students will be able to <ul style="list-style-type: none"><li>➤ Classify the soil and assess the engineering properties, based on index properties.</li><li>➤ Understand the stress concepts in soils</li><li>➤ Understand and identify the settlement in soils.</li><li>➤ Determine the shear strength of soil</li><li>➤ Analyze both finite and infinite slopes.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	04



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<b>Sub Code</b>	<b>CE8481</b>
<b>Sub Name</b>	<b>Strength of Materials Laboratory</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>➤ The students will have the required knowledge in the area of testing of materials and components of structural elements experimentally.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	04
<b>Sub Code</b>	<b>CE8461</b>
<b>Sub Name</b>	<b>Hydraulic Engineering Laboratory</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• The students will be able to measure flow in pipes and determine frictional losses.</li><li>• The students will be able to develop characteristics of pumps and turbines.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	04
<b>Sub Code</b>	HS8461
<b>Sub Name</b>	Advanced Reading and Writing



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<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Write different types of essays.</li><li>• Write winning job applications.</li><li>• Read and evaluate texts critically.</li><li>• Display critical thinking in various professional contexts.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	05
<b>Sub Code</b>	<b>CE8501</b>
<b>Sub Name</b>	<b>Design of Reinforced Cement Concrete Elements</b>
<b>Course Outcome</b>	Students will be able to <ul style="list-style-type: none"><li>• Understand the various design methodologies for the design of RC elements.</li><li>• Know the analysis and design of flanged beams by limit state method and sign of beams for shear, bond and torsion.</li><li>• Design the various types of slabs and staircase by limit state method.</li><li>• Design columns for axial, uniaxial and biaxial eccentric loadings.</li><li>• Design of footing by limit state method.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	05
<b>Sub Code</b>	CE8502
<b>Sub Name</b>	Structural Analysis I



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<b>Course Outcome</b>	<p>Students will be able to</p> <ul style="list-style-type: none"><li>Analyze continuous beams, pin-jointed indeterminate plane frames and rigid plane frames by strain energy method</li><li>Analyse the continuous beams and rigid frames by slope deflection method.</li><li>Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.</li><li>Analyse the indeterminate pin jointed plane frames continuous beams and rigid frames using matrix flexibility method.</li><li>Understand the concept of matrix stiffness method and analysis of continuous beams, pin jointed trusses and rigid plane frames.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	05
<b>Sub Code</b>	<b>EN8491</b>
<b>Sub Name</b>	<b>Water Supply Engineering</b>
<b>Course Outcome</b>	<p>The students completing the course will have</p> <ul style="list-style-type: none"><li>An insight into the structure of drinking water supply systems, including water transport, treatment and distribution</li><li>The knowledge in various unit operations and processes in water treatment</li><li>An ability to design the various functional units in water treatment</li><li>An understanding of water quality criteria and standards, and their relation to public health</li><li>The ability to design and evaluate water supply project alternatives on basis of chosen criteria</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	05



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Mecheri, Mettur Tk. Salem Dt - 636 453.

<b>Sub Code</b>	<b>CE8591</b>
<b>Sub Name</b>	<b>FOUNDATION ENGINEERING</b>
<b>Course Outcome</b>	Students will be able to <ul style="list-style-type: none"><li>• Understand the site investigation, methods and sampling.</li><li>• Get knowledge on bearing capacity and testing methods.</li><li>• Design shallow footings.</li><li>• Determine the load carrying capacity, settlement of pile foundation.</li><li>• Determine the earth pressure on retaining walls and analysis for stability.</li></ul>

<b>Regulation</b>	2017	
<b>Sem</b>	05	Professional Elective I
<b>Sub Code</b>	<b>GI8013</b>	
<b>Sub Name</b>	<b>Advanced Surveying</b>	
<b>Course Outcome</b>	On completion of this course, the student shall be able to <ul style="list-style-type: none"><li>• Know the astronomical surveying</li><li>• Do the photogrammetric surveying and interpretation</li><li>• Solve the field problems with total station</li><li>• Know the GPS surveying and the data processing</li><li>• Understand the route surveys and tunnel alignments</li></ul>	

<b>Regulation</b>	2017	
<b>Sem</b>	05	Open Elective - I
<b>Sub Code</b>	<b>ORO551</b>	
<b>Sub Name</b>	<b>Renewable Energy Sources</b>	



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<b>Course Outcome</b>	<p>Understanding the physics of solar radiation.</p> <ul style="list-style-type: none"><li>• Ability to classify the solar energy collectors and methodologies of storing solar energy.</li><li>• Knowledge in applying solar energy in a useful way.</li><li>• Knowledge in wind energy and biomass with its economic aspects.</li><li>• Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	05
<b>Sub Code</b>	<b>CE8511</b>
<b>Sub Name</b>	<b>Soil Mechanics Laboratory</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Students are able to conduct tests to determine both the index and engineering properties of soils and to characterize the soil based on their properties</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	05
<b>Sub Code</b>	<b>CE8512</b>
<b>Sub Name</b>	<b>Water And Waste Water Analysis Laboratory</b>
<b>Course Outcome</b>	<p>On the completion of the course, the students will be able to:</p> <ul style="list-style-type: none"><li>• Quantify the pollutant concentration in water and wastewater</li><li>• Suggest the type of treatment required and amount of dosage required for the treatment</li><li>• Examine the conditions for the growth of micro-organisms</li></ul>



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<b>Regulation</b>	2017
<b>Sem</b>	05
<b>Sub Code</b>	<b>CE8513</b>
<b>Sub Name</b>	Survey Camp (2 weeks –During IV Semester)
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>At the end of the camp, each student shall have mapped and contoured the area. The camp record shall include all original field observations, calculations and plots.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	06
<b>Sub Code</b>	<b>CE8601</b>
<b>Sub Name</b>	<b>Design of Steel Structural Elements</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>Understand the concepts of various design philosophies</li><li>Design common bolted and welded connections for steel structures</li><li>Design tension members and understand the effect of shear lag.</li><li>Understand the design concept of axially loaded columns and column base connections.</li><li>Understand specific problems related to the design of laterally restrained and unrestrained steel beams.</li></ul>

<b>Regulation</b>	2017
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<b>Sub Code</b>	<b>CE8602</b>
<b>Sub Name</b>	<b>Structural Analysis II</b>
<b>Course Outcome</b>	Students will be able to <ul style="list-style-type: none"><li>• Draw influence lines for statically determinate structures and calculate critical stress resultants.</li><li>• Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.</li><li>• Analyse of three hinged, two hinged and fixed arches.</li><li>• Analyse the suspension bridges with stiffening girders</li><li>• Understand the concept of Plastic analysis and the method of analyzing beams and rigid frames.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	06
<b>Sub Code</b>	<b>CE8603</b>
<b>Sub Name</b>	<b>Irrigation Engineering</b>
<b>Course Outcome</b>	Students will be able to Have knowledge and skills on crop water requirements. <ul style="list-style-type: none"><li>• Understand the methods and management of irrigation.</li><li>• Gain knowledge on types of Impounding structures</li><li>• Understand methods of irrigation including canal irrigation.</li><li>• Get knowledge on water management on optimization of water use.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	06
<b>Sub Code</b>	<b>CE8604</b>
<b>Sub Name</b>	<b>Highway Engineering</b>





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<b>Course Outcome</b>	Students will be able to <ul style="list-style-type: none"> <li>• Get knowledge on planning and aligning of highway.</li> <li>• Geometric design of highways</li> <li>• Design flexible and rigid pavements.</li> <li>• Gain knowledge on Highway construction materials, properties, testing methods</li> <li>• Understand the concept of pavement management system, evaluation of distress and maintenance of pavements.</li> </ul>
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<b>Regulation</b>	2017	
<b>Sem</b>	06	
<b>Sub Code</b>	EN8592	
<b>Sub Name</b>	Waste water Engineering	
<b>Course Outcome</b>	The students completing the course will have <ul style="list-style-type: none"> <li>• An ability to estimate sewage generation and design sewer system including sewage pumping stations</li> <li>• The required understanding on the characteristics and composition of sewage, self-purification of streams</li> <li>• An ability to perform basic design of the unit operations and processes that are used in sewage treatment</li> <li>• Understand the standard methods for disposal of sewage.</li> <li>• Gain knowledge on sludge treatment and disposal.</li> </ul>	

<b>Regulation</b>	2017	
<b>Sem</b>	06	Professional Elective - II
<b>Sub Code</b>	CE8005	
<b>Sub Name</b>	Air Pollution And Control Engineering	



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<b>Course Outcome</b>	<p>The students completing the course will have</p> <ul style="list-style-type: none"><li>• an understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management</li><li>• ability to identify, formulate and solve air and noise pollution problems</li><li>• Ability to design stacks and particulate air pollution control devices to meet applicable standards.</li><li>• Ability to select control equipments.</li><li>• Ability to ensure quality, control and preventive measures</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	06
<b>Sub Code</b>	<b>CE8611</b>
<b>Sub Name</b>	<b>Highway Engineering Laboratory</b>
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Student knows the techniques to characterize various pavement materials through relevant tests.</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	06
<b>Sub Code</b>	<b>CE8612</b>
<b>Sub Name</b>	<b>Irrigation And Environmental Engineering Drawing</b>



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<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• The students after completing this course will be able to design and draw various units of Municipal water treatment plants and sewage treatment plants.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	06
<b>Sub Code</b>	HS8581
<b>Sub Name</b>	Professional Communication
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Make effective presentations</li><li>• Participate confidently in Group Discussions.</li><li>• Attend job interviews and be successful in them.</li><li>• Develop adequate Soft Skills required for the workplace</li></ul>

<b>Regulation</b>	2017
<b>Sem</b>	07
<b>Sub Code</b>	CE8701
<b>Sub Name</b>	Estimation, Costing And Valuation Engineering



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<b>Course Outcome</b>	<p>The student will be able to</p> <ul style="list-style-type: none"> <li>• Estimate the quantities for buildings,</li> <li>• Rate Analysis for all Building works, canals, and Roads and Cost Estimate.</li> <li>• Understand types of specifications, principles for report preparation, tender notices types.</li> <li>• Gain knowledge on types of contracts</li> <li>• Evaluate valuation for building and land.</li> </ul>
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<b>Regulation</b>	2017
<b>Sem</b>	07
<b>Sub Code</b>	CE8702
<b>Sub Name</b>	Railways, Airports, Docks And Harbour Engineering
<b>Course Outcome</b>	<p>Students who successfully complete this course will be able to:</p> <ul style="list-style-type: none"> <li>• Understand the methods of route alignment and design elements in Railway Planning and Constructions.</li> <li>• Understand the Construction techniques and Maintenance of Track laying and Railway stations.</li> <li>• Gain an insight on the planning and site selection of Airport Planning and design.</li> <li>• Analyze and design the elements for orientation of runways and passenger facility systems.</li> <li>• Understand the various features in Harbours and Ports, their construction, coastal protection works and coastal Regulations to be adopted.</li> </ul>

<b>Regulation</b>	2017
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<b>Sub Code</b>	CE8703
<b>Sub Name</b>	Structural Design And Drawing
<b>Course Outcome</b>	<p>At the end of the course the student will be able to</p> <ul style="list-style-type: none"> <li>• Design and draw reinforced concrete Cantilever and Counterfort Retaining Walls</li> <li>• Design and draw flat slab as per code provisions</li> <li>• Design and draw reinforced concrete and steel bridges</li> <li>• Design and draw reinforced concrete and steel water tanks</li> <li>• Design and detail the various steel trusses and cantry girders.</li> </ul>

<b>Regulation</b>	2017	
<b>Sem</b>	07	Professional Elective III
<b>Sub Code</b>	CE8007	
<b>Sub Name</b>	<b>Traffic Engineering And Management</b>	
<b>Course Outcome</b>	<p>On completing this course, the Students will be able to</p> <ul style="list-style-type: none"> <li>• Analyse traffic problems and plan for traffic systems various uses</li> <li>• Design Channels, Intersections, signals and parking arrangements</li> <li>• Develop Traffic management Systems</li> </ul>	

<b>Regulation</b>	2017	
<b>Sem</b>	07	Professional Elective III



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<b>Sub Code</b>	EN8591
<b>Sub Name</b>	Municipal Solid Waste Management
<b>Course Outcome</b>	<p>The students completing the course will demonstrate</p> <ul style="list-style-type: none"><li>• Understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management.</li><li>• Reduction, reuse and recycling of waste.</li><li>• Ability to plan and design systems for storage, collection, transport, processing and disposal of municipal solid waste.</li><li>• Knowledge on the issues on solid waste management from an integrated and holistic perspective, as well as in the local and international context.</li><li>• Design and operation of sanitary landfill.</li></ul>



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<b>Regulation</b>	2017	
<b>Sem</b>	07	Open Elective-II
<b>Sub Code</b>	OME754	
<b>Sub Name</b>	Industrial Safety	
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>Students must be able to identify and prevent chemical, environmental mechanical, fire hazard through analysis and apply proper safety techniques on safety engineering and management.</li></ul>	

<b>Regulation</b>	2017	
<b>Sem</b>	07	
<b>Sub Code</b>	CE8091	
<b>Sub Name</b>	Hydrology And Water Resources Engineering	
<b>Course Outcome</b>	<p>The students completing the course will have</p> <ul style="list-style-type: none"><li>an understanding of the key drivers on water resources, hydrological processes and their integrated behaviour in catchments,</li><li>ability to construct and apply a range of hydrological models to surface water and groundwater problems including Hydrograph, Flood/Drought management, artificial recharge</li><li>ability to conduct Spatial analysis of rainfall data and design water storage reservoirs</li><li>Understand the concept and methods of ground water management.</li></ul>	



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<b>Sem</b>	07
<b>Sub Code</b>	CE8712
<b>Sub Name</b>	Industrial Training
<b>Course Outcome</b>	<p>At the end of the course the student will be able to understand</p> <ul style="list-style-type: none"><li>• The intricacies of implementation textbook knowledge into practice</li><li>• The concepts of developments and implementation of new techniques</li></ul>

<b>Regulation</b>	2017	
<b>Sem</b>	08	Professional Elective IV
<b>Sub Code</b>	GE8076	
<b>Sub Name</b>	Professional Ethics In Engineering	
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society</li></ul>	

<b>Regulation</b>	2017	
<b>Sem</b>	08	Professional Elective V
<b>Sub Code</b>	CE8022	
<b>Sub Name</b>	Prefabricated Structures	





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<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• The student will have good knowledge about design principles, layout of factory and stages of loading in precast construction.</li><li>• Acquire knowledge about panel systems, slabs, connections used in precast construction and they will be in a position to design the elements.</li><li>• Acquire knowledge about types of floor systems, stairs and roofs used in precast construction.</li><li>• Acquire knowledge about types of walls used in precast construction, sealants, design of joints.</li><li>• Acquire knowledge about components in industrial building.</li></ul>
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<b>Regulation</b>	2017
<b>Sem</b>	08
<b>Sub Code</b>	CE8811
<b>Sub Name</b>	Project Work
<b>Course Outcome</b>	<ul style="list-style-type: none"><li>• On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.</li></ul>