



The Kavery Engineering College

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

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.
- ❖ Problem analysis: Identify, formulate, review research literature, and analyse complex engineering



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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.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- ❖ Demonstrate in-depth knowledge of Civil Engineering discipline, with an ability to evaluate, analyze



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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)

Regulation	2021
Semester	01
Course Code	IP3151
Course Name	Induction Programme
Course Outcome	<ul style="list-style-type: none">❖ To make the students feel comfortable in their new environment, open them up, set a healthy daily routine, create bonding in the batch as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

Regulation	2021
Semester	01
Course Code	HS3151
Course Name	Professional English - I
Course Outcome	<ul style="list-style-type: none">❖ To listen and comprehend complex academic texts.❖ To read and infer the denotative and connotative meanings of technical texts.❖ To write definitions, descriptions, narrations and essays on various topics.❖ To speak fluently and accurately in formal and informal communicative contexts.❖ To express their opinions effectively in both oral and written medium of communication.

Regulation	2021
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Semester	01
Course Code	MA3151
Course Name	Matrices and Calculus
Course Outcome	<ul style="list-style-type: none">❖ Use the matrix algebra methods for solving practical problems.❖ Apply differential calculus tools in solving various application problems.❖ Able to use differential calculus ideas on several variable functions.❖ Apply different methods of integration in solving practical problems.❖ Apply multiple integral ideas in solving areas, volumes and other practical problems.

Regulation	2021
Semester	01
Course Code	PH3151
Course Name	Engineering Physics
Course Outcome	<ul style="list-style-type: none">❖ Understand the importance of mechanics.❖ Express their knowledge in electromagnetic waves.❖ Demonstrate a strong foundational knowledge in oscillations, optics and lasers.❖ Understand the importance of quantum physics.❖ Comprehend and apply quantum mechanical principles towards the formation of energy bands.

Regulation	2021
Semester	01
Course Code	CY3151
Course Name	Engineering Chemistry
Course Outcome	<ul style="list-style-type: none">❖ To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.❖ To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology



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	<p>applications.</p> <ul style="list-style-type: none">❖ To apply the knowledge of phase rule and composites for material selection requirements.❖ To recommend suitable fuels for engineering processes and applications.❖ To recognize different forms of energy resources and apply them for suitable applications in energy sectors.
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Regulation	2021
Semester	01
Course Code	GE3151
Course Name	Problem Solving and Python Programming
Course Outcome	<ul style="list-style-type: none">❖ Develop algorithmic solutions to simple computational problems.❖ Develop and execute simple Python programs.❖ Write simple Python programs using conditionals and looping for solving problems.❖ Decompose a Python program into functions.❖ Represent compound data using Python lists, tuples, dictionaries etc.❖ Read and write data from/to files in Python programs.

Regulation	2021
Semester	01
Course Code	GE3171
Course Name	Problem Solving and Python Programming Laboratory
Course Outcome	<ul style="list-style-type: none">❖ Develop algorithmic solutions to simple computational problems.❖ Develop and execute simple Python programs.❖ Implement programs in Python using conditionals and loops for solving problems.❖ Deploy functions to decompose a Python program.❖ Process compound data using Python data structures.❖ Utilize Python packages in developing software applications.



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Regulation	2021
Semester	01
Course Code	BS3171
Course Name	Physics and Chemistry Laboratory
Course Outcome	<ul style="list-style-type: none">❖ Understand the functioning of various physics laboratory equipment.❖ Use graphical models to analyze laboratory data.❖ Use mathematical models as a medium for quantitative reasoning and describing physical reality.❖ Access, process and analyze scientific information.❖ Solve problems individually and collaboratively.❖ To analyze the quality of water samples with respect to their acidity, alkalinity, hardness.❖ To determine the amount of metal ions through volumetric and spectroscopic techniques.❖ To analyze and determine the composition of alloys.❖ To learn simple method of synthesis of nanoparticles.❖ To quantitatively analyse the impurities in solution by electro analytical techniques.

Regulation	2021
Semester	01
Course Code	GE3172
Course Name	English Laboratory
Course Outcome	<ul style="list-style-type: none">❖ To listen and comprehend complex academic texts.❖ To speak fluently and accurately in formal and informal communicative contexts.❖ To express their opinions effectively in both oral and written medium of communication.

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Semester	02
Course Code	HS3251
Course Name	Professional English - II
Course Outcome	<ul style="list-style-type: none">• To compare and contrast products and ideas in technical texts.• To identify cause and effects in events, industrial processes through technical texts• To analyze problems in order to arrive at feasible solutions and communicate them orally and in the written format.• To report events and the processes of technical and industrial nature.• To present their opinions in a planned and logical manner, and draft effective resumes in context of job search.

Regulation	2021
Semester	02
Course Code	MA3251
Course Name	Statistics and Numerical Methods
Course Outcome	<ul style="list-style-type: none">• Apply the concept of testing of hypothesis for small and large samples in real life problems.• Apply the basic concepts of classifications of design of experiments in the field of agriculture.• Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.• Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.• Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

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Semester	02
Course Code	PH3201
Course Name	Physics For Civil Engineering
Course Outcome	<p>After completion of the course, the students should be able to Gain knowledge on the electrical and magnetic properties of materials and their applications.</p> <ul style="list-style-type: none">• acquire knowledge about heat transfer through different materials, thermal performance of building and thermal insulation.• Gain knowledge on the ventilation and air conditioning of buildings.• Understand the concepts of sound absorption, noise insulation and lighting designs.• Know about the processing and applications of composites, metallic glasses, shape memory alloys and ceramics.• Get an awareness on natural disasters such as earth quake, cyclone, fire and safety measures

Regulation	2021
Semester	02
Course Code	BE3252
Course Name	Basic Electrical, Electronics And Instrumentation Engineering
Course Outcome	<ul style="list-style-type: none">• Compute the electric circuit parameters for simple problems• Explain the concepts of domestics wiring and protective devices.• Explain the working principle and applications of electrical machines.• Analyze the characteristics of analog electronic devices.• Explain the types and operating principles of sensors and transducers.

Regulation	2021
Semester	02
Course Code	GE3251
Course Name	Engineering Graphics



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Course Outcome	<ul style="list-style-type: none">• Use BIS conventions and specifications for engineering drawing.• Construct the conic curves, involutes and cycloid.• Solve practical problems involving projection of lines.• Draw the orthographic, isometric and perspective projections of simple solids.• Draw the development of simple solids.
Regulation	2021
Semester	02
Course Code	GE3271
Course Name	Engineering Practices Laboratory
Course Outcome	<ul style="list-style-type: none">• Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.• Wire various electrical joints in common household electrical wire work.• Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.• Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

Regulation	2021
Semester	02
Course Code	BE3272
Course Name	Basic Electrical, Electronics and Instrumentation Engineering laboratory
Course Outcome	<ul style="list-style-type: none">• Use experimental methods to verify the Ohm's law and Kirchhoff's Law and to measure three phase power.• Analyze experimentally the load characteristics of electrical machines.• Analyze the characteristics of basic electronic devices.



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	<ul style="list-style-type: none">• Use LVDT to measure displacement.
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Regulation	2021
Semester	02
Course Code	GE3272
Course Name	Communication Laboratory
Course Outcome	<ul style="list-style-type: none">• Speak effectively in group discussions held in a formal/semi formal context.• Write emails and effective job applications.

Regulation	2021
Semester	03
Course Code	MA3351
Course Name	Transforms and Partial Differential Equations
Course Outcome	<ul style="list-style-type: none">• Understand how to solve the given standard partial differential equations.• Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.• Appreciate the physical significance of Fourier series techniques in solving one- and two dimensional heat flow problems and one-dimensional wave equations.• 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.• Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Regulation	2021
Semester	03



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Course Code	ME3351
Course Name	Engineering Mechanics
Course Outcome	<ul style="list-style-type: none">• Illustrate the vector and scalar representation of forces and moments.• Analyze the rigid body in equilibrium.• Evaluate the properties of distributed forces.• Determine the friction and the effects by the laws of friction.• Calculate dynamic forces exerted in rigid body.
Regulation	2021
Semester	03
Course Code	ME3301.
Course Name	Fluid Mechanics
Course Outcome	<ul style="list-style-type: none">• Demonstrate the difference between solid and fluid, its properties and behaviour in static conditions• Apply the conservation laws applicable to fluids and its application through fluid kinematics and dynamics.• Formulate the relationship among the parameters involved in the given fluid phenomenon and to predict the performance of prototypes by model studies.• Estimate the losses in pipelines for both laminar and turbulent conditions and analysis of pipes connected in series and parallel.• Explain the concept of boundary layer and its application to find the drag force exerted by the fluid on the flat solid surface.

Regulation	2021
Semester	03
Course Code	CE3302
Course Name	Construction Materials And Technology
Course Outcome	<ul style="list-style-type: none">• Identify the good quality brick, stone and blocks for construction• Recognize the market forms of timber, steel, aluminum and applications of various composite materials.



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	<ul style="list-style-type: none">• Identify the best construction and service practices such as thermal insulations and air conditioning of the building.• Select various equipments for construction works conditioning of building.• Understand the construction planning and scheduling techniques.
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Regulation	2021
Semester	03
Course Code	CE3303
Course Name	Water Supply and Waste Water Engineering
Course Outcome	<ul style="list-style-type: none">• Understand the various components of water supply scheme and design of intake structure and conveyance system for water transmission.• Understand on the characteristics and composition of sewage, ability to estimate sewage generation and design sewer system including sewage pumping stations.• Understand the process of conventional treatment and design of water and wastewater treatment system and gain knowledge of selection of treatment process and biological treatment process.• Ability to design and evaluate water distribution system and water supply in buildings and understand the self-purification of streams and sludge and septage disposal methods• Able to understand and design the various advanced treatment system and knowledge about the recent advances in water and wastewater treatment process and reuse of sewage.

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Semester	03
Course Code	CE3351
Course Name	Surveying And Levelling
Course Outcome	<ul style="list-style-type: none">• Introduce the rudiments of various surveying and its principles.• Imparts knowledge in computation of levels of terrain and ground features.• Imparts concepts of Theodolite Surveying for complex surveying operations.• Understand the procedure for establishing horizontal and vertical control.• Imparts the knowledge on modern surveying instruments

Regulation	2021
Semester	03
Course Code	CE3361
Course Name	Surveying and Levelling Laboratory
Course Outcome	<ul style="list-style-type: none">• Impart knowledge on the usage of basic surveying instruments like chain/tape, compass and levelling instruments.• Able to use levelling instrument for surveying operations.• Able to use theodolite for various surveying operations.• Able to carry out necessary surveys for social infrastructures• Able to prepare planimetric maps

Regulation	2021
Semester	03
Course Code	CE3311
Course Name	Water and Wastewater Analysis Laboratory
Course Outcome	<ul style="list-style-type: none">• Calibrate and standardize the equipment.



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	<ul style="list-style-type: none">• Collect proper sample for analysis.• To know the sample preservation methods.• To perform field oriented testing of water, wastewater.• To perform coliform analysis.
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Regulation	2021
Semester	03
Course Code	GE3361
Course Name	Professional Development
Course Outcome	<ul style="list-style-type: none">• Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements.• Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding.• Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.

Regulation	2021
Semester	04
Course Code	CE3401
Course Name	Applied Hydraulics Engineering
Course Outcome	<ul style="list-style-type: none">• Describe the basics of open channel flow, its classification and analysis of uniform flow in steady state conditions with specific energy concept and its application.• Analyse steady gradually varied flow, water surface profiles and its length calculation using direct and standard step methods with change in



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	<p>water surface profiles due to change in grades.</p> <ul style="list-style-type: none"> • Derive the relationship among the sequent depths of steady rapidly varied flow and estimating energy loss in hydraulic jump with exposure to positive and negative surges. • Design turbines and explain the working principle. • Differentiate pumps and explain the working principle with characteristic curves and design centrifugal and reciprocating pumps.
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Regulation	2021
Semester	04
Course Code	CE3402
Course Name	Strength of Materials
Course Outcome	<ul style="list-style-type: none"> • Understand the concepts of stress and strain, principal stresses and principal planes. • Determine Shear force and bending moment in beams and understand concept of theory of simple bending. • Calculate the deflection of beams by different methods and selection of method for determining slope or deflection. • Analyze propped cantilever, fixed beams and continuous beams for external loadings and support settlements. • Determine the stresses due to Unsymmetrical bending of beams, locate the shear center, and study the various theories of failure.

Regulation	2021
Semester	04
Course Code	CE3403
Course Name	Concrete Technology
Course Outcome	<ul style="list-style-type: none"> • Understand the requirements of cement, aggregates and water for concrete.



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	<ul style="list-style-type: none">• Select suitable admixtures for enhancing the properties of concrete.• Design concrete mixes as per IS method of mix design• Determine the properties of concrete at fresh and hardened state.• Know the importance of special concretes for specific requirements.
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Regulation	2021
Semester	04
Course Code	GE3451
Course Name	Environmental Sciences and Sustainability
Course Outcome	<ul style="list-style-type: none">• Gain knowledge about environment and ecosystem.• Students will learn about natural resource, its importance and environmental impacts of human activities on natural resource.• Gain knowledge about the conservation of biodiversity and its importance.• Aware students about problems of environmental pollution, its impact on human and ecosystem and control measures.• Students will learn about increase in population growth and its impact on environment.

Regulation	2021
Semester	04
Course Code	CE3404
Course Name	Soil Mechanics
Course Outcome	<ul style="list-style-type: none">• Demonstrate an ability to identify various types of soils and its properties, formulate and solve engineering Problems.• Show the basic understanding of flow through soil medium and its impact of engineering solution.• Understand the basic concept of stress distribution in loaded soil



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	<p>medium and soil settlement due to consolidation.</p> <ul style="list-style-type: none">• Show the understanding of shear strength of soils and its impact of engineering solutions to the loaded soil medium and also will be aware of contemporary issues on shear strength of soils.• Demonstrate an ability to design both finite and infinite slopes, component and process as per needs and specifications.
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Regulation	2021
Semester	04
Course Code	CE3405
Course Name	Highway and Railway Engineering
Course Outcome	<ul style="list-style-type: none">• Plan a highway according to the principles and standards adopted in various institutions in India.• Design the geometric features of road network and components of pavement.• Test the highway materials and construction practice methods and know its properties and able to perform pavement evaluation and management.• Understand the methods of route alignment and design elements in railway planning and constructions.• Understand the construction techniques and maintenance of track laying and railway stations.

Regulation	2021
Semester	04
Course Code	CE3411
Course Name	Hydraulic Engineering Laboratory
Course Outcome	<ul style="list-style-type: none">• Apply Bernoulli equation for calibration of flow measuring devices



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	<ul style="list-style-type: none">• Measure friction factor in pipes and compare with Moody diagram.• Determine the performance characteristics of rotodynamic pumps.• Determine the performance characteristics of positive displacement pumps.• Determine the performance characteristics of turbines.
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Regulation	2021
Semester	04
Course Code	CE3412
Course Name	Materials Testing Laboratory
Course Outcome	<ul style="list-style-type: none">• Determine the mechanical properties of steel.• Determine the physical properties of cement.• Determine the physical properties of fine and coarse aggregate.• Determine the workability and compressive strength of concrete.• Determine the strength of brick and wood.