



MACET
MARTHANDAM COLLEGE OF
ENGINEERING AND TECHNOLOGY

DEPARTMENT OF CIVIL ENGINEERING

COURSE OUTCOMES



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DEPARTMENT OF CIVIL ENGINEERING

ANNA UNIVERSITY REGULATION 2021(CIVIL) LIST OF COURSE NAMES

S.No	Sem	Course Code	Course Name
1.	I	HS3152	Professional English I
2	I	MA3151	Matrices and Calculus
3	I	PH3151	Engineering Physics
4	I	CY3151	Engineering Chemistry
5	I	GE3151	Problem Solving and Python Programming
6	I	GE3171	Problem Solving and Python Programming Laboratory
7	I	BS3171	Physics and Chemistry Laboratory (Physics)
8	I	BS3171	Physics and Chemistry Laboratory (Chemistry)
9	I	GE3172	English Laboratory
10	II	HS3252	Professional English II
11	II	MA3251	Statistics and Numerical Methods
12	II	PH3201	Physics for Civil Engineering
13	II	BE3252	Basic Electrical, Electronics and Instrumentation Engineering
14	II	GE3251	Engineering Graphics
15	II	GE3271	Engineering Practices Laboratory
16	II	BE3272	Basic Electrical, Electronics and Instrumentation Engineering Laboratory
17	II	GE3272	Communication Laboratory
18	III	MA3351	Transforms and Partial Differential Equations
19	III	ME3351	Engineering Mechanics
20	III	CE3301	Fluid Mechanics
21	III	CE3302	Construction Materials and Technology
22	III	CE3303	Water Supply and Waste water Engineering
23	III	CE3351	Surveying and Levelling
24	III	CE3361	Surveying and Levelling Laboratory



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25	III	CE3311	Water and Wastewater Analysis Laboratory
26	IV	CE3401	Applied Hydraulics Engineering
27	IV	CE3402	Strength Of Materials
28	IV	CE3403	Concrete Technology
29	IV	CE3404	Soil Mechanics
30	IV	CE3405	Highway and Railway Engineering
31	IV	GE3451	Environmental Sciences and Sustainability
32	IV	CE3411	Hydraulic Engineering Laboratory
33	IV	CE3412	Material Testing Laboratory
34	IV	CE3413	Soil Mechanics Laboratory
35	V	CE3501	Design of Reinforced Concrete Structural Elements
36	V	CE3502	Structural Analysis I
37	V	CE3503	Foundation Engineering
38	V	CE3005	Rehabilitation/Heritage Restoration
39	V	CE3015	Geo Environmental Engineering
40	V	CE3016	Ground Improvement Techniques
41	V	MX3084	Disaster Risk Reduction and Management
42	V	CE3511	Highway Engineering Laboratory
43	V	CE3512	Survey Camp
44	VI	CE3601	Design of Steel Structural Elements
45	VI	CE3602	Structural Analysis-II
46	VI	AG3601	Engineering Geology
47	VI	CE3030	Pavement Engineering
48	VI	CE3003	Prefabricated Structures
49	VI	CCE332	Environment Health and Safety
50	VI	MX3089	Industrial Safety
51	VI	CE3611	Building Drawing and Detailing Laboratory



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I SEMESTER



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Course Code & Course Name: HS3152 – Professional English I

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To use appropriate words in a professional context
CO2	To gain understanding of basic grammatic structures and use them in right context.
CO3	To read and infer the denotative and connotative meanings of technical texts
CO4	To write definitions, descriptions, narrations and essays on various topics
CO5	To interpret non verbal texts

Course Code & Course Name: MA3151- Matrices and Calculus

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use the matrix algebra methods for solving practical problems.
CO2	Apply differential calculus tools in solving various application problems.
CO3	Able to use differential calculus ideas on several variable functions.
CO4	Apply different methods of integration in solving practical problems.
CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems.

Course Code & Course Name: PH3151-ENGINEERING PHYSICS

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the importance of mechanics.
CO2	Express their knowledge in electromagnetic waves.
CO3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
CO4	Understand the importance of quantum physics.
CO5	Comprehend and apply quantum mechanical principles towards the formation of energy bands.



Course Code & Course Name: CY3151 Engineering Chemistry

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
CO2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
CO3	To apply the knowledge of phase rule and composites for material selection requirements.
CO4	To recommend suitable fuels for engineering processes and applications.
CO5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.

Course Code & Course Name: GE3151 Problem Solving and Python Programming

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Develop algorithmic solutions to simple computational problems.
CO2	Develop and execute simple Python programs.
CO3	Write simple Python programs using conditionals and loops for solving problems.
CO4	Decompose a Python program into functions.
CO5	Represent compound data using Python lists, tuples, dictionaries etc.

Course Code & Course Name: GE3171 Problem Solving and Python Programming Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Develop algorithmic solutions to simple computational problems
CO2	Develop and execute simple Python programs.
CO3	Implement programs in Python using conditionals and loops for solving problems.



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CO4	Deploy functions to decompose a Python program.
CO5	Process compound data using Python data structures.

Course Code & Course Name: BS3171&Physics and Chemistry Laboratory (Physics)

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the functioning of various physics laboratory equipment.
CO2	Use graphical models to analyze laboratory data.
CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.
CO4	Access, process and analyze scientific information.
CO5	Solve problems individually and collaboratively.

Course Code & Course Name: BS3171&Physics and Chemistry Laboratory (Chemistry)

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO
CO2	To determine the amount of metal ions through volumetric and spectroscopic techniques
CO3	To analyse and determine the composition of alloys.
CO4	To learn simple method of synthesis of nanoparticles
CO5	To quantitatively analyse the impurities in solution by electroanalytical techniques

Course Code & Course Name: GE3172- English Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To listen to and comprehend general as well as complex academic information
CO2	To listen to and understand different points of view in a discussion
CO3	To speak fluently and accurately in formal and informal communicative contexts
CO4	To describe products and processes and explain their uses and purposes clearly and accurately.



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CO5	To express their opinions effectively in both formal and informal discussions
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II SEMESTER



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Course Code & Course Name: HS3252 – Professional English II

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To compare and contrast products and ideas in technical texts.
CO2	To identify and report cause and effects in events, industrial processes through technical texts
CO3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
CO4	To present their ideas and opinions in a planned and logical manner
CO5	To draft effective resumes in the context of job search.

Course Code & Course Name: MA3251-Statistics and Numerical Methods

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.



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Course Code & Course Name: PH3201 – Physics for Civil Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Acquire knowledge about heat transfer through different materials, thermal performance of building and thermal insulation.
CO2	Gain knowledge on the ventilation and air conditioning of buildings
CO3	Understand the concepts of sound absorption, noise insulation and lighting designs
CO4	Now about the processing and applications of composites, metallic glasses, shape memory alloys and ceramics
CO5	Get an awareness on natural disasters such as earth quake, cyclone, fire and safety measures

Course Code & Course Name: BE3252– Basic Electrical, Electronics and Instrumentation Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Compute the electric circuit parameters for simple problems
CO2	Explain the concepts of domestics wiring and protective devices
CO3	Explain the working principle and applications of electrical machines
CO4	Analyze the characteristics of analog electronic devices
CO5	Explain the types and operating principles of sensors and transducers

Course Code & Course Name:GE3251 Engineering Graphics

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use BIS conventions and specifications for engineering drawing.
CO2	Construct the conic curves, involutes and cycloid.
CO3	Solve practical problems involving projection of lines.
CO4	Draw the orthographic, isometric and perspective projections of simple solids.
CO5	Draw the development of simple solids.



Course Code & Course Name: GE3271 Engineering Practices Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	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.
CO2	Wire various electrical joints in common household electrical wire work.
CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts;
CO4	Assemble simple mechanical assembly of common household equipment, Make a tray out of metal sheet using sheet metal work.
CO5	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

Course Code & Course Name: BE3272 Basic Electrical, Electronics and Instrumentation Engineering Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use experimental methods to verify the Ohm's law and Kirchhoff's Law.
CO2	Use experimental methods to measure three phase power.
CO3	Analyze experimentally the load characteristics of electrical machines
CO4	Analyze the characteristics of basic electronic devices
CO5	Use LVDT to measure displacement

Course Code & Course Name: GE3272- Communication Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Speak effectively in group discussions held in a formal/semi formal contexts.
CO2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions



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CO3	Write emails, letters and effective job applications.
CO4	Write critical reports to convey data and information with clarity and precision
CO5	Give appropriate instructions and recommendations for safe execution of tasks



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III SEMESTER



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Course Code & Course Name:MA3351 &Transforms and Partial Differential Equations

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand how to solve the given standard partial differential equations.
CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.
CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.
CO4	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.
CO5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.

Course Code & Course Name:ME3351 &Engineering Mechanics

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Illustratethe vectorial andscalarrepresentation offorces andmoments
CO2	Analysetherigidbodyinequilibrium
CO3	Evaluate theproperties ofdistributedforces
CO4	Determinethefrictionandtheeffectsbythelawsof friction
CO5	Calculatedynamicforcesexerted inrigidbody

Course Code & Course Name:CE3301 &Fluid Mechanics

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Demonstratethedifferencebetweensolidandfluid,itspropertiesandbehaviourinstaticconditions.
CO2	Applytheconservationlawsapplicabletofluidsanditsapplicationthroughfluidkinematicsanddynamics.
CO3	Formulate the relationship among the parameters involved in the given fluid phenomenon andtopredictthe performanceofprototypesby model studies.
CO4	Estimatethelossesinpipelinesforbothlaminarandturbulentconditionsandanalysisofpipesconnectedin seriesandparallel.



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CO5	Explain the concept of boundary layer and its application to find the drag force exerted by the fluid on the flat solid surface.
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Course Code & Course Name: CE3302 & Construction Materials and Technology

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Identify the good quality brick, stone and blocks for construction.
CO2	Recognize the market forms of timber, steel, aluminum and applications of various composite materials.
CO3	Identify the best construction and service practices such as thermal insulation and air conditioning of the building
CO4	Select various equipments for construction works conditioning of building
CO5	Understand the construction planning and scheduling techniques

Course Code & Course Name: CE3303 & Water Supply and Wastewater Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the various components of water supply scheme and design of intake structure and conveyance system
CO2	Understand on the characteristics and composition of sewage, ability to estimate sewage generation and design sewer system including sewage pumping stations
CO3	Understand the process of conventional treatment and design of water and wastewater treatment system and gain knowledge of treatment process and biological treatment process
CO4	Ability to design and evaluate water distribution system and water supply in buildings and understand the self-purification and sludge and septage disposal methods.
CO5	Able to understand and design the various advanced treatment system and knowledge about the recent advances in water and reuse of sewage

Course Code & Course Name: CE3351 & Surveying and Leveling

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Introduce the rudiments of various surveying and its principles.
CO2	Impart knowledge in computation of level of terrain and ground features
CO3	Impart concepts of Theodolite Surveying for complex surveying operations
CO4	Understand the procedure for establishing horizontal and vertical control



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CO5	Imparts the knowledge on modern surveying instruments
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Course Code & Course Name: CE3361 & Surveying and Levelling Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Impart knowledge on the usage of basic surveying instruments like chain/tape, compass and levelling instruments
CO2	Able to use levelling instrument for surveying operations
CO3	Able to use theodolite for various surveying operations
CO4	Able to carry out necessary surveys for social infrastructures
CO5	Able to prepare planimetric maps

Course Code & Course Name: CE3311 & Water and Wastewater Analysis Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Calibrate and standardize the equipment
CO2	Collect proper sample for analysis
CO3	To know the sample preservation methods
CO4	To perform field oriented testing of water, wastewater
CO5	To perform coliform analysis



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Course Code & Course Name :CE3401 & APPLIEDHYDRAULICSENGINEERING

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	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
CO2	Analyse steady gradually varied flow, water surface profiles and its length calculation using direct and standard step methods with change in water surface profiles due to change in grades
CO3	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.
CO4	Design turbines and explain the working principle
CO5	Differentiate pumps and explain the working principle with characteristic curves and design centrifugal and reciprocating pumps

Course Code & Course Name :CE3402 & StrengthOfMaterials

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the concepts of stress and strain, principal stresses and principal planes.
CO2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending.
CO3	Calculate the deflection of beams by different methods and selection of method for determining slope or deflection
CO4	Analyze propped cantilever, fixed beams and continuous beams for external loadings and support settlements.
CO5	Determine the stresses due to unsymmetrical bending of beams, locate the shear center, and study the various theories of failure

Course Code & Course Name :CE3403 & Concrete Technology

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the requirements of cement, aggregates and water for concrete
CO2	Select suitable admixtures for enhancing the properties of concrete
CO3	Design concrete mixes as per IS method of mix design



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CO4	Determine the properties of concrete at fresh and hardened state.
CO5	Know the importance of special concretes for specific requirements

Course Code & Course Name : CE3404 & SOIL MECHANICS

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Demonstrate an ability to identify various types of soils and its properties, formulate and solve engineering problems
CO2	Show the basic understanding of flow through soil medium and its impact of engineering solution
CO3	Understand the basic concept of stress distribution in loaded soil medium and soil settlement due to consolidation
CO4	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.
CO5	Demonstrate an ability to design both finite and infinite slopes, component and process as per needs and specifications

Course Code & Course Name : CE3405 & Highway and Railway Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Plan a highway according to the principles and standards adopted in various institutions in India.
CO2	Design the geometric features of road network and components of pavement
CO3	Test the highway materials and construction practice methods and know its properties and able to perform pavement evaluation
CO4	Understand the methods of route alignment and design elements in railway planning and constructions.
CO5	Understand the construction techniques and maintenance of track laying and railway stations.

Course Code & Course Name : GE3451 & Environmental Sciences and Sustainability

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
CO2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.



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CO3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
CO4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization

Course Code & Course Name :CE3411&Hydraulic Engineering Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Apply Bernoulli equation for calibration of flow measuring devices
CO2	Measure friction factor in pipes and compare with Moody diagram
CO3	Determine the performance characteristics of rotodynamic pumps.
CO4	Determine the performance characteristics of positive displacement pumps.
CO5	Determine the performance characteristics of turbines

Course Code & Course Name :CE3412&Material Testing Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Determine the mechanical property of steel
CO2	Determine the physical properties of cement
CO3	Determine the physical properties of fine and coarse aggregate
CO4	Determine the workability and compressive strength of concrete.
CO5	Determine the strength of brick and wood

Course Code & Course Name :CE3413&Soil Mechanics Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Conduct test to determine the index property of the soil
CO2	Determine the insitu density and compaction characteristics



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CO3	Conduct test determine the compressibility permeability and shear strength of soil
CO4	Understand the various test on geo-synthetic



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Course Code & Course Name:CE3501 & Design of Reinforced Concrete Structural Elements

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Know the various design concepts and design RC rectangular beams by working stress and limit state methods
CO2	Understand the design of flanged beams, design for shear and torsion, and anchorage and development length.
CO3	Design a RC slabs and staircase and draw the reinforcement detailing.
CO4	Design short columns for axial, uni-axial and bi-axial eccentric loadings
CO5	Design wall footings, isolated footings and combined rectangular footing

Course Code & Course Name:CE3502 & Structural Analysis I

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Analyze the pin-jointed plane and space frames.
CO2	Analyze the continuous beams and rigid frames by slope deflection method.
CO3	Understand the concept of moment distribution and analysis of continuous beams and rigid frames with and without sway.
CO4	Analyze the indeterminate pin-jointed plane frames, continuous beams and rigid frames using matrix flexibility method.
CO5	Understand the concept of matrix stiffness method and analysis of continuous beams, pin-jointed trusses and rigid plane frames.

Course Code & Course Name:CE3503 & Foundation Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Graduate will demonstrate an ability to plan and execute a detailed site investigation to select Geotechnical design parameters and type of foundation
CO2	Graduate will demonstrate an ability to design shallow foundations, its component or process as per the needs and specifications.
CO3	Graduate will demonstrate an ability to design combined footings and raft foundations, its component or process as per the needs and specifications



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CO4	Graduate will demonstrate an ability to design deep foundations, its component or process as per the needs and specifications.
CO5	Graduate will demonstrate an ability to design retaining walls, its component or process as per the needs and specifications.

Course Code & Course Name: CE3005 & Rehabilitation/Heritage Restoration

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Know the importance of inspection and maintenance.
CO2	Study the Impact of cracks, corrosion and climate on structures.
CO3	Know about various special concretes
CO4	Understand the testing techniques and various protection measures
CO5	Know the Repair of structures and Restoration of Heritage structures

Course Code & Course Name: CE3015 & Geo Environmental Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the various causes and consequences of waste interaction with soil and their modification.
CO2	Understand the various mechanism of transport of contaminants into the subsurface and characterization of contaminated sites and their risk analysis.
CO3	Understand on how to decontaminate the sites so as to reuse the site for human settlement
CO4	Understand how to safely dispose the waste through different containment process.
CO5	Expose on how to convert the waste into a resource material through soil waste stabilization techniques with or without chemical stabilization.

Course Code & Course Name: CE3016 & Ground Improvement Techniques

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Identify and evaluate the deficiencies in the deposits of the given project area and improve its characteristics by hydraulic modifications
CO2	improve the ground characteristics by mechanical modifications using various methods and design the system



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CO3	improvethegroundcharacteristicsbyphysicalmodificationsusingvariousmethodanddesignthesystem
CO4	improve thecharacteristics ofsoils byvarious reinforcementtechniquesand design
CO5	Analyze thegroundanddecidethesuitablechemical methodforimprovingits characteristics

Course Code & Course Name:MX3084&Disaster Risk Reductionand Management

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)
CO2	To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
CO3	To develop disaster response skills by adopting relevant tools and technology
CO4	Enhance awareness of institutional processes for Disaster response in the country
CO5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity

Course Code & Course Name:CE3511&Highway Engineering Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Characterize Pavement Aggregate through relevant test.
CO2	Ascertain the Quality of Bitumen.
CO3	Determine the Optimum Binder Content Using Marshall Method.
CO4	Evaluate the Consistency and Properties of Bitumen.
CO5	Determine the Bitumen Content in the Bituminous Mixes

Course Code & Course Name:CE3512&Survey Camp

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Handle the modern surveying instruments like Total station and GPS
CO2	Apply modern surveying techniques in field to establish horizontal control.
CO3	Understand the surveying techniques in field to establish vertical control
CO4	Apply different survey adjustment techniques.



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CO5	Carry out different setting out works in the field
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Course Code & Course Name :CE3601& Design of Steel Structural Elements

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Recognize the design philosophy of steel structures and identify the different failure modes of bolted and welded connections, and determine their design strengths
CO2	Select the most suitable section shape and size for tension and compression members and beams according to specific design criteria
CO3	Apply the principles, procedures and current code requirements to the analysis and design of steel tension members, columns, column bases and beams
CO4	Identify and compute the design loads on industrial structures, and gantry girder
CO5	Find out ultimate load of steel beams and portal frames using plastic analysis

Course Code & Course Name :CE3602& Structural Analysis-II

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Draw influence lines for statically determinate structures and calculate critical stress resultants.
CO2	Understand Muller Breslau principle and draw the influence lines for statically indeterminate beams.
CO3	Analyze three hinged, two hinged and fixed arches.
CO4	Analyze the suspension bridges with stiffening girders
CO5	Analyze HYDE rigid frames by approximate methods for gravity and horizontal loads.

Course Code & Course Name :AG3601& Engineering Geology

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Knowing the internal structure of earth and its relation to earthquakes. Landforms created by various geological agents and their importance in civil engineering.
CO2	Getting knowledge on various minerals and rocks that can be used as construction materials and road aggregates. In addition, testing the suitability of rocks for foundation purposes.
CO3	Studying various geological structures and their impact in engineering constructions. Further, learning the geomechanical properties of rocks and their significance in engineering projects.



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CO4	Gaining knowledge on the role of geological mapping, remote sensing and geophysics for surface and subsurface investigations. In addition, students will also gain knowledge on borehole logging techniques and their applications in civil engineering.
CO5	Applying geological knowledge for designing and constructing major civil engineering structures, and also mitigating various geological hazards such as earthquakes, landslides and tsunamis.

Course Code & Course Name :CE3030& Pavement Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Get knowledge about types of rigid and flexible pavements.
CO2	Able to design rigid pavements
CO3	Able to design flexible pavements.
CO4	Determine the causes of distress in rigid and flexible pavements.
CO5	Understand stabilization of pavements, testing and field control.

Course Code & Course Name :CE3003& Prefabricated Structures

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand concepts about principles of prefabrication, production, transportation, erection.
CO2	Acquire knowledge about panel systems, slabs, beams, shear walls and columns used in precast construction.
CO3	Acquire knowledge about design of cross-section, joint flexibility.
CO4	Acquire knowledge about joints and connection in precast construction
CO5	Acquire knowledge about structural stability

Course Code & Course Name :CCE332& Environment Health and Safety

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Need for EHS in industries and related Indian regulations
CO2	Various types of Health hazards, effect, assessment and control methods
CO3	Various safety systems in working environments



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CO4	The methodology for preparation of Emergency Plans and Accident investigation
CO5	EHS Management System and its elements

Course Code & Course Name :MX3089& Industrial Safety

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the basic concept of safety.
CO2	Obtain knowledge of Statutory Regulations and standards.
CO3	Know about the safety Activities of the Working Place.
CO4	Analyze on the impact of Occupational Exposures and their Remedies
CO5	Obtain knowledge of Risk Assessment Techniques

Course Code & Course Name :CE3611& Building Drawing and Detailing Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Draw the plan, elevation and sectional view of the load bearing and framed buildings
CO2	Draw the structural detailing of RCC elements
CO3	Draw the structural detailing of RCC water tanks, footings and retaining walls
CO4	Draw the structural detailing of steel structures
CO5	Draw the structural detailing of Industrial structures