



Mar Ephraem

College of Engineering & Technology

(NAAC Accredited Institution)

Run by Catholic Diocese of Marthandam

Approved by AICTE, Affiliated To Anna University, Chennai.

Malankara Hills, Elavuvilai, Marthandam – 629 171, Kanyakumari District, Tamil Nadu

Web: www.marephraem.edu.in, Ph: 04651 – 271111, 273111, Fax: 04651 – 270158, e-mail: marephraem@gmail.com

S.No	Course Code	Course Title	Course Outcomes
1.	HS8151	Communicative English	Summarize various experiences and events
			Interpret various visual materials (line graphs, pie charts etc.)
			Use the electronic media (internet) for email communication
			Describe various processes using sequence words .
			Analyse different spoken discourses/excerpts
			Write cohesively and coherently and flawlessly avoiding grammatical errors
2.	MA8151	Engineering Mathematics – I	Calculate the limits of the given mathematical function.
			Apply differentiation to solve maxima and minima problems
			Solve integrals using substitution method, partial fraction method and integration by parts
			Apply integration to compute area and volume
			Apply the methods of euler and legendre in solving differential equations.
			Solve any simultaneous differential equation
3.	PH8151	Engineering Physics	Apply the concept of elasticity for the construction of bridges, beams, columns, lintels.
			Derive einstein's .a and b coefficients and describe the working principle of semiconductor laser
			Explain the various methods to determine the thermal conductivity of different materials.
			Solve schroedinger's wave equations for an electron trapped in a potential well.
			Calculate the packing factor for different crystal systems.
			Select the suitable fiber for efficient optical communication system with less signal degradation.
4.	CY8151	Engineering Chemistry	Discuss different techniques for removing hardness producing ions
			Explain the methods adopted in air and water purification by adsorption.
			Recall the principles of catalysis in pollution control
			Select appropriate alloys for castings
			Recognizes the sustainability of energy resources.
			Identify the efficiency of fuels _



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5.	GE8151	Problem Solving And Python Programming	Describe the functions of a digital computer with its organization
			Apply appropriate algorithm to solve the problem.
			Analyse the different conditional constructs to solve simple scientific and statistical problems
			Analyse the usage of functions and pointers
			Solve the program using arrays and strings
6.	GE8152	Engineering Graphics	Apply the concept of structures and unions in writing c programs.
			Construct engineering drawing using appropriate scales and standards
			Perform freehand sketching of basic geometrical constructions and multiple views of objects
			Draw orthographic projection of lines and plane surfaces
			Draw projections of solids and development of surfaces
			Perform isometric and perspective sections of simple solids
7.	GE8161	Problem Solving And Python Programming Laboratory	Perform projections of sectioned solids and development of sectioned surfaces
			Apply simple python statements to solve computational problem.
			Develop python programs applying the concepts of conditionals and looping
			Develop python programs applying the concepts of function definition and function call
			Apply the concepts of lists, tuples, dictionaries to store data values in python programs
8.	BS8161	Physics And Chemistry Laboratory	Apply the concept of string operations to handle strings in python programs
			Fabricate basic carpentry components & pipe connections.
			Join the structures using arc welding.
			Demonstrate basic machining operations in lathe.
			Fabricate the models using sheet metal works.
1.	HS8251	Technical English	Demonstrate basic electrical engineering practices and appliances.
			Create reports & curriculum vitae
			Use active & passive sentences



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			Produce different types of writing such as narration, description, exposition and argument
			Analyse and evaluate the implied meanings of various texts
			Paraphrasing minutes of meeting
			Prepare formal letters
2.	MA8251	Engineering Mathematics – II	Compute the eigen values and eigen vectors using matrix operations vector
			Calculate line, surface and volume integrals using gauss, stokes and green's theorems.
			Apply conformal mapping to transform analytical function for one domain to another domain
			Compute the integral value orally complex function over a simple closed curve
			Solve the differential equations using laplace transform techniques
			Use, laplace transform techniques to turn integral and differential equations to polynomial equations
3.	PH8201	Physics For Civil Engineering	Choose proper conducting material used for heating elements, coils, electrical machines.
			Calculate the carrier concentration for semi conducting materials.
			Select suitable magnetic material in the production of gyrotator, motors, electric cars, mri.
			Apply super conducting phenomenon in the manufacturing of squid, mag lev train, switching devices.
			Use proper dielectric material for manufacturing of high voltage transformer, circuit breakers, servo motors.
			Analyse different synthesis technique in the preparation of nano materials
4.	BE8251	Basic Electrical And Electronics Engineering	Apply basic laws to solve simple circuits.
			Apply network theorems to simplify a circuit.
			Choose appropriate sensors to measure various parameters.
			Sketch the speed characteristic of different electrical machines.



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			Utilize rectifiers to generate ac signals.
			Experiment single phase transformer with loads.
5.	GE8291	Environmental Science And Engineering	To identify the characteristics of water and waste water.
			To identify the microorganisms growth in water
			To quantify the pollutant concentration in water and waste
			To identify the bod & cod for the given sample
			To identify the chloride present in water
			To identify the optimum quantity of coagulation
6.	GE8292	Engineering Mechanics	Illustrate the vectorial and scalar representation of forces and moments
			Analyze the rigid body in equilibrium
			Compute the centroid and moment of inertia of different cross section
			Calculate the dynamic forces extended in rigid body
			Determine the friction and the effects by the laws of friction
			Evaluate the properties of solids and surfaces
7.	GE8261	Engineering Practices Laboratory	Fabricate basic carpentry components & pipe connections
			Join the structures using arc welding.
			Demonstrate basic machining operations in lathe.
			Fabricate the models using sheet metal works.
			Demonstrate basic electrical engineering practices and appliances.
8.	CE8211	Computer Aided Building Drawing	Illustrate the capabilities of autocad package for basic drafting and modeling
			Draw 2d models of engineering drawing using autocad
			Draw 3d models of engineering drawing using autocad
			Draw sectional views of simple solids using autocad
			Draw a title block with necessary text and projection symbols in autocad
1.	MA8353		Develop partial differential equations for any provided equations



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S.No	Course Code	Course Title	Course Outcomes
		Transforms And Partial Differential Equations	Solve various types of partial differential equations solve one dimensional wave equations and heat equations Using fourier series Transform aperiodic function from one domain to another Domain using fourier transform method. Transform periodic function into sum of sine and cosine Series Solve difference equations using z-transform.
2.	CE8301	Strength Of Materials I	Analyse stress, strain and deformation of simple and compound bars for varying load Analyse shear force and bending moment in beams subjected to transverse loading. Analyse shear stress due to torsion in shafts and helical springs. Calculate the slope and deflection in beams using different methods. Compute stress and deformation in thin, thick cylinders and spherical shells. Calculate stress distribution due to shearing force and bending moment.
3.	CE8302	Fluid Mechanics	Analyze properties of fluid in static state Analyze properties of fluid in motion for designing hydraulic sections. Analyze flow through pipes for any site conditions Develop solutions for boundary layer problems with respect to any site conditions. Design efficient hydraulic structures based on their dimensions and properties. Design hydraulic structure based on model studies
4.	CE8351	Surveying	Apply the principles of linear measurements and traversing for plotting maps and layouts Identify the level difference between any given points. Apply the principles of control surveying to establish horizontal and vertical distance for any site conditions.



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			Apply the concepts of field astronomy & hydrographic surveying for computing as well as locating hydrographic and celestial points.
			Operate and prepare topographic detailing using total station survey
			Prepare topographic detailing using gps survey
5.	CE8391	Construction Materials	Understand the basic knowledge of construction materials and its uses in the site
			Understand the typical and potential applications of construction materials
			Understand the importance of experimental verification of material properties.
			Understand the importance of timber and its Properties.
			Compare the properties of most common and advanced building materials.
			Understand the relationship between material properties and structural form
6.	CE8392	Engineering Geology	Describe action of geological agents and formation of geological structures
			Identify different rocks based on its physical properties
			Apply rankine cycle for steam power plant and compare few cycle improvement methods.
			Identify various geological structures by applying geophysical methods for subsurface investigations
			Interpret gis data's for identifying minerals and rock formation.
			Select the geological conditions necessary for design and construction of dams, reservoirs, tunnels, and road cuttings
7.	CE8311	Construction Materials Laboratory	Acquire knowledge in the area of testing of fine aggregates for construction
			Acquire knowledge in the area of testing of coarse aggregates for construction
			Acquire knowledge in the area of testing of cement for construction
			Acquire knowledge in the area of testing of concrete for construction
			Acquire knowledge in the area of testing of bricks for construction



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			Acquire knowledge in the area of testing of blocks for construction
8.	CE8361	Surveying Laboratory	Estimate the area of any plot using triangulation method
			Estimate the area of any plot using trilateration method
			Access the level difference between any terrain
			Determine the elevation of an object when base is accessible/inaccessible
			Measure horizontal angles and vertical angles using various surveying instruments
			Acquire knowledge on handling of total station
1.	MA8491	Numerical Methods	Solve algebraic and transcendental equations by different method
			Find the missing values by different methods
			Apply the numerical techniques for solving first and second order ordinary differential equations.
			Solve the ordinary differential equations with boundary value conditions
			De solve the ordinary differential equations with boundary value conditions demonstrate the working of dc and ac
			Solve the partial differential equations with initial boundary value conditions
2.	CE8401	Construction Techniques And Practices	Select the suitable construction techniques and structural system for any construction activity.
			Coordinate any construction project in the correct sequence of activity.
			Execute super/substructure construction for any site conditions
			Select suitable construction equipment for any construction activity.
			Select suitable materials and methods for green building construction.
			Select suitable de-watering technique for underground open excavation.



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3.	CE8402	Strength Of Materials Ii	Discuss the basics of mechanism in machines
			Perform analysis of structural elements subjected to unsymmetrical loading for the any design purpose.
			Analyse unsymmetrical bending of beams with different cross section subjected to loading condition of the site
			Analyse the load carrying capacity of a structural element by comparing actual stress and ultimate stress subjected to loading condition of the site
			Analyse the load carrying capacity of columns subjected to loading condition of the site
			Analyse shear force and bending moment of indeterminate beams subjected to loading conditions of the site.
4.	CE8403	Applied Hydraulic Engineering	Design best hydraulic section for any uniform flow
			Design suitable section for any gradually varied flow.
			Design best hydraulic section for any rapidly varied flow
			Evaluate the performance of any turbine for a given flow
			Evaluate the performance of any pump for a given output
			Apply the theory of fluid mechanics to design hydraulic structures and machineries.
5.	CE8404	Concrete Technology	Select quality materials required for making concrete
			Analyse the effect of admixtures on properties of concrete
			Estimate the concept and procedure of mix design as per is method
			Examine the properties of concrete at fresh and hardened state
			Explain importance and application of special concretes
			Analyse mechanical properties and test as per bis grading requirements
6.	CE8491	Soil Mechanics	Classify the soil and assess the engineering properties, based on index properties



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			Calculate the effective stress in soils based on site conditions
			Identify the settlement in soils based on site conditions
			Determine the shear strength of soil based on site conditions
			Analyze both finite and infinite slopes at site
			Describe experiments to determine the engineering properties of soil
7.	CE8481	Strength Of Materials Laboratory	Compute the tensile and torsional strength of steel rod
			Compute the compressive strength of modern sample
			Compute shear strength of metal sample
			Compute the hardness and impact resistance of metal specimen
			Compute deflection of metal beam
			Compute the compressive strength and deflection of springs
8.	CE8461	Hydraulic Engineering Laboratory	Determine major and minor losses in pipes
			Determine using orificemeter and venturimeter
			Calibrate rotometer for various fluids
			Analyse the characteristics performance of centrifugal, reciprocating, submersible and gear pump
			Analyse the characteristics performance of pelton wheel turbine, kaplan turbine and francis turbine
9.	HS8461	Advanced Reading And Writing	Write different types of essays.
			Understand pronoun reference and use of connectors
			Write winning job applications.
			Read any texts critically.
			Evaluate various texts critically.
			Display critical thinking in various professional contexts
1.	CE8501	Design Of Reinforced Cement Concrete Elements	Design singly reinforced rectangular beams as per working stress method based on the loading condition of the site
			Design beams, slabs and stair case based on limit state method for any loading condition of the site.
			Design beams for shear and torsion for any loading condition of the site



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			Design columns for any loading and support conditions.
			Design footings for any type of site conditions.
			Design combined footing for any type of site conditions.
2.	CE8502	Structural Analysis I	Analyze indeterminate frames for any loading condition
			Analyze beams and frames subjected for any moving loads and site condition.
			Evaluate indirect models and analyze its performance for any site conditions
			Analyze structural arches considering all the effects of site condition
			Analyze rigid frames by slope deflection method for any loading condition of the site
			Analyze rigid frames by moment distribution method for any loading condition of site.
3.	EN8491	Water Supply Engineering	Plan public water supply system for any area.
			Design water supply conveyance system for any area
			Design and operate water treatment facility for any area
			Design water purification systems in accordance to the requirement.
			Design networks of water distribution based on the demand.
			Select appropriate fixtures and fittings for any water distribution system.
4.	CE8591	Foundation Engineering	Select suitable soil investigation methods for exploration
			Prepare a soil investigation report
			Calculate soil properties for structural design of buildings
			Design a shallow footing for a given load conditions
			Design a pile group based on soil and load conditions
			Design a retaining wall based on earth pressure and analyse its stability



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5.	GE8071	Disaster Management	Differentiate the types of disasters, causes and their impact on environment and society
			Assess vulnerability and various methods of risk reduction measures as well as mitigation.
			Draw the hazard and vulnerability profile of india, scenarious in the indian context, disaster damage assessment and management.
			Understand the approaches of disaster risk reduction
			Develop solutions for works related to disaster management
			Understand various importance of various technologies in disaster management
7.	CE8511	Soil Mechanics Laboratory	Analyse the index properties of fine aggregate based on the site condition
			Analyse the index properties of coarse aggregate based on the site condition
			Analyse insitu density by field density test based on the site condition
			Analyse compaction characteristics based on the site condition
			Analyse the shear stress and compressibility based on the site condition
8.	CE8512	Water And Waste Water Analysis Laboratory	To identify the characteristics of water and waste water.
			To identify the microorganisms growth in water.
			To quantify the pollutant concentration in water and waste water.
			To identify the bod & cod for the given sample.
			To identify the chloride present in water.
9.	CE8513	Survey Camp (2 Weeks –During Iv Semester)	Estimate the area of any plot using triangulation method
			Estimate the area of any plot using trilateration method
			Access the level difference between any terrain
			Estimate the area of any plot using traversing



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			Develop contour maps
			Determine the quantity of cutting and filling in l.s and c.s
1.	CE8601	Design Of Steel Structural Elements	Select and design appropriate connection for any type of structures
			Design tension members for any loading conditions
			Design compression members for the loading condition of the site
			Design beams for the loading condition of the site
			Design roof truss in according to the site conditions
			Design plate girders for the loading condition of the site
2.	CE8602	Structural Analysis Ii	Analyze indeterminate beams and frames by flexibility matrix method based on loading condition on site.
			Analyze indeterminate beams and frames by stiffness matrix method based on loading condition on site.
			Analyze the structural element by finite element method based on site condition
			Analyze the structures by plastic analysis based on site condition
			Analyze space trusses based on site conditions
			Analyze cable structures based on site conditions
3.	CE8603	Irrigation Engineering	Identify various types of water resources and design appropriate storage structures.
			Manage the water resources for any area in accordance with national water policy
			Estimate water requirements for irrigation and drinking depending upon any site condition
			Design irrigation canal for irrigated area
			Identify and select suitable types of impounding structures for irrigated area
			Select appropriate irrigation methods for suitable areas.
4.	CE8604	Highway	Implement irc standards for effective traffic management.



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		Engineering	Describe factors influencing traffic safety. Design highways and its components in accordance to geometric designs principles. Analyse traffic survey data using statistical methods for forecasting future traffic flow Understand the concept of pavement management system, evaluation of distress and maintenance of pavements Prepare traffic survey using various sources.
5.	EN8592	Wastewater Engineering	Summarize the basics of finite element formulation Identify the characteristics and composition of sewage Design sewerage systems for collection of sewage for any site Design the primary treatment unit for any location Design the secondary treatment unit for any location Select suitable sewage disposal method depending upon the site condition
7.	CE8611	Highway Engineering Laboratory	Analyse the workability of fresh concrete for any mix proportion Analyse the compressive strength of concrete for any grade Analyse flexural strength for hardened concrete Analyse the quality of fine and coarse aggregate Analyse the young's modulus for hardened concrete
8.	CE8612	Irrigation And Environmental Engineering Drawing	Understand the fundamentals of various units of municipal water treatment plants and sewage treatment plants Design impounding structures and cross drainage works Design canal regulation structures Design components of water supply and treatment system Design components of various sewage treatment types



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			Design disposal arrangements of treated sewages.
9.	HS8581	Professional Communication	Make effective presentations Participate confidently in group discussions. Attend job interviews and be successful in them. Develop adequate soft skills required for the workplace Develop a long-term career plan and make career changes
1.	CE8701	Estimation, Costing And Valuation Engineering	Describe the needs and basic concepts of tqm Apply the tqm principles and concepts in business Apply benchmarking techniques in quality management processes Explain the concepts of six sigma Describe the quality systems and standards in the organisations. Describe the concepts of total productive maintenance
2.	CE8702	Railways, Airports, Docks And Harbour Engineering	Construct and maintain railway track and its component for any site condition Plan airports and its components for any location Design, airport runways for any airport Design harbour and its components for any given site condition. Implement coastal regulation zone 2011 for environmental protection of any harbour sight. Analysis and plan railway track for any site conditions
3.	CE8703	Structural Design And Drawing	Design and draw reinforced concrete cantilever retaining walls Design and draw reinforced concrete counterfort retaining walls Design and draw flat slab as per code provisions Design and draw reinforced concrete and steel bridges



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			Design and draw reinforced concrete and steel water tanks
			Design and detail the various steel trusses and cantry girders
4.	EN8591	Municipal Solid Waste Management	Describe the physical and chemical properties of municipal solid waste.
			Analyze collection routes and systems for transfer of municipal solid waste.
			Design transfer stations for management of municipal solid waste.
			Locate the site for sanitary landfills using modern technology.
			Implement the guidelines and procedures to rehabilitate dump site and improve environmental conditions.
			Operate collection and transfer teams for optimum performance.
6.	CE8711	Creative And Innovative Project	Identify problem considering societal issues.
			Provide eco-friendly solution of the identified problem
			Design and develop systems and models using modern tools
			Conduct of experiments/testing using proper codes and standards referred.
			Summarize and efficiently validate the proposed solution
			Systematic cost analysis and budget plan
1.	CE8018	Geo-Environmental Engineering	assess the contamination in the soil
			Understand the current practice of waste disposal
			To select suitable site for waste disposal
			To prepare the suitable disposal system for particular waste
			Stabilize the waste and utilization of solid waste for soil improvement.
			Select suitable remediation methods based on contamination.
2.	CE8020	Maintenance, Repair And Rehabilitation Of Structures	Select repair materials based on physical and chemical properties.
			Analyze and assess the strength and durability of concrete.



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			Strengthen distressed structural elements in accordance to site conditions.
			Implement repair works and prevent the usage of new construction materials by improving serviceability of any structures.
			Provide the legal advice on the causes of deterioration in structures
			Identify the causes of deterioration of any structure by adopting suitable assessment procedures.
3.	CE8811	Project Work	Identify problem considering societal issues.
			Provide eco-friendly solution of the identified problem
			Design and develop systems and models using modern tools
			Conduct of experiments/testing using proper codes and standards referred.
			Summarize and efficiently validate the proposed solution
			Systematic cost analysis and budget plan