

DEPARTMENT OF CIVIL AND STRUCTURAL ENGINEERING
B.E., CIVIL AND STRUCTURAL ENGINEERING

SEMESTER III ETBS301 Engineering Mathematics -III

COURSE OUTCOMES

At the end of the course the students will be able to acquire knowledge on

1. Be capable of mathematically formulating certain practical problems in terms of partial differential equation. Solve them and physically interpret the results.
2. Have gained a well founded knowledge of Fourier series, their different possible forms and the frequently needed practical Fourier analysis that an engineer may have to make from discrete data.
3. Have obtained capacity to formulate and identify certain boundary value problems encountered in engineering practices, decide on applicability of the Fourier series method of solution, solve and interpret the results.
4. Have grasped the concept of expression of a function under certain conditions as a double integral leading to identification of transform pair, and specialization of Fourier transform pair, their properties, and the possible special cases with attention to their applications.
5. Have learnt the basics of z transform in its applicability to discretely varying functions, gained the skill to formulate certain problems in terms of difference equations and solve them using the z transform techniques bringing out the elegance of the procedure involved.

SEMESTER III ETES302 Environmental Studies

COURSE OUTCOMES

At the end Students can able to

1. Understand the importance of environment.
2. Analyse the importance of environment in engineering.
3. Apply their own ideas and demonstrate advanced technologies that will be useful to protect environment.
4. Employ awareness among the society about environmental problems and natural disasters.
5. Practice according to the present and future environmental issues.

SEMESTER III ETES303 Engineering Mechanics

COURSE OUTCOMES

On successful completion of the course the learner will be able to

1. Use scalar and vector analytical techniques for analysing forces in structures.
2. Apply basic knowledge of maths and physics to solve real world problem.
3. Apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems
4. Determine resultants and apply conditions of static equilibrium to plane force systems.
5. Calculate the motion characteristics of a body subjected to a force system and mechanical vibrations.

SEMESTER III CEES304 Construction Engineering

COURSE OUTCOMES

At the completion of the course students will be able to

1. Compare the properties of most common and advanced building materials.
2. Understand the typical and potential applications of these materials.
3. Acquire knowledge of testing of construction materials and their strength requirements.
4. Recognize the functions of different building components.
5. Understand the usage of modern building materials and construction equipments and apply techniques to repair buildings.

SEMESTER III CEPC305 Introduction to Fluid Mechanics

COURSE OUTCOMES

At the end of the course, the student will be able to:

1. Understand the broad principles of fluid statics, kinematics and dynamics
2. Understand definitions of the basic terms used in fluid mechanics
3. Understand classifications of fluid flow
4. Apply the continuity, momentum and energy principles
5. Apply dimensional analysis

SEMESTER III CZPC306 Concrete Technology

COURSE OUTCOMES

At the completion of the course, students will be able to

1. Compare the properties of most common and advanced building materials.
2. Test the construction materials to determine their properties and strength requirements.
3. Understand the typical and potential applications of these materials.
4. Analyse the properties of concrete and recommend it to the suitable purpose.
5. Calculate the mix ratio of concrete according to the requirements.

SEMESTER III CZSP307 Computer Practical-I(Building Drawings)

COURSE OUTCOMES

At the completion of the course students will be able

1. To identify the drawings of detailing and building plans.
2. Draw the building plans and sections using AUTOCAD.
3. To prepare the doors and windows details and other requirements.
4. To draw approval plans with complete requirements of the authorities.
5. To prepare the estimation of buildings in spreadsheets.

SEMESTER III CECP308 Fluid Mechanics Laboratory

COURSE OUTCOMES

At the end of the course, the student will be able to

1. Understand the broad principles of fluid statics, kinematics and dynamics
2. Understand definitions of the basic terms used in fluid mechanics
3. Understand classifications of fluid flow
4. Be able to apply the continuity, momentum and energy principles
5. Be able to apply dimensional analysis.

SEMESTER III CZCP309 Concrete and Construction Laboratory

COURSE OUTCOMES

At the completion of the course students will be able

1. Identify the tests for determining concrete properties
2. To test the workability of a concrete for specific purpose depends on requirements.
3. To determine the strength of hardened concrete, bricks, tiles, coarse aggregates, etc.
4. Calculate the mix proportion for concrete
5. Identify the detailing of the structural reinforcements

SEMESTER III ETIT310 Internship Inter/ Intra Institutional Activities

SEMESTER IV CZBS401 Probability Random Process and Numerical Methods

COURSE OUTCOMES

The students should be able to

1. Collect data on a problem and describe the data using graphical and descriptive measures; develop a probabilistic model for the problem; perform probability operations and evaluations;
2. Acquire skills in handling situations involving random variables and random processes
Perform statistical analyses of the data and hypotheses testing
3. Perform correlation and regression analyses for fitting a curve or model to data and formulate algorithms to solve problems
4. To solve problems for engineers in using numerical methods.

SEMESTER IV CZES402 Introduction to Solid Mechanics

COURSE OUTCOMES

On completion of the course, the student will be able to:

1. Describe the concepts and principles, understand the theory of elasticity including strain/displacement and Hooke's law relationships; and perform calculations, relative to the strength and stability of structures and mechanical components;
2. Define the characteristics and calculate the magnitude of combined stresses in individual members and complete structures
3. Analyze solid mechanics problems using classical methods and energy methods
4. Analyse various situations involving structural members subjected to combined stresses by application of Mohr's circle of stress; locate the shear center of thin wall beams
5. Calculate the deflection at any point on a beam subjected to a combination of loads; solve for stresses and deflections of beams under unsymmetrical loading; apply various failure criteria for general stress states at points; solve torsion problems in bars and thin walled members.

SEMESTER IV CZPC403 Engineering Economics, Estimation and Costing

COURSE OUTCOMES

On completion of the course, the students will

1. Have an idea of Economics in general, Economics of India particularly for public sector agencies and private sector businesses
2. Be able to perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.
3. Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.

4. Be able to understand the technical specifications for various works to be performed for a project and how they impact the cost of a structure.
5. Be able to quantify the worth of a structure by evaluating quantities of constituents, derive their cost rates and build up the overall cost of the structure and how competitive bidding works and how to submit a competitive bid proposal.

SEMESTER IV CEPC404 Applied Hydraulics Engineering

COURSE OUTCOMES

At the end of the course students will be able to

1. Relate the theory and practice of problems in hydraulic engineering.
2. Apply knowledge of fluid mechanics in addressing open channel flow problems.
3. Solve problems in uniform, gradually varied and rapidly varied flows in steady state conditions.
4. Understand the working principle of pumps.
5. Understand the working principle of turbines.

SEMESTER IV CZPC405 Structural Concrete Design-I

COURSE OUTCOMES

At the end of the course students will be able

1. To understand the behaviour of steel and concrete structures.
2. To develop and strengthen the knowledge on physical, mechanical and inherent properties of concrete and reinforcing materials and to design practical reinforced concrete structural components.
3. To understand the fundamental application of structural loads, stresses and to design the structural elements using various design philosophies.
4. To acquire the knowledge about the state of the art principles, procedures and current Indian Code requirements for the design of reinforced concrete structural elements.
5. To understand the concept of detailing of reinforced concrete structural elements as per the Indian Codes.

SEMESTER IV CZPC406 Surveying and Geomatics

COURSE OUTCOMES

The course will enable the students to

1. Apply the knowledge, techniques, skills, and applicable tools of the discipline to engineering and surveying activities.
2. Translate the knowledge gained for the implementation of Civil infrastructure facilities
3. Relate the knowledge on Surveying to the new frontiers of science like Hydrographic surveying, Electronic Distance Measurement, Global Positioning System, Photogrammetry and Remote Sensing.
4. Be familiar with the principals of recording accurate, orderly, complete, and logical field notes from surveying operations, whether recorded manually or with automatic data collection methods.
5. Measure horizontal, vertical, and zenith angles with a transit, theodolite, total station or survey grade GNSS instruments

SEMESTER IV CZCP407 Structural Materials Testing Laboratory

COURSE OUTCOMES

At the end of the course students will be able

1. To find out the material properties.
2. To find out the stress, strain, young's modulus, Poisson's ratio, etc. for different materials.
3. To understand the materials behaviour by their properties.
4. To determine the hardness of materials
5. To determine the stiffness of the springs.

SEMESTER IV CECP408 Hydraulics Engineering Laboratory

COURSE OUTCOMES

1. The students will be able to apply their knowledge of fluid mechanics in addressing problems in open channels.
2. They will possess the skills to solve problems in uniform, gradually and rapidly varied flows in steady state conditions.
3. They will have knowledge in hydraulic machineries (pumps and turbines).
4. They will be able to identify the flow properties under various conditions.
5. They will be able to calculate the losses in flow.

SEMESTER IV CZCP409 Surveying and Geomatics Laboratory

COURSE OUTCOMES

At the completion of the course students will be able to

1. Do chain surveying, compass surveying, plane table surveying, and Levelling
2. Carry out Theodolite survey and Tachometric survey.
3. Handle the Survey Instruments, their care and adjustments and the, principles of Chain Surveying.
4. Understand the concept of total station.
5. Carry out the contouring.

SEMESTER V CZPC501 Structural Mechanics-I

COURSE OUTCOMES

At the completion of the course students will be able

1. To analyze the indeterminate structures like beams and frames with different end conditions.
2. To analyze the indeterminate structures like beams and frames with different loading conditions.
3. To analyse the arch structures and suspension cable bridges.
4. To solve the structural problems with influence line methods of analysis.
5. To analyse the problems in the various classical methods of analysis of structures

SEMESTER V CZPC502 Structural Steel Design-I

COURSE OUTCOMES

At the completion of the course students will be able

1. To understand the different types of Steel sections available in the market.
2. To design the connections and different types of members subjected to various loading conditions.
3. To understand the Codal provisions for designing the members.
4. To design the compression and tension members as per the requirements
5. To design the plate girders inclusive of the design of flanges and web and their

connections.

SEMESTER V CZPC503 Soil Mechanics

COURSE OUTCOMES

At the end of the course students will be able

1. To understand the soil characters such as shear strength and stress distribution.
2. To determine the soil properties.
3. To demonstrate the experiments on different soils.
4. To understand the stress distribution under the soils.
5. To understand the shear strength and uplift due to seepage.

SEMESTER V CZPC504 Structural Concrete Design-II

COURSE OUTCOMES

1. The students will have the knowledge of analysis and design of multi-storeyed frames with lateral loads
2. The students will have the knowledge of analysis and design of the pile foundation.
3. The students will have the knowledge of analysis and design of the strap footings and raft foundation.
4. The students will have the knowledge of analysis and design of the water tanks of different sizes for various staging conditions.
5. The students will have the knowledge of analysis and design of the retaining walls of different types.

SEMESTER V CZPE505 Hydrology and Water Resource Engineering

SEMESTER V CZPE506 Engineering Geology

SEMESTER V CZCP507 Computer Practical-II

COURSE OUTCOMES

At the completion of the course students will be

1. Having the knowledge of how to represent the detailing in the form of drawings for practical applications.
2. Draw the detailed drawings showing reinforcement details.
3. Able to gain experience/ practice on Modern Software in Civil Engineering field.
4. Able to give the reinforcement detailing for the structures like foundations, water tanks, retaining walls, etc.
5. Able to understand the codal provisions for detailing of reinforcements and how to implement in the drawings

SEMESTER V CZCP508 Geotechnical Engineering Laboratory

COURSE OUTCOMES

At the completion of the course students will be able

1. To understand the soil properties.
2. To gain knowledge about the soil characteristics.
3. To conduct the different experiments according to the soil types for finding their properties.
4. To classify the soils by its size and type.
5. To know the consistency limits of soils and consolidation process for the usefulness of

practical applications.

SEMESTER V CZCP509 Structural Reinforcement Detailing Laboratory

COURSE OUTCOMES

At the completion of the course students will be

1. Having the knowledge of how to represent the detailing in the form of drawings for practical applications.
2. Draw the detailed drawings showing reinforcement details.
3. Able to gain experience/ practice on Modern Software in Civil Engineering field.
4. Able to give the reinforcement detailing for the structures like beams, columns, footings, foundations, water tanks, retaining walls, etc.
5. Able to understand the codal provisions for detailing of reinforcements and how to implement in the drawings.

SEMESTER V ETIT510 Industrial Training / Rural Internship/Innovation / Entrepreneurship

SEMESTER VI CZPC601 STRUCTURAL MECHANICS II

COURSE OUTCOMES

At the completion of the course students will be able

1. To analyze the indeterminate structures like beams and frames with different end conditions through various advanced and modern methods.
2. To solve the structural problems with matrix approach.
3. To do the plastic analysis for concrete structures.
4. To analyse the problems with approximate methods and compare the results.
5. To have a sound knowledge on the application of these methods in to practical problems.

SEMESTER V CZPC602 Disaster Preparedness and Planning

COURSE OUTCOMES

The student will develop competencies in

1. The application of disaster concepts to management
2. Analyzing relationship between development and disasters.
3. Ability to understand categories of disasters and
4. Realization of the responsibilities to society
5. Mitigate the people and make awareness during disasters.

SEMESTER V CZCP607 Advanced Material Testing Laboratory

COURSE OUTCOMES

At the completion of the course students will be able

1. To understand the behaviour of steel elements for practical application.
2. To get experience in Modal analysis.
3. To understand the development of concrete for durability studies.
4. To determine the material property concrete and steel.
5. To check the property of special concrete like HSC, HPC, SCC, etc.

SEMESTER V CZCP608 Computer Practical-III

COURSE OUTCOMES

At the completion of the course students will be

1. Having the knowledge of how to represent the detailing in the form of drawings for

practical applications.

2. Draw the detailed drawings showing the truss structure and its connection details.
3. Able to gain experience/ practice on Modern Software in Civil Engineering field.
4. Able to give detailing for the steel structures like truss, columns, water tanks, elevated water tanks, bracings, plate girders, bunkers and silos.
5. Able to understand the codal provisions for detailing and how to implement in the drawings.

SEMESTER VII ETHS701 Professional Practice, Law and Ethics

COURSE OUTCOMES

1. To familiarise the students to what constitutes professional practice, introduction of various stakeholders and their respective roles; understanding the fundamental ethics governing the profession
2. To give a good insight into contracts and contracts management in civil engineering, dispute, resolution mechanisms; laws governing engagement of labour
3. To give an understanding of Intellectual Property Rights, Patents.
4. To make the students understand the types of roles they are expected to play in the society as practitioners of the civil engineering profession
5. To develop good ideas of the legal and practical aspects of their profession

SEMESTER VII CZPC702 Instrumentation and Sensor Technologies for Civil Engineering Applications

COURSE OUTCOMES

1. To analyze the errors during measurements, specify the requirements in the calibration of sensors and instruments and to describe the noise added during measurements and transmission
2. To describe the measurement of electrical variables
3. To describe the requirements during the transmission of measured signals
4. To construct Instrumentation/Computer Networks
5. To suggest proper sensor technologies for specific applications and to design and set up measurement systems and do the studies

SEMESTER VII CZCP706 Instrumentation and Sensor Technologies for Civil Engineering Applications & Earthquake Engineering Laboratory

COURSE OUTCOMES

1. To analyze the errors during measurements, specify the requirements in the calibration of sensors and instruments and to describe the noise added during measurements and transmission
2. To construct Instrumentation/Computer Networks
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3. To understand the dynamic properties.
4. To gain knowledge about the earthquake occurrence and resistance.
5. To analyse the structure under free and forced vibrations.

SEMESTER VII ETIT707 Industrial Training / Rural Internship/Innovation / Entrepreneurship

COURSE OUTCOMES

1. The students know the advanced engineering developments.
2. Able to Prepare and present technical reports.
3. Able to use various teaching aids such as over head projectors, power point presentation

and demonstrative models.

4. Able to present in front of the experts about a topic or technical matters.
5. Able to adapt themselves in the situation needed.

SEMESTER VIII CZPV803 Project Work and Viva-Voce

COURSE OUTCOMES

On Completion of the project work students will be in a position

1. To take up any challenging practical problems and find solution by formulating proper methodology
2. To Carry out any experimental works on concrete and steel or any other construction material to know the behavior and properties
3. Understand the modelling, analysis and design concepts by taking up a structure.
4. Carry out a different projects like stadium, theatre, multiplex malls, etc for the analysis and design.
5. Carry out water retaining structures, dams and bridges for the analysis and design.

PROFESSIONAL ELECTIVES

CZPE505 HYDROLOGY & WATER RESOURCE ENGINEERING

COURSE OUTCOMES

At the end of the course, students must be in a position to:

1. Understand the interaction among various processes in the hydrologic cycle; Apply the application of fluid mechanics and use of computers in solving a host of problems in hydraulic engineering
2. Study types and classes of hydrologic simulation models and design procedures for safe and effective passage of flood flows for design of hydraulic structures
3. Understand the basic aquifer parameters and estimate groundwater resources for different hydro-geological boundary conditions
4. Understand application of systems concept, advanced optimization techniques to cover the socio-technical aspects in the field of water resources
5. Apply the principles and applications of remote sensing, GPS and GIS in the context to hydrological extreme flood and drought events in water resources engineering.

CZPE506 ENGINEERING GEOLOGY

COURSE OUTCOMES

At the completion of the course students will understand

1. Site characterization and how to collect, analyze, and report geologic data using standards in engineering practice
2. The fundamentals of the engineering properties of Earth materials and fluids.
3. Rock mass characterization and the mechanics of planar rock slides and topples.
4. Soil characterization and the Unified Soil Classification System.
5. The mechanics of soils and fluids and their influence on settlement, liquefaction, and soil slope stability.

CZPE603 STRUCTURAL STEEL DESIGN II

COURSE OUTCOMES

At the completion of the course students will be able

1. To identify the different types of Steel sections available in the market.
2. To design of Connections and Different types of members which are subjected to various loads.
3. To do the plastic analysis and estimate its effects.
4. To design the PEB and Gantry girders.
5. To understand the cold form gauge sections and its applications.

CZPE604 STRUCTURAL CONCRETE DESIGN III

COURSE OUTCOMES

At the completion of the course students will be able

1. To design the special structural elements as per relevant IS standards.
2. To design the grid floor and flat slabs as per codal recommendations.
3. To design the corbels and deep beams
4. To understand the concept of force flow at the joints and design of joints
5. To design the shear walls and its benefits

CZPE605 TRANSPORTATION ENGINEERING

COURSE OUTCOMES

On completion of the course, the students will be able to:

1. Carry out surveys involved in planning and highway alignment
2. Design the geometric elements of highways and expressways
3. Carry out traffic studies and implement traffic regulation and control measures and intersection design
4. Characterize pavement materials and
5. Design flexible and rigid pavements as per IRC

CZPE703 PRESTRESSED CONCRETE

COURSE OUTCOMES

At the completion of the course students will be able to

1. Gain knowledge on methods of pre-stressing.
2. Design various Pre-stressed concrete structural elements.
3. Understand the deflection criteria and its Codal recommendations.
4. Understand the concepts of composite section and its analysis.
5. Design the cables and tendons profile for prestressing and also to design the concrete pipes, circular tanks, railway sleepers, etc.

CZPE704 ENVIRONMENTAL ENGINEERING

COURSE OUTCOMES

After successfully studying this course, students will:

1. Understand the impact of humans on environment and environment on humans
2. Be able to identify and value the effect of the pollutants on the environment: atmosphere, water and soil.
3. Be able to plan strategies to control, reduce and monitor pollution.
4. Be able to select the most appropriate technique for the treatment of water, wastewater solid waste and contaminated air.
5. Be conversant with basic environmental legislation.

CZPESCN STRUCTURAL CONCRETE DESIGN IV

COURSE OUTCOMES

At the end of the course students will be able

1. To design the bridges deck slab as per Indian Standards.
2. To design concrete Pipes as per the codal provisions.
3. To design bunkers, silos and chimneys with relevant IS standards.
4. To provide the detailing of reinforcements as per Codal recommendations.
5. To design the machine foundation and its detailing.

CZPESN ADVANCES IN CONCRETE TECHNOLOGY

COURSE OUTCOMES

At the completion of the course students will be able

1. To understand about various types of special concretes and testing techniques.
2. To understand the principles of special concreting techniques and non destructive testing procedures for concrete structures.
3. To prepare and recommending special concrete using admixtures.
4. To understand the behaviour of microstructure of concrete.
5. To understand the concepts of SEM analysis and X-ray micro analysis.

CZPESCN DESIGN OF LOAD BEARING MASONRY

COURSE OUTCOMES

At the end of the course students will be able

1. To understand the scientific approach to be followed in the design of masonry structures.
2. To analyse the application masonry materials and design related to civil engineering problems.
3. To know the testing of masonry structures.
4. To know where and how to construct the expansion joints in brick masonry structures.
5. To design the prestressed brick masonry structures.

CZPESCN SCAFFOLDING AND FORMWORK DESIGN IN CONSTRUCTION

COURSE OUTCOMES

At the end of the course students will be able

1. To know the detailed planning of framework, design of forms and erection of form work.
2. To select the timbers and wooden planks with quality.
3. To have an idea of scaffolding fabrication for different works.
4. To check the formworks and scaffolding works and to check the stability before concreting.
5. To design the formwork and scaffolding works for different shapes to make paraboloid, shell and cylindrical structures.

CZPESCN TALL BUILDINGS

COURSE OUTCOMES

At the completion of the course students will be able to

1. Gain the knowledge about the behaviour of tall buildings subjected to lateral loads and their stability.
2. Design the tall buildings as per the existing codes.
3. Check the stability of the structures under the present and expected loading

conditions.

4. Do the dynamic analysis of a structure to withstand the present and expected loadings.
5. Estimate the natural frequencies and damping of a structure.

OPEN ELECTIVES

CZOE606 FOUNDATION ENGINEERING

COURSE OUTCOMES

At the completion of the course students will be able

1. To select type of foundation required for the soil at a place and able to design shallow, foundation, deep foundation and retaining structures.
2. To calculate the safe bearing capacity of soils.
3. To advise the type of foundation suitable for the particular soil type.
4. To know the tests required to conduct for the soil type and how to carry out those tests.
5. Calculate the properties of soils and to estimate the optimum levels for recommending the foundation sizes.

CZOE705 FINITE ELEMENT METHOD

COURSE OUTCOMES

At the completion of the course students attains

1. The knowledge of solving physical problems using finite element softwares.
2. To develop computer coding for any structural problem and creating software packages.
3. The knowledge in solving practical problems by global stiffness matrix approaches for truss, beam, etc.
4. The knowledge of modelling techniques of the problems.
5. The knowledge of using FEM softwares for the practical problems and to find the solution.

CZOE801 EARTHQUAKE ENGINEERING

COURSE OUTCOMES

At the completion of the course students will be able

1. To design the earthquake resistance structures.
2. To understand the behaviour of structure during earthquake.
3. To recommend the materials used for construction in the earthquake prone areas.
4. To analyze the building frames for dynamic loadings.
5. To provide the detailings of reinforcement for seismic analysis.

CZOE802 REPAIR AND REHABILITATION OF STRUCTURES

COURSE OUTCOMES

At the completion of the course students will be able

1. To understand about the mechanics of deterioration of concrete.
2. To estimate and analyze the degree of damage by testing methods.
3. To identify the repairs and suitable repair methods and materials.
4. To gain the knowledge about rehabilitation and retrofitting of structural members.
5. To understand the repair and strengthening of RC structures with reasonable cost.

**DEPARTMENT OF CIVIL AND STRUCTURAL ENGINEERING
M.E. (CONSTRUCTION ENGINEERING AND MANAGEMENT) (Full-Time)**

SEMESTER I CZCMPC11: Construction Project Management

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Have an idea about the concept of Project management planning on construction projects
2. Understand the roles and responsibilities in project planning.
3. Find project duration and optimize the time and minimize the cost implement resource allocation and.
4. Understand the control techniques plan and implement
5. Know about site mobilization, material and labor management

SEMESTER I CZCMPC12: Quality control and Assurance in construction

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Understand the concept of quality plan
2. Learn about quality Management Guidelines
3. Use taguchi's concept-codes and standards
4. Know quality assurance, appraisals and quality control by reliability testing
5. Implement the quality improvement techniques

SEMESTER I CZCMMC15: Research methodology and IPR.

COURSE OUTCOMES

At the end of the course, Student will be able to

1. Understand research problem formulation.
2. Analyze the Plagiarism and Research ethics.

3. Explain about Preparation of research proposal.
4. Learn about Patenting.
5. Understand IPR.

SEMESTER I CZCMCP16: Construction Project Management Lab

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Know about the Preparation and delivery of the bid or proposal of an Engineering construction project.
2. Learn about the Design of a simple equipment information system.
3. Understand the Computer application of using primavera scheduling system including reports and tacking.
4. Understand the Computer application of using primavera Scheduling system including reports and tacking.
5. Analyse the models for projects risk .

SEMESTER I CZCMCP17: Advanced Concrete Lab

COURSE OUTCOMES:

At the completion of the course students will be able to

1. Design high grade concrete and study the parameters affecting its performance.
2. Conduct Non Destructive Tests on existing concrete structures.
3. Apply engineering principles to understand behaviour of structural/ elements.
4. Know about the cyclic load testing.
5. Know about the durability tests on concrete.

SEMESTER II CZCMPC21 Safety in Construction

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Know about Accidents and their Causes and Legal Implications.
2. Gain knowledge about duties and responsibilities of construction management.
3. Learn about the safety in and their applications.
4. Manage the Various Safety Equipment And Gear Used On Site.
5. Summarize the safety policies, methods equipment's, training provided on any ISO approved construction company.

SEMESTER II CZCMPC22 Construction Equipment and Management

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Manage the equipment, cost control and maintenance of a project.
2. Identify and understand the working principle of earthwork equipment's.
3. Identify and understand the working of various equipment's for different construction process.
4. Identify and understand the working principle of material handling equipment's.
5. Understand the concept of scheduling.

SEMESTER II CZCMCP25 Model Testing Lab

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Understand the dynamic properties.
2. Analyze dynamics response of single degree freedom system using fundamental theory and equation of motion.
3. Analyze dynamics response of Multi degree freedom system using fundamental theory and equation of motion.
4. Use the available software for dynamic analysis.
5. Gain knowledge about the basic concept of special topics in structural dynamics.

SEMESTER II CZCMCP26 Numerical Analysis Lab

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Understand roots of non linear equations by bisection method and newton's method.
2. Do curve fitting by least square approximations.
3. Solve the system of linear equations using gauss- elimination/gauss-Seidal Iteration/ gauss-Jorden method.
4. Integrate numerically using trapezoidal and simpson's rules.
5. Solve the numerical solution of ordinary differential equations by Euler's method, Runge-kutta method.

SEMESTER II CZCMTS27 Industrial Training and Seminar/ Mini project

COURSE OUTCOMES:

At the end of the course, student will be able to:

1. Understand the response of structures.
2. Prepare the models.
3. Conduct model testing for static loading.
4. Conduct model testing for free and forced vibrations.
5. Evaluate of dynamic modulus.

SEMESTER III CZCMPE31 Program Elective- V

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Understand the various types of concretes and their constituents and properties.
2. Identify the various types of metals, their properties and applications.
3. Identify the various composite materials, their properties and applications.
4. Use the concept of water-proofing and identify the purpose of flooring and facade materials.
5. Design and develop smart intelligent buildings.

SEMESTER III CZCMPV33 PV-I Project work and Viva-Voce Phase 1

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Identify structural engineering problems reviewing available literature.
2. Understand different techniques used to analyze complex structural systems.
3. Work on the solutions given and present solution by using his/her technique applying engineering principles.
4. Understand of contemporary / emerging technology.
5. Share knowledge effectively in oral and written form and formulate documents.

SEMESTER IV CZCMPV41 Project work and Viva-Voce Phase II

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Prepare the final report of project work in standard format for satisfactory completion of the work.
2. Synthesize knowledge and skills previously gained and applied to an in-depth study and execution of new technical problem.
3. Capable to select from different methodologies, methods and forms of analysis to produce a suitable research design and justify their design..
4. Find technical solution in a written report.
5. Present the work in International/National conference or reputed journals.

PROGRAM ELECTIVES

CZCMPEXX FORENSIC ENGINEERING AND RETROFITTING OF STRUCTURES

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the concepts of durability criteria.
2. Investigate the methods and Diagnosis of concrete structures.
3. Know about the repair materials.
4. Manage strategies for repair and retrofitting of structures.
5. Know the protection techniques of structures.

CZCMPEXX SYSTEM INTEGRATION IN CONSTRUCTION ENGINEERING

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Have an idea about the system integration.
2. Understand the influence of environmental factors.
3. Learn about the Plumbing and Electricity services in construction Engineering.
4. Know about the maintenance in construction Engineering.
5. Attain knowledge about the safety systems in construction Engineering.

CZCMPEXX PROJECT FORMULATION AND APPRAISAL

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Formulate and generate the project and prepare reports for executing the work.
2. Understand the costing and cash flows of a project.
3. Assess various methods of project appraisal.
4. Understand the project financing and special schemes.
5. Know about private sector participation in Infrastructure Development Projects

CZCMPEXX CONTRACT LAWS AND REGULATIONS

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Identify and understand the types of contract
2. Implement the various processes involved in tenders.
3. Achieve awareness on powers and duty of an arbitrator.
4. Assess the legal requirements and the corresponding government laws.
5. Achieve awareness about the Labour regulations-Indian Factory Act – Tamilnadu Factory Act.

CZCMPEXX CONSTRUCTION ECONOMICS AND FINANCE MANAGEMENT

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Have an idea about the Construction Economics.
2. Understand Finance management.
3. Analyze the financial control and the need of financial management.
4. Prepare accounting for tax reporting and financial reporting purposes.
5. Know about subcontracting and purchasing.

CZCMPEXX RESOURCE MANAGEMENT AND CONTROL IN CONSTRUCTION

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the Resource Planning, Procurement and Identification.
2. Use the resource allocation and leveling techniques in single and multi-projects.
3. Implement various Systems approach in resource management.
4. Assess the resources - material, equipment, labour and time.
5. Manage time on the project and forecasting the future.

CZCMPEXX CONSTRUCTION PLANNING, SCHEDULING AND CONTROL

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the basic concepts in development of construction planning.
2. Understand the concepts in scheduling procedures.
3. Apply appropriate tools and techniques for scheduling.
4. Gain knowledge about the monitoring and accounting of projects through cost control.
5. Apply the concept of organization and Use of Project Information

CZCMPEXX ADVANCED TOPICS IN ACOUSTICS, LIGHTING AND VENTILATION

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Learn about the effects of acoustics in buildings.
2. Learn about the design of an auditorium.

3. Understand the concepts of day lighting and components of daylight factor.
4. Understand the concept of ventilation and calculation of natural ventilation.
5. Understand the concept of mechanical ventilation and air conditioning.

CZCMPEXX INFORMATION TECHNOLOGY FOR CONSTRUCTION MANAGERS

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Have an idea about computer networking and use of network.
2. Use database application in construction industry.
3. Implement the role and types of information systems.
4. Identify the development and planning of information systems.
5. Formulate and generate computer aided design and issues in information systems.

CZCMPEXX CONSTRUCTION WORKPLACE AND EMPLOYEES BEHAVIOUR

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Assess Industrial Health and Psychological problems of Employees.
2. Understand occupational Stresses.
3. Manage individual stress factors and career planning.
4. Solve the factors influencing personality and emotions.
5. Achieve awareness about formation of Group in organizations and decision making techniques.

CZCMPEXX ADVANCED CONCRETE TECHNOLOGY

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Understand the cementitious material and its properties.
2. Carry out mix design for different types of concrete.
3. Assess the properties of fresh and hardened concrete
4. Gain knowledge about the special types of concrete
5. Adopt various concreting methods.

CZCMPEXX ANALYTICAL AND NUMERICAL METHODS FOR CONSTRUCTION ENGINEERS

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Solve ordinary and partial differential equations in structural mechanics using numerical methods.
2. Gain the knowledge about the solution of nonlinear equations.
3. Understand the solution of differential equations.
4. Solve the problems using finite difference scheme.
5. Write a program to solve a mathematical problem using software.

CZCMPEXX COMPUTER APPLICATION IN CONSTRUCTION ENGINEERING AND PLANNING

COURSE OUTCOMES:

At the completion of the course, students will be able to

1. Use Computer aided Cost Estimation.
2. Apply the techniques of linear, dynamic and integer programming.
3. Generate inventory models.
4. Understand advanced planning and scheduling concepts.
5. Develop skills on sequencing problems.

CZCMPEXX ADVANCED CONSTRUCTION METHODS FOR SPECIAL STRUCTURES

COURSE OUTCOMES:

At the completion of the course, students will be able to

1. Understand the special structures and their applications.
2. Assess construction methods of Bridge structures.
3. Evaluate the construction methods of tunneling and underground structures.
4. Gain knowledge about the construction methods of marine structures.
5. Get an exposure on construction methods and techniques for high-rise buildings and power plant structures.

CZCMOEXX GEOGRAPHIC INFORMATION SYSTEM IN CONSTRUCTION ENGINEERING AND MANAGEMENT

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Understand the application of GIS software in construction projects.
2. Analyze Geo reference data and data access.
3. Gain knowledge about data structure and database management system.
4. Assess the Data Quality and its output.
5. Apply in the field for management and from case studies.

CZCMOEXX SHORING, SCAFFOLDING AND FORMWORK

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Have an idea about the detailed planning of formwork.
2. Understand the design aspects of formwork under various requirements.
3. Formulate the design of forms and shores.
4. Identify the planning and erection aspects of form work for buildings.
5. Share knowledge about the latest methods of form construction.

CZCMOEXX VALUE ENGINEERING AND VALUATION

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Know about value engineering.

2. Understand the various value analysis.
3. Analyze different methods of performing value engineering.
4. Explain about the types, purpose and factors affecting valuation.
5. Generate valuation report

CZCMOEXX ENERGY CONSERVATION TECHNIQUES IN BUILDING CONSTRUCTION COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Have an idea about energy production systems and energy economic analysis.
2. Know the environmental aspect and resource conservation.
3. Share knowledge about smart buildings and energy efficient design strategies.
4. Get an exposure on the energy efficient and environment friendly building.
5. Understand the concepts of energy management of electrical equipment.

CZCMOEXX COMPOSITE CONSTRUCTION

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Assess the concept of composite structures and sandwich construction.
2. Formulate the design of composite members.
3. Identify the types and design of connections.
4. Formulate know about the design of box girder bridges.
5. Understand seismic behaviour of composite structures

CZCMOEXX ADVANCED CONSTRUCTION ENGINEERING TECHNIQUES

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Formulate the design of underwater construction.
2. Use the construction techniques of high rise and large span structures.
3. Use the construction techniques of special structures like Silo, chimney, etc.,
4. Achieve awareness about seismic retrofitting and strengthening techniques.
5. Learn about demolition and dismantling techniques.

CZCMOEXX PREFABRICATED STRUCTURES

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Have an idea about the planning and layout of prefabrication plant and IS Code specifications.
2. Identify prefabricated structures and its connections.
3. Generate the design of roof slab, Stair case, floor slab.
4. Know about various types of wall.
5. Gain knowledge about industrial buildings and shell roofs.

CZCMOEXX PUBLIC HEALTH ENGINEERING STRUCTURES

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Get an exposure on water treatment and waste treatment systems.
2. Understand structural designs – construction below ground level.

3. Assess the design of overhead water tanks.
4. Understand the functional aspects of ground level water retaining structures.
5. Assess the design of conduits and appurtenances.

CZCMOEXX CONSTRUCTION PERSONNEL MANAGEMENT

COURSE OUTCOMES

At the end of the course, Student will be able to

1. Gain knowledge about Leadership Power, Leadership Styles, and Leadership in Administration.
2. Have an idea about the stress and its causes, performance appraisal and time management.
3. Understand the HRM.
4. Know about Relations and Compensation Management.
5. Learn about Labours Training and Development.

CZCMOEXX INDUSTRIES ORGANIZATIONAL PSHYCOLOGY

COURSE OUTCOMES:

At the end of the course, Student will be able to

1. Understand the importance and scope of industrial and organizational psychology.
2. Know about the types of psychology and its effect on the efficiency and productivity.
3. Have an idea about Organizational Psychology
4. Manage Individual and Group Behavior of workers
5. Learn about Occupational Stress.

DEPARTMENT OF CIVIL AND STRUCTURAL ENGINEERING
M.E. (STRUCTURAL ENGINEERING) (Full -Time)

SEMESTER I

CZSEPC11: Advanced Structural Analysis

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Obtain influence coefficients for hyperstatic structures
2. Apply stiffness method to discrete structures

3. Analyse planar structures by member and structure approaches
4. Solve simple boundary value problems
5. Understand the basics of finite element method.

SEMESTER I CZSEPC12: Advanced Solid Mechanics

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the fundamentals of elasticity
2. Apply the equations of elasticity
3. Solve 2D problems of elasticity
4. Solve torsion problems in bars and thin tubes
5. Understand the basics of plasticity.

SEMESTER I CZSEPC15: Research Methodology and IPR

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Identify good research problems
2. Write sound technical papers and research proposals
3. Understand the concepts of patenting
4. Understand the patent rights
5. Utilise the new developments in IPR

SEMESTER I CZSEPC16: Structural Design Lab

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the codal provisions relating to structural design and detailing.
2. Analyse symmetrical building frames subjected to gravity loading, wind loading and seismic loading using STADD PRO software.
3. Analyse unsymmetrical building frames subjected to gravity loading, wind loading and seismic loading using STADD PRO software.
4. Analyse symmetrical building frames subjected to gravity loading, wind loading and seismic loading using ETABS software.
5. Analyse unsymmetrical building frames subjected to gravity loading, wind loading and seismic loading using ETABS software.

SEMESTER I CZSEPC17: Advanced Concrete Lab

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the fundamentals of concrete mix design
2. Design concrete mixes using national and international codes of practice
3. Understand the flexural behaviour of RC beams
4. Understand the shear behaviour of RC beams
5. Conduct non-destructive testing on concrete elements.

SEMESTER I CZSEPC18: Audit Course – 1

SEMESTER II**CZSEPC21: FEM in Structural Engineering****COURSE OUTCOMES:**

At the end of the course, the student will be able to:

1. Understand the fundamentals of numerical methods
2. Solve Eigen Value problems
3. Solve ordinary and partial differential equations
4. Understand the finite difference schemes
5. Solve numerically different structural problems

SEMESTER II CZSEPC22: Structural Dynamics**COURSE OUTCOMES:**

At the end of the course, the student will be able to:

1. Understand vibration Analysis and Mathematical Modeling.
2. Evaluate numerical solution and its methods.
3. Analyze dynamics response of SDOF system using fundamental theory and equation of motion.
4. Analyze dynamics response of MDOF system using fundamental theory and equation of motion.
5. Use the available software for dynamic analysis.

SEMESTER II**CZSEPC25: Model Testing Lab****COURSE OUTCOMES:**

At the end of the course, the student will be able to:

1. Understand the response of structures.
2. Prepare the models.
3. Conduct model testing for static loading
4. Conduct model testing for free and forced vibrations
5. Evaluation of dynamic modulus

SEMESTER II**CZSEPC27: Industrial Training & Seminar - Mini Project****COURSE OUTCOMES:**

At the end of the course, the student will be able to:

1. Identify structural engineering problems reviewing available literature.
2. Study different techniques used to analyze complex structural systems.
3. Work on the solutions given and present solution by using his/her technique applying engineering principles.
4. Understand of contemporary / emerging technology.
5. Share knowledge effectively in oral and written form and formulate documents.

SEMESTER III**CZSEPE33: Project work & Viva-voce Phase – I****COURSE OUTCOMES:**

At the end of the course, the student will be able to:

1. Prepare the final report of project work in standard format for satisfactory completion of the

work.

2. Synthesize knowledge and skills previously gained and applied to an in-depth study and execution of new technical problem.
3. Select a technique from different methodologies, methods and forms of analysis to produce a suitable research design and justify their design.
4. Present the findings of their technical solution in a written report.
5. Make the presentation of their work in International/National conference or reputed journals.

SEMESTER IV

CZSEPV41: Project work & Viva-voce Phase – II

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Prepare the final report of project work in standard format for satisfactory completion of the work.
2. Synthesize knowledge and skills previously gained and applied to an in-depth study and execution of new technical problem.
3. Select a technique from different methodologies, methods and forms of analysis to produce a suitable research design and justify their design..
4. Present the findings of their technical solution in a written report.
5. Make the presentation of their work in International/National conference or reputed journals.

M.E. (STRUCTURAL ENGINEERING) - PART TIME

PROGRAMME ELECTIVES

CZSEPEXX THEORY OF THIN PLATES AND SHELLS

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Understand the basic concept of plates and shells.
2. Use analytical methods for the solution of thin plates.
3. Use analytical methods for the solution of shells.
4. Apply the numerical techniques and tools for the complex problems in thin plates.
5. Apply the numerical techniques and tools for the complex problems in shells.

CZSEPEXX THEORY AND APPLICATIONS OF CEMENT COMPOSITES

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Formulate constitutive behaviour of composite materials – Ferro-cement, SIFCON and Fibre Reinforced Concrete - by understanding their strain- stress behaviour.
2. Classify the materials as per orthotropic and anisotropic behaviour.
3. Estimate strain constants using theories applicable to composite materials.
4. Analyse and design structural elements made of cement composites.
5. Gain the knowledge about composite materials.

CZSEPEXX THEORY OF STRUCTURAL STABILITY

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Understand the criteria for design of structures.
2. Determine stability of columns.
3. Determine stability of frames.
4. Determine stability of beams and plates
5. Use stability criteria and concepts for analysing discrete and continuous systems.

CZSEPEXX ANALYTICAL AND NUMERICAL METHODS FOR STRUCTURAL ENGINEERING

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Solve ordinary and partial differential equations in structural mechanics using numerical methods.
2. Gain the knowledge about the solution of nonlinear equations.
3. Understand the solution of differential equations.
4. Solve the problems using finite difference scheme.
5. Write a program to solve a mathematical problem using software.

CZSEPEXX STRUCTURAL HEALTH MONITORING

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Diagnosis the distress in the structure understanding the causes and factors.
2. Assess the health of structure using static field methods.
3. Assess the health of structure using dynamic field tests.
4. Suggest repairs and rehabilitation measures of the structure
5. Understand the structures monitoring based on strength using different types of methods.

CZSEPEXX STRUCTURAL OPTIMIZATION

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Solve the classical external problems
2. Use Variational principle for optimization
3. Develop the linear programming
4. Apply optimization techniques to structural steel and concrete members.
5. Design using frequency constraint.

CZSEPEXX ADVANCED STEEL DESIGN

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Understand the knowledge about properties of steel
2. Design steel structures/ components by different design processes.
3. Analyze the beams and columns for stability and strength, and drift.
4. Understand the design of beams.
5. Design welded and bolted connections.

CZSEPEXX DESIGN OF FORMWORK

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Select proper formwork, accessories and material.
2. Design the form work for Beams, Slabs, columns, Walls and Foundations.
3. Design the form work for Special Structures.
4. Understand the working of flying formwork.
5. Judge the formwork failures through case studies.

CZSEPEXX DESIGN OF HIGH RISE STRUCTURES

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Analyse, design and detail Transmission/ TV tower, Mast and Trestles with different loading conditions.
2. Analyse, design and detail the RC and Steel Chimney.
3. Analyse, design and detail the tall buildings subjected to different loading conditions using relevant codes.
4. Design and detail the tall buildings subjected to firefighting provision using relevant codes.
5. Analyse and design the tall buildings using relevant software.

CZSEPEXX DESIGN OF MASONRY STRUCTURES

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Understand the masonry design approaches.
2. Analyse Reinforced Masonry Members.
3. Determine interactions between members.
4. Determine shear strength and ductility of Reinforced Masonry members.
5. Check the stability of walls and Perform elastic and inelastic analysis of walls.

CZSEPEXX DESIGN OF ADVANCED CONCRETE STRUCTURES

COURSE OUTCOMES:

At the end of the course, students will be able to:

1. Determine the deflection and crack width of flexural members using code provisions.
2. Understand the redistribution moments in R. C. Beams.
3. Design the deep beams as per relevant codes.

4. Analyse the special structures by understanding their behaviour.
5. Design and prepare detail structural drawings for execution citing relevant IS codes.

CZSEPEXX ADVANCED DESIGN OF FOUNDATIONS

COURSE OUTCOMES:

At the end of the course, students will be able to:

1. Understand the knowledge about planning of soil exploration.
2. Design the shallow foundations for construction engineering structures
3. Design the pile foundations for construction engineering structure
4. Design the well foundations for construction engineering structures
5. Understand the knowledge about open cuts in different soils.

CZSEPEXX SOIL STRUCTURE INTERACTION

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Understand soil structure interaction concept and complexities involved.
2. Evaluate soil structure interaction for different types of structure under various conditions of loading and subsoil characteristics.
3. Prepare comprehensive design oriented computer programs for interaction problems based on theory of sub grade reaction such as beams, footings, rafts etc.
4. Analyze different types of frame structure founded on stratified natural deposits with linear and non-linear stress-strain characteristics.
5. Evaluate action of group of piles considering stress-strain characteristics of real soils.

CZSEPEXX DESIGN OF INDUSTRIAL STRUCTURES

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Design Steel Gantry Girders.
2. Design Steel Portal, Gable Frames.
3. Design Steel Bunkers and Silos.
4. Design Chimneys and Water Tanks.
5. Design prestressed steel water tank.

CZSEPEXX DESIGN OF PRESTRESSED CONCRETE STRUCTURES

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Find out losses in the prestressed concrete. Understand the basic aspects of prestressed concrete fundamentals, including pre and post-tensioning processes.
2. Analyse and design the prestressed concrete beams.
3. Analyse and design of prestressed concrete pipes and columns
4. Analyse and design the deck slab and beam/girders.
5. Analyse and design the composite prestressed concrete members.

CZSEPEXX ANALYTICAL AND FINITE ELEMENT ANALYSIS OF LAMINATED COMPOSITE PLATES

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Analyse the rectangular composite plates using the analytical methods.
2. Determine the analytical solutions for bending of laminated plates using FSTP.

3. Analyse the composite plates using advanced finite element method.
4. Gain the knowledge about the laminated composite plates.
5. Develop the computer programs for the analysis of composite plates.

CZSEPEXX FRACTURE MECHANICS OF CONCRETE STRUCTURES

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Identify and classify cracking of concrete structures based on fracture mechanics.
2. Implement stress intensity factor for notched members
3. Apply fracture mechanics models to high strength concrete and FRC structures.
4. Compute J-integral for various sections understanding the concepts of LEFM.
5. Gain the knowledge about the fracture mechanics of concrete structures.

CZSEPEXX DESIGN OF PLATES AND SHELLS

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Analyse and design the folded plate systems.
2. Develop the shell equation for folded plates
3. Develop the approximate solutions for folded plates.
4. Analyse and design the cylindrical shells.
5. Analyse and design the double cylindrical shells.

OPEN ELECTIVES

CZSEOEXX BUSINESS ANALYTICS

COURSE OUTCOMES:

At the end of the course, students will be able to

1. Students will demonstrate knowledge of data analytics.
2. Students will demonstrate the ability of think critically in making decisions based on data and deep analytics.
3. Students will demonstrate the ability to use technical skills in predicative and prescriptive modelling to support business decision-making.
4. Students will demonstrate the ability to translate data into clear, actionable insights.
5. To become familiar with processes needed to develop, report and analyses business data.

CZSEOEXX INDUSTRIAL SAFETY

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Apply safety practices.
2. Inspect maintenance operations.
3. Trace faults in equipments.
4. Do event tree and fault tree analyse
5. Understand the concept and importance of repair recycle.

CZSEOEXX OPERATIONS RESEARCH

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Apply the dynamic programming to solve problems of discreet and continuous variables.

2. Apply the concept of non-linear programming
3. Carry out sensitivity analysis
4. Model the real world problem and simulate it.
5. Understand the concept and importance of scheduling and sequencing.

CZSEOEXX COST MANAGEMENT OF ENGINEERING PROJECTS

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand cost accounting knowledge, such as terminology and fundamental principles and methods.
2. Plan project execution.
3. Plan project cost control.
4. Apply TQM practices.
5. Apply course material to new situations.

CZSEOEXX COMPOSITE MATERIALS

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand mechanical behavior of composites.
2. Familiar with manufacturing of polymer matrix composites.
3. Do the design with composites.
4. Know about the manufacturing of metal matrix composites.
5. Determine stresses and strains relation in composite materials.

CZSEO32 WASTE TO ENERGY

COURSE OUTCOMES:

At the end of the course, the student will be able to:

1. Understand the concept of harnessing energy from waste.
2. Know the design, construction and operation of biomass gasifiers.
3. Come know about bio diesel, its production and applications.
4. Gain knowledge about Biomass Combustion.
5. Gain knowledge about Biogas.

AUDIT COURSES

CZSEACXX ENGLISH FOR RESEARCH PAPER WRITING

COURSE OUTCOMES:

At the end of the course, Students will be able to

1. Understand that how to improve your writing skills and level of readability
2. Learn about what to write in each section.
3. Understand the skills needed when writing a Title.
4. Understand the skills when writing the discussion
5. Ensure the good quality of paper at very first-time submission.

CZSEACXX DISASTER MANAGEMENT

COURSE OUTCOMES:

At the end of the course, Students will be able to

1. Demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response.
2. Evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.
3. Understand the standards of humanitarian response and practical relevance in specific types of disasters and conflict situations.
4. Understand the strengths of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in.
5. Understand the weaknesses of disaster management approaches, planning and programming in different countries, particularly their home country or the countries they work in.

CZSEACXX SANSKRIT FOR TECHNICAL KNOWLEDGE**COURSE OUTCOMES:**

At the end of the course, Students will be able to

1. Understanding basic Sanskrit language
2. Ancient Sanskrit literature about science & technology can be understood
3. Being a logical language will help to develop logic in students
4. Understand the technical information about Sanskrit Literature
5. Understand the Technical concepts of other language.

CZSEACXX VALUE EDUCATION**COURSE OUTCOMES:**

At the end of the course, Students will be able to

1. Knowledge of self-development
2. Learn the importance of Human values
3. Developing the overall personality
4. Understand the self-destructive habits
5. Know about the self-management and good health

CZSEACXX CONSTITUTION OF INDIA**COURSE OUTCOMES:**

At the end of the course, Students will be able to:

1. Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
2. Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
3. Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution.
4. Discuss the passage of the Hindu Code Bill of 1956.
5. Understand the role of election commission.

CZSEACXX PEDAGOGY STUDIES

COURSE OUTCOMES:

At the end of the course, Students will be able to understand:

1. Pedagogical practices being used by teachers in formal and informal classrooms in developing countries.
2. Evidence on the effectiveness of these pedagogical practices.
3. Teacher education (curriculum and practicum) and the school curriculum and guidance materials that best support effective pedagogy.
4. The barriers to learning.
5. The research gaps and future directions.

CZSEACXX STRESS MANAGEMENT BY YOGA

COURSE OUTCOMES:

At the end of the course, Students will be able to:

1. Develop healthy mind in a healthy body thus improving social health also
2. Improve efficiency
3. Understand the various Yoga poses.
4. Know about the regulation of breathings.
5. Know about the types of pranayama.

CZSEACXX PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS

COURSE OUTCOMES:

At the end of the course, Students will be able to

1. Study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life.
2. The person who has studied Geeta will lead the nation and mankind to peace and prosperity.
3. Study of Neetishatakam will help in developing versatile personality of students.
4. Understand the ability to do day to day duty and work.
5. Study of Neetishatakam will help in developing rise himself in society.