COURSE OUTCOMES

(R 2013)

Branch:ME
Structural

Course Code C101- Course Name -Advanced Mathematical Methods

C101.1	Application of Laplace and Fourier transforms to initial value, initial–boundary value and boundary value problems in Partial Differential Equations
C101.2	Maximizing and minimizing the functional that occur in various branches of Engineering Disciplines
C101.3	Construct conformal mappings between various domains and use of conformal mapping in studying problems in physics and engineering particularly to fluid flow and heat flow problems.
C101.4	Understand tensor algebra and its applications in applied sciences and engineering and develops ability to solve mathematical problems involving tensors.
C101.5	Competently use tensor analysis as a tool in the field of applied sciences and related fields.

Course Code C102- Course Name : Concrete Structures

C102.1	To make the students be familiar with the limit state design of RCC beams and columns
C102.2	To design special structures such as Deep beams, Corbels, Deep beams, and Grid floors
C102.3	To make the students confident to design the flat slab as per Indian standard, yield line theory and strip method.
C102.4	To design the beams based on limit analysis and detail the beams, columns and joints for ductility.
C102.5	On completion of this course the students will have the confidence to design various concrete structures and structural elements by limit state design and detail the same for ductility as per codal requirements.

Course Code C103 - Course Name Structural Dynamics

C103.1	To expose the students the principles and methods of dynamic analysis of structures and to prepare them for designing the structures for wind, earthquake and other dynamic loads.
C103.2	After completion of the course the students will have the knowledge of vibration analysis of systems/structures with different degrees of freedom and they know the method of damping the systems.
C103.3	Dynamic response of continuous system
C103.4	solve problems using the direct method of integration of dynamic response
C103.5	Mode superposition technique and response spectrum method of dynamics analysis of system

Course Code C104 - Course Name: Theory of Elasticity and Plasticity

C104.1	To understand the concept of 3D stress, strain analysis and its applications.
C104.2	On completion of this course the students will be familiar to the concept of elastic analysis of plane stress and plane strain problems, beams on elastic foundation and torsion on non- circular section
C104.3	They will also have sufficient knowledge in various theories of failure and plasticity
C104.4	Expose the students to torsion of circular and non circular section
C104.5	Methods of analysis of beam in elastic foundation

Course Code C105 -Course Name: Maintenance and Rehabilitation of Structures

C105.1	To study the damages, repair and rehabilitation of structures
C105.2	Various types of cracks in concrete structure
C105.3	Study on moisture penetration remedial treatment and measures
C105.4	Knowledge on various distress in steel and concrete structures
C105.5	Different methods of strengthening of existing member

Course Code C106 -Course Name: Advanced Concrete Technology

C106.1	To study the properties of concrete Making
C106.2	Test on concrete
C106.3	Knowledge on Mix design of concrete
C106.4	Various types of concrete

Course CodeC107Course Name:Finite Element Analysis of Structures

C107.1	To study the basics of the Finite Element Technique, a numerical tool for the solution of different classes of problems.

C107.2	On completion of this course, the students will know the concept of finite element analysis and enable to analyze framed structure, Plate and Shells and modify using recent softwares.
C107.3	Acquire knowledge on Finite element Analysis of plate
C107.4	Acquire knowledge on Finite element Analysis of shell
C107.5	Acquire knowledge on Finite element Analysis of framed structures

Course Code C108 - Course Name:Experimental Techniques and instrumentation

C108.1	To learn the principles of measurements of static and dynamic response of structures and carryout the analysis of results.
C108.2	At the end of this course students will know about measurement of strain, vibrations and wind blow
C108.3	They will be able to analyze the structure by non-destructive testing methods
C108.4	Direct and indirect method of model analysis of structures
C108.5	Exposure to choice on experimental stress analysis methods

Course Code C109 -Course Name: Steel Structures

C109.1	To study the behaviour of members and connections, analysis and design of Industrial buildings and roofs, chimneys.
C109.2	Study the design of with cold formed steel and plastic analysis of structures.
C109.3	At the end of this course students will be in a position to design bolted and welded connections in industrial structures.
C109.4	They also know the plastic analysis and design of light gauge steel structures.
C109.5	Aseismic design of steel building

Course Code C110- Course Name:Earthquake Analysis and Design of Structures

C110.1	To study the effect of earthquakes, analysis and design of earthquake resistant Structures.
C110.2	At the end of this course the students will be able to understand the causes and effect of earthquake.
C110.3	They will be able to design masonry and RC structures to the earthquake forces as per the recommendations of IS codes of practice.
C110.4	Gain knowledge on vibration control Techniques
C110.5	Design earthquake resistant design of RC building using IS13920 1993

Course Code C111 - Course Name:Design of Bridges

C111.1	Design of short Span RC Bridges
C111.2	Design of long span RC Bridges
C111.3	Design of prestressed concrete bridges
C111.4	Design of steel bridges
C111.5	Design of bearings and Substructures

Course Code C112 -Course Name: Prestressed Concrete

C112.1	Principle of prestressing, analysis and design of prestressed concrete structures
C112.2	On completion of this course students will have sufficient knowledge on various methods of prestressing and the concepts of partial pre-stressing.
C112.3	They will be in a position to design beams, pipes, water tanks, posts and similar structures.
C112.4	Prestressed Cylindrical tank design

Course Code C113 - Course Name:Advanced Structural Engineering Laboratory

C113.1	On completion of this laboratory course students will be able to cast and test RC beams for strength and deformation behaviour
C113.2	They will be able to test dynamic testing on steel beams, static cyclic load testing of RC frames and non-destruction testing on concrete.
C113.3	Fabrication, casting and testing of reinforced concrete column subjected to concentric and eccentric loading.
C113.4	Testing of simply supported steel beam for strength and deflection behaviour.
C113.5	Dynamic Response of cantilever steel beam

Course Code C201- Course Name:Design of Steel Concrete Composite structures

C201.1	To develop an understanding of the behaviour and design concrete composite elements and structures.

C201.2	At the end of this course students will be in a position to design composite beams, columns, trusses and box-girder bridges including the related connections.
C201.3	They will get exposure on case studies related to steel-concrete constructions of buildings.
C201.4	Dynamic behaviour of steel concrete composite construction

Course Code C202 -Course Name:Industrial Structures

C202.1	To study the requirements, planning and design of Industrial structures.
C202.2	On completion of this course student will be able to plan industrial structures for functional requirements.
C202.3	They will be able to design various structures such as Bunkers, Silos, Cooling Towers, Chimneys, and Transmission Towers with required foundations.
C202.4	Exposure to design of turbo generator foundation
C202.5	Study on various components of industrial building

Course Code C203 -Course Name: Prefabricated structures

C203.1	To Study the design principles, analysis and design of elements
C203.2	At the end of this course student will have good knowledge about the prefabricated elements and the technologies used in fabrication and erection
C203.3	They will be in a position to design floors, stairs, roofs, walls and industrial buildings, and various joints for the connections.
C203.4	study on Types of wall panels and shear walls existing in building

Course Code C204 -Course Name:Practical Training (4 weeks)

C204.1	To train the students in the field work so as to have a firsthand knowledge of practical problems related to Structural Engineering in carrying out engineering tasks.
C204.2	To develop skills in facing and solving the field problems
C204.3	They are trained in tackling a practical field/industry orientated problem related to Structural Engineering.

Course Code C205 -Course Name:Seminar

C205.1	To work on a specific technical topic in Structural Engineering and acquire the skills of written and oral presentation.
C205.2	To acquire writing abilities for seminars and conferences.
C205.3	The students will be trained to face an audience and to tackle any problem during group discussion in the Interviews.

Course Code C206 -Course Name: Project Work (Phase I)

C206.1	To identify a specific problem for the current need of the society and collecting information related to the same through detailed review of literature
C206.2	To develop the methodology to solve the identified problem.
C206.3	To train the students in preparing project reports and to face reviews and viva-voce examination.
C206.4	At the end of the course the students will have a clear idea of his/her area of work and they are in a position to carry out the remaining phase II work in a systematic way.

Course Code C207- Course Name:Project work (Phase II)

C207.1	To solve the identified problem based on the formulated methodology.
C207.2	To develop skills to analyze and discuss the test results, and make conclusions.
C207.3	On completion of the project work students will be in a position to take up any challenging practical problem and find better solutions.