# Department of Civil Engineering

## NECG R20 Course Outcomes

## IV B.Tech Sem-I

| S.NO | Course Code | Subject | Course Outcomes |
|---|---|---|---|
| 1. | 20CE2014 | Design of Steel Structures | Explain the terms, design philosophies and relevant IS codes & Design the Bolted and Welded connections. |
| | | | Design & Detailing of Tension, compression & roof trusses under different conditions. |
| | | | Design & Detailing of laterally supported and unsupported beams. |
| | | | Design & Detailing of Built-up compression members and Column bases. |
| | | | Design & Detailing of components of Plate and Gantry girder. |
| 2. | 20CE2015 | Estimation And Quantity Surveying | Estimate the various structural elements |
| | | | Illustrate various methods of detailed estimates for different structures |
| | | | Explain the specifications |
| | | | Analyze the Rate analysis |
| | | | Summarize the valuation of buildings |
| 3. | 20CE4018 | Professional Elective-IV(Municipal Solid Waste Management) MOOCS | Understand the solid waste management. |
| | | | Study of comparative assessment of waste generation and composition of developing and developed nations. |
| | | | Understand the transportation and disposal of solid waste (waste disposal). |
| | | | Study of product recovery and recycling of solid waste. |
| | | | Understand Recovery Of Biological Conversion Products |
| 4. | 20CE4023 | Professional Elective-V(EIA) | Classify the different methodologies of EIA and conditions under which a particular method can be adopted. |
| | | | Find conservation areas and plant species at risk. |
| | | | Illustrate the important plant or animal groups. |

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| | | | Determine how well the environmental management systems and equipment are performing. Verify compliance with the relevant national, local or other laws and regulations. |
| | | | Prepare EIA reports. |

## III B.Tech Sem-I

| S.NO | Course Code | Subject | Course Outcomes |
|---|---|---|---|
| 1. | 20CE2008 | Design of Reinforced Concrete Structures | Apply clauses of IS:456-2000 code design specifications for different structural designs & Design the beams with different end conditions |
| | | | Understand and Design the beams for shear, torsion and bond |
| | | | Design one way slabs and two way slabs with different end conditions |
| | | | Design the RCC columns with combined bending and compression |
| | | | Design foundations and stair cases of different shapes |
| 2. | 20CE2009 | Geotechnical Engineering-II | Understand the necessity of soil exploration. |
| | | | To enable the student to analyze slopes of stability. |
| | | | Compute Earth pressures acting on the retaining walls. |
| | | | Understand the design of shallow foundations. |
| | | | Design the well foundations and Pile foundations. |
| 3. | 20CE2010 | Water Resources Engineering | Understand of the concepts of hydrologic processes, Precipitation and Curves . |
| | | | Describe the process, measurement and estimation of hydrological components: Evaporation, Infiltration. |
| | | | Develop runoff and Hydrograph estimation and apply to engineering practices. |
| | | | Understand and analysis of ground water hydrology. |
| | | | Understand the design steps of reservoir. |
| 4. | 20CE4002 | Pavement Materials (Professional Elective-I) | Understand the Mechanical properties of soil as pavement material. |
| | | | Describe aggregate strength properties by various tests. |
| | | | Know about importance Bitumen as a binding agent. |
| | | | Design cold and hot recycled bituminous mixtures. |

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| | | | Understand about properties of cement as pavement material. |
| | | | Developing knowledge on detailing of building components in CAD software. |
| | | | Planning the plan and sectional views for Residential buildings in CAD software. |
| | | | Drawing plan and sectional views for Hospital buildings in CAD software. |
| | | | Planning the plan and sectional views for Industrial buildings in CAD software. |

## III B.Tech Sem-II

| S.NO | Course Code | Subject | Course Outcomes |
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| 1. | 20CE2011 | Concrete Technology | Illustrate the types of cements and manufacturing of concrete |
| | | | Explain testing of fresh concrete and Admixtures |
| | | | Describe the elasticity, creep and shrinkage of the hardened concrete |
| | | | Summarize the special concretes and Non_ Destructive testing |
| | | | Apply the ACI and IS 10262 methods to design the mix proportions of concrete. |
| 2. | 20CE2012 | Environmental Engineering | Identify the sources of water and intake works for collection. Be able to forecast and calculate water demand. |
| | | | Understands the stages and process of water treatment methods. |
| | | | Understand the various methods of conveyance and distribution of water. Be able to design pipe-networks by hardy-cross method. Understand various joints, valves and house service connections. |
| | | | Analyze the waste water collection system & its characteristics. |
| | | | Explain the processing and management of waste water and sludge treatment. |
| 3. | 20CE2013 | Highway Engineering | Interpreting the concept of highway planning and alignment. |
| | | | Executing the geometric design of highway. |
| | | | Annotating the types of highway materials and construction. |
| | | | Integrating the concept of pavement design. |
| | | | Exemplifying the concept of traffic engineering. |

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| 4. | **20CE4009** | **Irrigation Engineering** | Understand irrigation systems & methods of application of water. |
| | | | Estimate the irrigation water requirement of crops |
| | | | Design channels using Kennedy's and Lacey's regime theory |
| | | | Design the lined canals. |
| | | | Understand the management of canal irrigation |
| 5. | **20CE4011** | **Prestressed Concrete** | Understand the development & methods of prestressing. |
| | | | Understand the losses in prestressing. |
| | | | Analyse and design the sections to withstand flexure. |
| | | | Design various prestressed concrete structural elements for shear. |
| | | | Control deflections in prestressed concrete beams. |

## II B.Tech Sem-I

| S.NO | Course Code | Subject | Course Outcomes |
|---|---|---|---|
| **1.** | **20ES1013** | **Fluid Mechanics** | Students able to identify the properties of fluids, Pressure and Understand the importance of flow measurement & Statics. |
| | | | Students able to Determine the hydrostatic forces and buoyancy forces on different bodies. |
| | | | Students able to understand the kinematics of fluid's with different equations like continuity equation etc. |
| | | | Students able to find the velocity & discharge by using orifices, notches & weirs. |
| | | | Students able to understand the friction, minor & major losses in pipes and its experimental procedures. |
| **2.** | **20CE2001** | **Building Construction and Planning** | Students able to understand the different types of foundation, masonry, Floors |
| | | | Students able to understand the different types of Arches, Doors and Windows, Lintels and Roof |
| | | | Students able to demonstrate the causes of DPC and treatment of water leakages |
| | | | Students able to learn the different building Bylaws and Building planning |
| | | | Students able to memorizes Learn the different planning of building and Residential building |
| 3. | **20CE2002** | **Strength of Materials** | Students able to define the concepts of simple stresses and strains and estimation of stresses for Bars of varying sections, composite bars and Temperature stresses. |
| | | | Examine the variation of bending moment and shear force at any section and identify the position and the magnitude of |

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| | | | maximum and minimum values for all practical loading cases |
| | | | Assess Bending and shear stresses in beams subjected to different loadings for different machine parts |
| | | | Ability to transform the state of stress at a point and determine the principal and maximum shear stresses using equations as well as the Mohr's circle |
| | | | Explain the types of column and apply the Euler's theory to find the parameters for different end condition. |
| 4. | **20CE2003** | **Surveying** | Students able to generalized the basic concept of surveying and chain surveying |
| | | | Students able to identify the methods of compass surveying and Plane Table surveying |
| | | | Students able to calculate the levelling surveying |
| | | | Students able to compute the Theodolite and Traversing surveying |
| | | | Students able to measure the contouring & computation of areas and volumes |

## II B.Tech Sem-II

| S.NO | Course Code | Subject | Course Outcomes |
|---|---|---|---|
| **1.** | **20CE2004** | **Geotechnical Engineering-I** | Characterize and classify soils based on different limits. |
| | | | Determine the permeability of soils and stratified soils. |
| | | | Compute seepage stresses in soils under various loading conditions. |
| | | | Understand the consolidations and settlement of soils. |
| | | | Calculate the shear strength of soil under different drainage conditions. |
| **2.** | **20CE2005** | **Hydraulics engineering** | Understand characteristics of Types of channel flows and channels |
| | | | Analyze characteristics for uniform and non-uniform flows in open channels. |
| | | | Design different types of turbines and impact of jets |
| | | | Design of axial inward reaction Turbines |
| | | | Analyze the Rayleigh's & Buckingham's pi theorems |
| 3. | **20CE2006** | **Structural Analysis** | Analyze various statically indeterminate structures like continuous beams for various loading conditions. |
| | | | Sketch shear force and bending moment diagrams of continuous beams and frames by slope deflection & moment distribution method. |
| | | | Analyze the continuous beams by Flexibility Matrix method. |

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| | | | Analyze the continuous beams by Stiffness Matrix method. |
| | | | Determine the internal forces in Three-hinged arches subjected to various loading conditions & Sketch the influence line diagrams. |
| 4. | **20CE2007** | **Surveying & Geomatics** | Understand the principles and purpose of Tacheometry in finding out the constants. |
| | | | Familiarize the concept of Triangulation and setting out for different works. |
| | | | Understand the terms, elements and classify the different types of curves. |
| | | | Summarize the basic principles of GPS, Total station & EDM in Civil Engineering |
| | | | Illustrate the basic principles of Remote sensing and Geographical Information systems. |
| **5.** | **20MC8002** | **Environmental Science** | Types of natural resources |
| | | | Describe ecosystem and biodiversity its con |
| | | | Explain the environmental pollution and solid waste management |
| | | | Describe the social issues and ACTs on environment |
| | | | Explain human population effects on environment |

**I Year, Sem-II**

| S.NO | Course Code | Subject | Course Outcomes |
|---|---|---|---|
| **1.** | **20ES1006** | **Engineering Mechanics** | Find the resultant of coplanar force system and the unknown forces in determinate structures using equilibrium conditions |
| | | | Develop the knowledge of static and dynamic frictions of a bodies. |
| | | | Solve the problems of centriod and moment of inertia by the composite areas. |
| | | | Develop the knowledge of static and dynamic behavior of the bodies |
| | | | Determine the axial forces in a members of a determinate trusses |
| **2.** | **20ES1005** | **Building Materials Science** | Understand the characteristics of various building materials such as stone & clay products. |
| | | | Evaluate the properties of binding materials for their suitability |

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| | | | in building construction. |
| | | | Apply the ferrous and non ferrous materials in building construction. |
| | | | Understand the construction procedure of carious building components such as wood & steel masonry. |
| | | | Understand the installation of electrical, sanitary and plumbing fittings in buildings. |

**HOD**