

## **Department of Civil Engineering**

**CLASS: SECOND YEAR**

**SUBJECT/CODE: BUILDING TECHNOLOGY AND MATERIALS [201001]**

1. Identify types of building and basic requirements of building components.
2. Explain types of masonry, formwork, casting procedure and necessity of underpinning and scaffolding.
3. Elucidate different types of flooring and roofing materials.
4. Describe types of doors, windows, arches and lintel.
5. Illustrate means of vertical circulation and protective coatings.
6. Explain different materials especially eco-friendly materials and safety measures to be adopted at any construction site.

**SUBJECT/CODE: ENGINEERING MATHEMATICS III [207001]**

1. Solve higher order linear differential equations and apply to civil engineering problems such as bending of beams and whirling of shafts.
2. Solve system of linear equations using direct and iterative numerical techniques and develop solutions to ordinary differential equations using single step and multistep methods applied to structural systems.
3. Apply statistical methods like correlation, regression analysis in analyzing and interpreting experimental data and probability theory applied to construction management.
4. Perform vector differentiation and integration, analyze the vector fields and apply to fluid flow problems.
5. Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations.

**SUBJECT/CODE: SURVEYING [201006]**

1. Operate and use surveying equipment.
2. Draw plan or map of the existing permanent features on the ground.
3. Classify the ground features from the map or plan.
4. Analyze temporary adjustments and check permanent adjustments of the Theodolite.

**SUBJECT/CODE: STRENGTH OF MATERIALS [201002]**

1. Compute different type of stresses in determinate, indeterminate, homogeneous and composite structures.
2. Develop bending and shear stress diagram.
3. Determine the torsional stresses and stresses due to strain energy for different loading conditions.
4. Explain the concept of principal stresses due to combined loading and able to compare the values of analytical and graphical (Mohr's circle) method.
5. Plot loading diagram, Shear Force Diagram (SFD) and Bending Moment Diagram (BMD).
6. Analyze axially and eccentrically loaded column

**SUBJECT/CODE: GEOTECHNICAL ENGINEERING [201003]**

1. 1) Differentiate the different types of soil and their engineering properties and classify them;
2. 2) Determine the soil properties in laboratory and develop a proficiency in handling experimental data;
3. Understand of the concept of effective stress and its influence on soil behavior.
4. Develop an understanding of the influence of water flow on the engineering behaviour of soils.
5. Analyze engineering properties like compaction, permeability, soil shear strength.
6. Compute the lateral thrust due to backfill on the retaining walls.
7. Classify soil slopes and identify their modes of failure.

**SUBJECT/CODE: AUDIT COURSE**

1. Different types of civil engineering industries and their functioning.
2. Applications of different documents, drawings, regulations in Civil Engineering industries.
3. Code of ethics to be practiced by a Civil Engineer and understand duties and responsibilities as a Civil Engineer.
4. Different safety practices on the site.

**SUBJECT/CODE: FLUID MECHANICS-I [201004]**

1. Use fluid properties, dimensional analysis for solving problems of fluid flow.
2. Solve fluid statics problems.
3. Measure fluid pressure.
4. Calibrate discharge measuring instrument like venturimeter, orifice meter.
5. Distinguish between various types of fluid flows and find the fluid velocity using principles of Kinematics and Dynamics.
6. Design pipes to carry particular amount of discharge.

**SUBJECT/CODE: ARCHITECTURAL PLANNING AND DESIGN OF BUILDINGS [201005]**

1. Make use of principles of planning and principles of architectural Planning.
2. Analyze the available primary or secondary data and plan different types of structures considering futuristic need of an area.
3. Improve the status of existing structures by proposing appropriate green measures.
4. Plan effectively various types of buildings according to their utility with reference to different codes.
5. Understand and resolve contemporary issues at multi-dimensional functional levels.

**SUBJECT/CODE: STRUCTURAL ANALYSIS I [201008]**

1. Understand the basic concept of static and kinematic indeterminacy, slope and deflection of determinate and indeterminate beams for analysis of structures.
2. Analyze indeterminate beams structures and frames.
3. Evaluate determinate and indeterminate trusses and its application in the field.
4. Apply influence line diagrams for the analysis of structures under moving load.
5. Analyze two and three hinged arches and its application.
6. Apply plastic analysis for indeterminate steel structures by limits state method.

**SUBJECT/CODE: ENGINEERING GEOLOGY [201009]**

1. Explain the basic concepts of engineering geology.
2. Differentiate between the different rock types, their inherent characteristics and their application in civil engineering.

3. Understand physical properties, mechanical properties of the minerals and their application in civil engineering. .
4. Identify favorable and unfavourable conditions for the buildings, roads, dam, tunneling etc through the rocks.
5. Explain mass wasting processes, effects of mass wasting process on the civil engineering structures and remedial measures.
6. Interpret geohydrological characters of the rocks present at the foundations of the dams, percolation tanks, tunnels.
7. Understand Seismic activities and its effect on the civil engineering construction.
8. Identify geological hazards and presence of ground water.

**SUBJECT/CODE: CONCRETE TECHNOLOGY [201007]**

1. Understand chemistry, properties, and classification of cement, fly ash, aggregates and admixtures, and hydration of cement in concrete.
2. Prepare and test the fresh concrete.
3. Test hardened concrete with destructive and nondestructive testing instruments.
4. Get acquainted to concrete handling equipments and different special concrete types.
5. Design concrete mix of desired grade.
6. Predict deteriorations in concrete and repair it with appropriate methods and techniques.

**SUBJECT/CODE: 201010: SOFT SKILL [201010]**

1. Make use of techniques for self-awareness and self-development.
2. Apply the conceptual understanding of communication into everyday practice.
3. Understand the importance of teamwork and group discussions skills.
4. Develop time management and stress management.
5. Apply business etiquette skills effectively an engineer requires.

**SUBJECT/CODE: AUDIT COURSE [Road Safety Management]**

1. Show changes in awareness levels, knowledge and understanding.
2. Demonstrate a change in attitudes / behavior e.g. against drink-drive.

3. Utilize remedial education for those who make mistakes and for low level offences where this is more effective than financial penalties and penalty points.
4. Improve road safety together leading to casualty reduction