

Course Outcomes (Cos)

Surveying & Geomatics (BTCE-301- 18)

Course Outcomes

The course will enable the students to:

1. Understand the concept, various methods and techniques of surveying
2. Compute angles, distances and levels for given area
3. Apply the concept of tachometry survey in difficult and hilly terrain.
4. Select appropriate instruments for data collection and survey purpose
5. Analyze and retrieve the information from remotely sensed data and interpret the data for survey.
6. Understand the concepts related to GIS and GPS and analyze the geographical data.

Solid Mechanics (BTCE-302-18)

Course Outcomes

1. Understand the concept of static equilibrium, deformations, and material constitutive behavior.
2. Describe the concepts of stress, strain and elastic behaviour of materials including Hooke's law relationships to analyze structural members subjected to tension, compression and torsion.
3. Apply the concept of Mohr's circle in the stress/strain calculations.
4. Develop SFD and BMD for different type of beams subjected to different types of loads
5. Plot elastic curves for beams undergoing displacements under different loadings
6. Understand the behavior of columns and struts under axial loading.

Fluid Mechanics (BTCE-303-18)

Course Outcomes

After completion of the course, student is able to

1. Understand the basic terms used in fluid mechanics and its broad principles
2. Estimate the forces induced on a plane/ submerged bodies
3. Formulate expressions using dimensionless approach and able to determine design parameters by creating replica of prototype at appropriate scale.
4. Apply the continuity, momentum and energy principles and design the pipelines used for water supply or sewage under different situation.
5. Calculate drag force exerted by fluid on the body of varying shapes and able to minimize them.
6. Design and addressing problems in open channel (lined/ unlined) of different shapes and size optimally as per site condition

Mathematics-III (Transform & Discrete Mathematics) (BTAM-301- 18)

Course Outcomes:

1. Understand the basic results on vector function, their properties and fields so as to apply them for solving problems of engineering.

2. Find length, area and volume using integral calculus that is an important application in engineering.
3. Solve some real problems in engineering using Gauss Divergence and Stokes' theorem
4. To formulate Laplace transform of functions and its applications to solve differential equations that form real life problems in engineering.
5. To formulate Fourier Series, its properties and its applications to solve problems in engineering.

Basic Electronics & applications in Civil Engineering (BTEC- 305- 18)

Course Outcomes:

After undergoing this course students will be able to

1. Understand construction of diodes and their rectifier applications.
2. Appreciate the construction and working bipolar junction transistors and MOSFETs.
3. Design Op-Amp IC based fundamental applications.
4. Comprehend working of basic elements of digital electronics and circuits.

Civil Engineering- Introduction, Societal & Global Impact (HSMC-132- 18)

Course Outcomes

1. Introduction to what constitutes Civil Engineering
2. Understanding the vast interfaces this field has with the society at large
3. Providing inspiration for doing creative and innovative work for the benefit of the society
4. Need to think innovatively to ensure Sustainability
5. Highlighting the depth of engagement possible within civil engineering and exploration of various possibilities of a career in this field

Concrete Technology (BTCE-401- 18)

Course Outcomes

1. Understand the relevance of different properties of constituent materials on properties of concrete.
2. Understand the behavior and durability aspects of concrete under different loading and exposure conditions.
3. Understand the issues involved in production and use of concrete.
4. Design of concrete mixes as per BIS specifications.
5. Understand various testing methods for concrete and their applicability.
6. Knowledge of special type of non-conventional concretes.

Materials, Testing & Evaluation (BTCE-402- 18)

Course Outcomes

1. Appraisal about the role of materials in civil engineering
2. Introduce common measurement instruments, equipments and devices to capture the material response under loading
3. Exposure to a variety of established material testing procedures/techniques and the relevant codes of practice
4. Ability to write a technical laboratory report.

Hydrology & Water Resources Engineering (BTCE-403- 18)

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.
- 2 Calculate the average annual rainfall of any area using the rain gauge data and inter-relations of various parameters as infiltration, evapotranspiration etc
- 3 Understand the various component of hydro graphs and able to estimate the run off.
- 4 Find the water requirement for different crops and able to proposed appropriate method of applying water.
- 5 Understand the distribution system of canal and various components of irrigation system.
- 6 Classify dams and spillways, their problems and able to determine forces exerted by fluid on dams.

Transportation Engineering (BTCE-404- 18)

Course Outcomes

After completing this course the student must demonstrate the knowledge and ability to:

1. Appreciate the importance of different modes of transportation and characterize the road transportation.
2. Alignment and geometry of pavement as per Indian Standards according to topography.
3. Assess the properties of highway materials in laboratory
4. Understand the importance of railway infrastructure planning and design.
5. Identify the functions of different component of railway track.
6. Outline the importance of Airport Infrastructure

Disaster Preparedness & Planning (BTCE-405- 18)

Course Outcomes

After completing this course the student must demonstrate the knowledge and ability to:

1. Identify various types of disasters, their causes, effects & mitigation measures.
2. Demonstrate the understanding of various phases of disaster management cycle and create vulnerability and risk maps.
3. Understand the use of emergency management system to tackle the problems.
4. Discuss the role of media, various agencies and organisations for effective disaster management.
5. Design early warning system and understand the utilization of advanced technologies in disaster management.
6. Compare different models for disaster management and plan & design of infrastructure for effective disaster management.

Environmental Science (EVS-101-18)

Course Outcomes:

1. Students will enable to understand environmental problems at local and national level through literature and general awareness.
2. The students will gain practical knowledge by visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
3. The students will apply interdisciplinary approach to understand key environmental issues and critically analyze them to explore the possibilities to mitigate these problems.
4. Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Engineering Geology (BTCE- 501-18)

Course Outcome

The course will enable the students understand:

1. The basic concepts of geological processes and their importance in civil Engineering
2. Identification of rocks and minerals and their characteristics
3. Significance of geological structures and processes in civil engineering projects
4. Site characterization and geologic considerations in construction

Elements of Earthquake Engineering (BTCE- 502-18)

Course Outcome

The course will enable the students to:

- i) Appreciate the role of earthquake forces in structural design of building.
- ii) Apply various codal provisions related to seismic design of buildings.
- iii) Acquire new basic knowledge in earthquake engineering

Construction Engineering & Management (BTCE- 503-18)

Course Outcome

The course will enable the students to:

An idea of

how structures are built and projects are developed on the field

- i. An understanding of modern construction practices
- ii. A good idea of basic construction dynamics- various stakeholders, project objectives,
- iii. processes, resources required and project economics
- iv. A basic ability to plan, control and monitor construction projects with respect to time
- v. and cost
- vi. An idea of how to optimize construction projects based on costs
- vii. An idea how construction projects are administered with respect to contract structures and issues.
- viii. An ability to put forward ideas and understandings to others with effective communication processes

Environmental Engineering (BTCE- 504-18)

Course Outcome

The course will enable the students to:

- i. Understand the impact of humans on environment and environment on humans
- ii. Be able to identify and value the effect of the pollutants on the environment: atmosphere, water and soil.
- iii. Be able to plan strategies to control, reduce and monitor pollution.
- iv. Be able to select the most appropriate technique for the treatment of water, wastewater, solid waste and contaminated air.
- v. Be conversant with basic environmental legislation.

Structural Engineering (BTCE- 505-18)

Course Outcome

The course will enable the students to:

- i. The students will be able to apply their knowledge of structural mechanics in addressing design problems of structural engineering
- ii. They will possess the skills to analyse and design concrete and steel structures
- iii. They will have knowledge of structural engineering

Geotechnical Engineering (BTCE- 506-18)

After studying this course, students shall be able to:

1. comprehend the various geotechnical field challenges and understand their fundamental, index and engineering properties and then use (apply) the soil as an engineering material.
2. Investigate and write the laboratory reports for soil design properties and parameters by apply the concept of permeability, total and effective stress approaches in soil strength determination
3. Apply the various specifications of compaction of soils in the construction of highways and earthen dams.
4. Able to apply the knowledge of consolidation, soil deformation parameters, and calculate settlement magnitude and rate of settlement.
5. Design the embankment slopes and check the stability of finite slopes.

Engineering Economics, Estimation & Costing (BTCE-601- 18)

Course outcomes: On completion of the course, the students will:

1. Have an idea of basic principles and elements of economics in general.
2. Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.
3. 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.
4. 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.
5. Be able to understand how competitive bidding works and how to submit a competitive bid proposal.

Remote Sensing and GIS (OECE-609- 18)

Course Outcome

The course will enable the students understand:

- The characteristics of Remote sensing satellites and Applications of remote sensing.
- The GIS and its Data models.
- The Global Navigation Satellite System

Prestressed Concrete (PECE-603E-18)

Course outcome: On completion of this course the student will be able to:

1. Recognize the materials for prestressed concrete and its properties, advantages and applications in contrast to normally reinforced concrete.
2. Comprehend the concept of pre-tensioning and post-tensioning of prestressed concrete, types of prestressed members, prestressing systems and its components.
3. Analyse the prestress, its losses, and determine the strength of a prestressed concrete sections using Indian Standards (IS) guidelines under flexure, shear and torsion.
4. Evaluate the strength and serviceability requirements of different prestressed concrete members i.e. beam, slab and anchor blocks.
5. Design the sections and the reinforcement for prestressed concrete beams, prestressed slabs and anchorage zones as per the IS specifications.

Pavement and geometric design of Highways (PECE -701A-18)

Course Outcome: On the completion of this course the student will be able to

1. Understand patterns of Traffic and its behavior.
2. Develop an understanding for various sight distances and its affects
3. Analyse and design Horizontal and vertical curves
4. Design the cross-sectional elements for different types of highways.
5. Develop and appreciate the concept of intersections

Airport planning and Design (PECE -701B-18)

Course outcome: On the completion of this course the student will be able to

1. Understand the detail concepts of the airport engineering.
2. Able to design runway, taxiway and apron pavements.
3. Suggest the runway orientation and the runway length as per FAA & ICAO guidelines.
4. Conceptualize Pavement management system for maintenance

Intelligent Transportation systems (PECE -701C-18)

Course outcome: On the completion of this course the student will be able to:

1. Understand the concept of Intelligent Transportation system.
2. Analyse ITS's relevance with Smart growth and energy based planning.
3. Conceptualize the urban transportation systems using different models.
4. Explore methodology for smart city based Transit planning
5. Suggest road safety using ITS.

Highway Construction and Management (PECE -701D18)

Course outcome: On the completion of this course the student will be able to:

1. Understand various materials and techniques used to construct pavements.
2. Design the bituminous pavement as per standards.
3. Design thickness and joints including drainage of concrete pavements.
4. Suggest maintenance of pavement.
5. Conceptualize pavement management systems

Traffic Engineering and Management (PECE -701F -18)

Course Outcomes: On the completion of this course the student will be able to:

1. Understand the traffic flow parameters and measures related to traffic control and management.
2. Analyze the feasibility of different control devices for traffic management.
3. Create the solution of the problem related to traffic congestion and safety.
4. Outline the causes of road accidents and procedure to assess the road safety audit.
5. Apply the methods to identify the black spots and propose the solutions to improve road safety.
6. Assess the need of modernization in traffic management and road safety.