

**Bharati Vidyapeeth's college of Engineering Lavale**  
**Department of civil Engineering**

**Program outcomes**

PO-1	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and engg. Specialization to the solution of complex engineering problems.
PO-2	<b>Problem analysis:</b> Identify, formulate, research literature, and analyze engineering problems to arrive at substantiated conclusions using first principles of mathematics, natural, and engineering sciences.
PO-3	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components, processes to meet the specifications with consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO-4	<b>Conduct investigations of complex problems:</b> Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO-5	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO-6	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO-7	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO-8	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO-9	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings.
PO-10	<b>Communication:</b> Communicate effectively with the engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations, and give and receive clear instructions.
PO-11	<b>Project management and finance:</b> Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects in multidisciplinary environments
PO-12	<b>Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## **Structural Analysis-II**

### **Objectives**

1. Students able to understand the determinate and indeterminate structure
2. The subject provides the various types of structure
3. The subject provides the various method to analysis of beams and frame
4. The course which provides the analysis of members in design field.
5. To select the type of sections.

### **Course Outcomes**

1. Able to identify types of structure.
2. Able to analyze the structure using different methods.
3. Able to identify the deflection of structure.
4. Able to identify whether structure is safe or not
5. Able to identify structural bearing capacity.

## **Advanced Survey**

### **Objectives**

1. To understand the triangulation adjustment.
2. To understand modern engineering tools such as CAD, FEM and GIS is used in geodetic surveying
3. To understand remote sensing and GIS applicable as per public health and safety also.
4. To know different corrections.

### **Course Outcomes**

1. Able to carry out field geodetic survey and apply triangulation adjustment with modern equipment's.
2. Able to do geodetic trigonometric leveling survey and apply corrections.
3. Able to perform hydrographic survey and get solution for problems related to it.
4. Able to study aerial photography and applications in civil engineering.
5. Learn Remote sensing and GIS and its application in civil engineering fields.

## **Structural Design-II**

### **Course Objectives**

1. Able to perform analysis and design of RCC members and connections.
2. Able to identify and interpret the appropriate relevant industry design codes.
3. To become familiar with professional issues in the design of RCC members.

### **Course Outcomes**

1. Various design philosophies
2. Design One way slab.
3. Design two way slab and staircase.
4. Design of singly and doubly flexural members
5. Shear, Bond, torsion.
6. Design of column.

## **Structural Design-I**

### **Course Objectives-**

1. Able to perform analysis and design of structural steel members and connections.
2. To gain an educational and comprehensive experience in the design of simple steel structures.
3. To become familiar with professional issues in the design of structural steel members.

### **Course Outcomes**

1. Different failure modes of steel in tension members.
2. Design of Axially loaded steel members.
3. Design of eccentrically loaded columns and column bases.
4. Design of laterally supported and unsupported beams.
5. Secondary and main beam design and welded plate girder.
6. Design of gantry girder and roof truss.

## **Environment Engineering-I**

### **Course Objectives:**

1. Student should be able to make technology choice to deal with water quality issues.
2. Students must be able to operate and maintain working treatment systems and do troubleshooting of the problems in these systems.
3. The student will be able to apply the knowledge gained from the subject in EIA studies for water component and water pollution control strategies.
4. To provide a sound understanding of design principles in water supply systems and treatment processes.
5. Students will be able to acquire sufficient knowledge on basic design of conventional and advanced water treatment processes.

### **Course Outcomes:**

1. Understand water quality concepts and their effect on treatment process selection.
2. Appreciate the importance and methods of operation and maintenance of water supply systems.
3. Communicate effectively in oral and written presentations to technical and non-technical audiences.
4. After successful completion of the course, the students should be capable of understanding the modern water treatment principles and philosophy.
5. Students should be able to cope with the basic design and operation of unit processes for conventional and advanced water treatment.
6. Graduate exhibit the knowledge to calculate the demand needs for water supply to households, industry and public services.

## Fluid Mechanics II

### Course Objective:

1. To find the solution of complex problems in Civil Engineering
2. To design system components or processes
3. To apply appropriate techniques, resources, and modern engineering tools such as CAD, FEM and GIS including prediction and modeling.
4. To manage Civil Engineering projects and in multidisciplinary environments.
5. To engage in independent and life-long learning in the broadest context of technological change.

### Course Outcomes:

Student will be able to understand:

1. Fluid Flow around Submerged Objects.
2. Depth-Energy Relationships in Open Channel Flow
3. Find energy dissipated in a hydraulic jump
4. Uniform flow in open channel.
5. Understand and apply knowledge of pumps.
6. Understand and apply knowledge of turbines.

## Infrastructure Engineering and Construction Techniques

### Course Objectives:

- 1) To study the various things comes under railway infrastructure.
- 2) To describe all methods of Dewatering.
- 3) To study different types Tunnel construction methods.
- 4) To enumerate different types of Earth moving equipment's.

### Course Outcomes:

On completion of the course, learner will be able to

1. Explain rail components, Cant, curves, crossing and Turnout.
2. Elucidate different dewatering Techniques.
3. Explain different types of tunnel construction methods and their suitability.
4. To understand the different types of Earth moving equipment's and their capacities as well as suitability.

## Hydrology and Water Resources Engineering

### Objective

1. Studying this course student will be able to identify and categories rainfall data and understand the concept of precipitation and mechanism of precipitation.
2. Student should have an understanding measurement of catchment area and measurement of rainfall data
3. Students should have an understanding irrigation engineering and design of irrigation structures
4. This course provides the detailed presentation and analysis of rainfall data and the concepts of ground water hydrology.

### Outcomes

1. Able to describe the hydrologic cycle and analyze the precipitation data
2. Able understand methods and concept of the stream gauging.
3. Able to interpret the methods of irrigation and assess the canal revenue
4. Outline the ground water hydrology.
5. Able to analyze the flood frequency and runoff hydrograph

## **Foundation Engineering**

### **Objectives**

1. To understand different type of soil properties.
2. To understand different types of tests.
3. To analyses the soil stability.
4. To analyze type of foundation suitable.
5. To identify different zone of strata

### **Outcomes**

1. Ability to understand the importance of soil investigation and determine various soilProperties.
2. Ability to calculate the allowable bearing capacity of Shallow foundations and soil conditions.
3. Ability to Understand the settlement behavior of different type of soil
4. Able to understand sheet piles and characterization of BC soil, remedial measures to be cultivated for foundations
5. Able to explain application of geo-synthetics and different earthquake aspects

## **Project Management and Engineering Economics**

### **Course**

### **Objective:**

- 1) To study the project life cycle.
- 2) To study concept of economic tools needed for project management.

### **Course**

### **Outcomes:**

The student will be able to understand;

1. Objective, functions and principles of Management.
2. Project planning and objectives.
3. Project monitoring and control, Resource allocations.
4. Introduction to project economics.
5. Objective of material management.
6. Project appraisal ,