



**BHARATI VIDYAPEETH'S**

**COLLEGE OF ENGINEERING, KOLHAPUR**

Name of Department Civil ENGINEERING

Class:-Second Year B.TECH

Sem:-III

Course: - ENGINEERING MATHEMATICS II (BSC-CV301)

Course Outcomes:

1. Solve Linear differential equations and problems related to applications of differential equation.
2. Perform vector differentiation.
3. Find probabilities by using probability distributions.
4. Find Laplace transform, Inverse Laplace transform of various functions and applications.
5. Find analytic function.



## **BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR**

Name of Department Civil Engineering  
Class:-Second Year B.TECH  
Course: - Surveying-I (PCC-CV302)

Sem:-III

Course Outcomes:

After successful completion of this course students will be able to:

1. Determine linear and angular measurements.
2. Record various measurements in the field book.
3. Find areas of irregular figures.
4. Prepare plans and sections required for civil engineering projects.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Second Year B.TECH

Sem:-III

Course: - Strength Of Materials (ESC-CV303)

### **Course Outcomes:**

After completion of this course students will be able to:

1. Evaluate the response of elastic body for external actions and compute design forces.
2. Evaluate shear force and bending moment of statically determinate structure.
3. Analyze the stress, strain and deformation of elastic bodies under bending and shear actions.
4. Analyze the stress, strain and deformation of elastic bodies under external actions.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Second Year B.TECH

Sem:-III

Course: - Fluid Mechanics – I (ESC-CV304)

### **Course Outcomes:**

After successful completion of this course, student will be able to:

1. Study the basic properties of fluids and their behavior under application of various force systems.
2. Discuss the basic concepts and principles in fluid statics, fluid kinematics and fluid dynamics with their applications in fluid flow problems.
3. Recognize the principles of continuity, momentum and energy as applied to fluid in motion.
4. Apply the equations to analyze problems by making proper assumptions and learn systematic engineering methods to solve practical fluid mechanics problems.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

Class:-Second Year B.TECH

Sem:-III

COURSE: - BUILDING CONSTRUCTION AND MATERIALS (PCC-CV305)

### **Course Outcomes:**

After successful completion of this course, student will be able to:

1. Know the building Materials.
2. Describe properties and suitability of various building materials.
3. State the different building components.
4. Demonstrate different bonds in brick masonry.
5. Produce drawings of different building components.
6. Explain different types of roof coverings & types of flooring.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

Class:-Second Year B.TECH

Sem:-III

Course: - NUMERICAL METHODS (ESC-CV306)

### **Course Outcomes:**

After successful completion of this course, student will be able to:

1. Identify, classify and choose the most appropriate numerical method for solving problem.
2. Illustrate basic theory of correlation and regression.
3. Form and solve Linear Programming Problem.
4. Use methods of solutions to solve classical problems.
5. Deploy skills effectively in the solution of
6. Problems in civil engineering.



# BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

CLASS:-SECOND YEAR B.TECH

SEM-IV

COURSE: - STRUCTURAL MECHANICS (ESC-CV401)

## **Course Outcomes:**

After completion of this course students will be able to:

1. Identify the response of elastic body for external actions.
2. Distinguish engineering properties of the materials are understood.
3. Compute the design forces in the structures.
4. Analyze the stress, strain and deformation of elastic bodies under external forces



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

CLASS:-SECOND YEAR B.TECH

SEM –VI

COURSE: - SURVEYING-II (PCC-CV402)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Adopt the principles of advanced surveying instruments.
2. Formulate triangulation stations, Flight planning and Ground control points (GCPs).
3. Apply GIS and GPS concepts to civil engineering problems.
4. Design and setout curves by different methods





## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

CLASS:-SECOND YEAR B.TECH

SEM –IV

COURSE: - CONCRETE TECHNOLOGY (PCC-CV403)

### **Course Outcomes:**

After successful completion of this course students will be able to:

To study materials used in concrete production.

1. To understand process of concrete manufacturing and to study properties of fresh concrete.
2. To study relationship between compressive strength and tensile strength.
3. To study mix design of concrete by using IS code method and ACI method
4. To study different Non-Destructive Tests (NDT).
5. To study different types of special concrete and their manufacturing.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

CLASS:-SECOND YEAR B.TECH

SEM –IV

COURSE: - FLUID MECHANICS – II (ESC-CV404)

### **Course Outcomes:**

After successful completion of this course, student will be able to:

1. Provide students with basic knowledge of fluid properties and utilizing principles developed in fluid mechanics.
2. Develop the principle and equation for pressure flow and momentum analysis.
3. Provide the students with the analytical knowledge of pressure and velocity distribution in an open channel in order to solve practical problems.
4. Illustrate and develop the equations and design principles for open channel flows, including sanitary and storm sewer design and flood control hydraulics.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

CLASS:-SECOND YEAR B.TECH

SEM –IV

COURSE: - BUILDING DESIGN AND DRAWING (PCC-CV405)

### **Course Outcomes:**

After successful completion of this course, student will be able to:

1. Know principles of building planning.
2. Describe Building Bye-Laws and regulations.
3. Plan and draw residential building considering principle of planning and Building Bye-Laws and regulations.
4. Explain techniques of maintenance, repair and rehabilitation of structure.
5. Draw the working drawing of foundation detail, plumbing and electrification of building.
6. Illustrate the concept of ventilation, air conditioning and thermal insulation.
7. Describe different types of building finishes.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem –V

Course: -Water Resorce Engineering - I (PCC-CV 501)

### **Course Outcomes:**

After successful completion of this course, student will be able to:

1. Apply the knowledge of estimation of hydro meteorological parameters.
2. Estimate Direct runoff with infiltration indices method and empirical formulas
3. Estimate direct runoff and peak discharge using hydrograph technique.
4. Estimate discharge through confined and unconfined aquifer.
5. Select and design appropriate method of irrigation and method of applying water to crops
6. Determine reservoir capacity based on crop water requirement



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem –V

Course: - Design of Steel Structures (PCC-CV502)

### **Course Outcomes:**

After Successful Completion Of This Course, Student Will Be Able To:

1. Describe The Design Philosophy, Behavior Of Steel Structure And Failure Mechanism.
2. Analyze And Design Different Types Of Bolted & Welded Connections.
3. Assess The Strength Of Structural Members As Per Indian Standards.
4. Analyze And Design Members Subjected To Tension, Compression And Flexure.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:- Third Year B.Tech

Sem –V

Course: - Environmental Engineering-I (Pcc-Cv503)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Describe The Various Sources Of Water With Respect To Quality And Quantity Of Water.
2. Design The Various Water Treatment Units.
3. Illustrate The Special Water Treatments And Sequencing Of Treatment For Various Qualities Of Surface & Ground Water.
4. Describe The Various Components Related To Transmission And Design Of Distribution Of Water.
5. Summarize The Different Water Supply Appurtenances.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem –V

Course: - Geotechnical Engineering –I (PCC-CV504)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. To provide a coherent development to the students for the courses in sector of Geotechnical Engineering & Soil Improvement Techniques etc.
2. To present the foundations of many basic Engineering tools and concepts related Geotechnical Engineering.
3. To give an experience in the implementation of Engineering concepts which are applied in field of Geotechnical Engineering
4. To involve the application of scientific and technical principles of planning, analysis, design of foundation along with soil improvement techniques.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem –V

Course: - Building Planning And Design (PCC-CV505)

### **Course Outcomes:**

After successful completion of this course students will be able to:

- 1.Specify dimensions and space requirements for various elements of the building inrelation to human body measurements.
- 2.Plan, design public building considering principles of planning and Building Bye-Laws and regulations.
- 3.Prepare the submission and working drawings of public building.
- 4.Illustrate the procedures for preparing perspective drawings of various objects as wellas buildings.
- 5.Apply knowledge of architectural composition and terms for betterment of aestheticview.





## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem –V

Course: - Open Elective – I (Energy & Environment) OEL-CV506

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Compare conventional and renewable energy resources
2. Identity scope and potential of renewable energy
3. Analyze suitability of renewable energy resource.
4. Explain energy management principles and strategies.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem-VI

Course: - Theory of Structures (PCC-CV601)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Understand the concept of determinacy and indeterminacy.
2. Apply various techniques of structural mechanics to solve indeterminate structures.
3. Analyze indeterminate structures by using various approaches.
4. Know the limitations of the methods of solution and their outcomes.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem-VI

Course: - Engineering Management (EM HM-CV602)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Understand importance of management in construction.
2. Use the Project planning and management tools in Construction.
3. Evaluate and draw project network for estimating time and cost.
4. Know the techniques of Material Management.
5. Explore and understand the concepts of Economics in construction.
6. Know the advance concepts in management.



**BHARATI VIDYAPEETH'S  
COLLEGE OF ENGINEERING, KOLHAPUR**

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem-VI

Course: - Environmental Engineering-II (PCC-CV603)

**Course Outcomes:**

After successful completion of this course students will be able to:

1. Explain sources, characteristics and methods of wastewater collection.
2. Design the primary and secondary wastewater treatment units and describe low cost wastewater treatment units.
3. Understand various methods of wastewater disposal
4. Explain the necessity and importance of solid waste management.
5. Describe air pollution, its effect and controlling techniques.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem-VI

Course: - Geotechnical Engineering –II (Pcc-Cv604)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Know various concepts of different soil/rock strata and use of this data for interpretation of bearing capacity
2. Understand the importance and basics of foundation engineering in the civil engineering Projects.
3. Evaluate the load bearing capacity and settlement of foundations by classical theories.
4. Analyze the geotechnical aspects of shallow and deep foundations
5. Understand the concepts of the stability of slopes and study various methods of evaluating the stability of slopes.
6. Know the modern foundation techniques.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

NAME OF DEPARTMENT: CIVIL ENGINEERING

CLASS:-THIRD YEAR B.TECH

SEM-VI

COURSE: - OPEN ELECTIVE-II (SOIL AND WATER CONSERVATIONTECHNIQUES) OE – II (OEC-CV605)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Understand methods of soil and water conservation.
2. Develop an integrated model for sustainable natural conservation.
3. Explain the groundwater exploration techniques and its artificial recharge.
4. Analyze the needs for protection of banks and preservation of soil.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem-VI

Course: - Structural Design And Drawing - I (PCC-CV606)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Analyze and design different types of bolted & welded connections
2. Demonstrate the knowledge of common sections subjected tension and compression members & its design,
3. Analyze and design of steel column, flexural members and its elements.
4. Aware of application of software in structural analysis and design.
5. Prepare the working drawing as per requirement of project execution.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Third Year B.Tech

Sem-VI

Course: - Seminar (MC-CV607)

### **Course Outcomes:**

After successful completion of this course students will be able to:

1. Summarize the present status and make literature review on the selected topic with current issues to give a state of an art of technological progress in the past through technical report.
2. Deliver seminar presentation using modern tools highlighting the distinguishing features of the studies conducted.
3. Prepare the technical report of seminar work in given format.





## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Vii

Course: - Design Of Concrete Structures- I (Pcc-Cv701)

### **Course Outcomes:**

After successful completion of this course students will be able to

- 1.Understand the basic data (Basic Mechanics, Mathematics, and structural analysis) required for design of concrete structures.
- 2.Understand the design process of concrete structure
- 3.Understand the application of limit state method for structural element such as footing, column, beam slab, staircase etc.
- 4.Design the individual members and hence building.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-VII

Course: - Earthquake Engineering (PCC-CV702)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Prepare mathematical modeling of Single Degree of Freedom System.
2. Design earthquake resistant structure by applying various codal provisions related to seismic design
3. Know the concept of modern earthquake resistant techniques



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Vii

Course: - Quantity Survey And Valuation (Pcc-Cv703)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Explain the importance of estimation in Civil Engineering works.
2. Prepare rate analysis of various items.
3. To estimate for various construction projects.
4. Explain importance of valuation in Civil Engineering works



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-VII

Course: - Transportation Engineering-I (PCC-CV704)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Carry out surveys involved in planning and highway alignment
2. Design the geometric elements of highways and expressways
3. Carry out traffic studies and implement traffic regulation and control measures and intersection design
4. Characterize pavement materials and design flexible and rigid pavements as per IRC



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Vii

Course: - Solid Waste Management (PCE-CV705)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Learn basic concepts of solid waste management, beginning from source generation to waste disposal in a system of municipality organizational structure.
2. To acquire a fair amount of knowledge on waste characterization and its management practices
3. Develop understanding on various technological applications for processing of waste and their disposals in various ways.
4. Acquire knowledge on waste to energy productions in the perspectives of sustainable development.
5. Apply basic concepts in hazardous waste management and integrated waste management for urban areas.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Vii

Course: - Legal Aspects in Civil Engineering (Hm-Cv706)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Students will learn Indian contract act, Arbitration act and contract administration.
2. Students will understand the labour laws.
3. Students will be understood safety engineering and relevant acts.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-VIII

Course: - Design Of Concrete Structures- Ii (Pcc-Cv801)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Sections subjected to torsion
2. Continuous beams
3. Water tanks resting on ground
4. Press stressed concrete sections



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Viii

Course: - Water Resource Engineering Ii (Pcc-Cv802)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Investigate prior to reservoir planning and able to decide capacity of reservoir.
2. Check the stability of Gravity Dam.
3. Chose the type of spillway based on site condition
4. Design the Impervious floor for weir using theory of seepage
4. Plan, design and monitor an efficient canal network system.
5. Understand the role of rivers and Hydropower in the development of nation.





## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Viii

Course: - Transportation Engineering-II(Pcc-Cv803)

### **Course Outcomes:**

After Successful Completion Of This Course Students Will Be Able To

1. Perform Geometric Design For The Railway Tracks.
2. Plan The Layout Of Different Types Of Air Terminals.
3. Carry Out The Surveys For Layout Of Railways, Airports And Harbors.
4. Design Various Bridge Components



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Viii

Course: Professional Elective II: Structural Design Of Foundation & Retaining  
Structures (Pce-Cv804)

### **Course Outcomes:**

After Successful Completion Of This Course Students Will Be Able To

1. Understand The Different Types Of Foundations & Their Necessities
2. Select The Suitable Foundation System Based On Soil And Loading Conditions.
3. Analyse The Different Types Of Loading Acting On Foundation System.
4. Design The Foundation For Lighter & Heavy Structures.
5. Learn The Reinforcement Curtailments In Foundation Systems.
6. Design The Vertical Walls To Retain Water Or Soil On One Side Of Wall



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Viii

Course: - Advanced Construction Techniques (Pce-Cv805)

### **Course Outcomes:**

After Successful Completion Of This Course Students Will Be Able To

1. Explain Types Of Construction And Various Type Of Formwork.
2. Select Advanced Construction Material For Construction From Different Categories.
3. Interpret & Execute The Methods Of Ground Improvement By Different Techniques.
4. Explain Different Types Of Cofferdams, Selection Criteria & Material Used.
5. Explain The Fundamentals Of Rehabilitation Of Bridges And Retaining Structures.
6. Describe Various Advanced Techniques For Infra-Structure And Construction Of Concrete Pavement.



## BHARATI VIDYAPEETH'S COLLEGE OF ENGINEERING, KOLHAPUR

Name Of Department: Civil Engineering

Class:-Final Year B.Tech

Sem-Viii

Course: - Structural Design And Drawing-Ii (Pcc-Cv806)

### **Course Outcomes:**

After successful completion of this course students will be able to

1. Translate the ideas into workable plans
2. Classify the components
3. Design the units & hence the structure as a whole
4. Draft the details for execution
5. To read and understand the supplied drawing for execution on site.