ANJUMAN COLLEGE OF ENGINEERING & TECHNOLOGY

MANGALWARI BAZAAR ROAD, SADAR, NAGPUR - 440001.

DEPARTMENT OF CIVIL ENGINEERING

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,NAGPUR

FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/3rd sem

Faculty :- Samina Anjum

Sem:IIIrd	**Total Hours Distribution per week**		
Total credit:4	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 1Hrs**	**Practical (P):Hrs**
Subject Code	**BTCVE301T**	**Name of Subject: Applied Mathematics -III**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
15 Marks (07 marks for sessional Examination) (08 Marks for Activity based)	70 Marks	45 Marks	3 Hours

Course objective	
1	The aim is to introduce and develop the advance Mathematical Skills of Engineering Students that are imperative for effective understanding of Civil Engineering Subjects.
2	The Topics Covered will equip them with the technique to understand advance level Mathematics and its applications that would enrichlogical thinking power

Course Outcome	
After completion of syllabus student able to	
CO 201.1	Apply Fourier series in the analysis of periodic functions not in terms sine and cosine encounterd in engineering problems.
CO 201.2	Solve Partial differential equations of first ,higher and second order using elementary techniues formulate mathematical models to simple problems of vibration of strings and beam in terms of Partial differential equations and solving with elementary solution techniques
CO 201.3	Learn the concept of finding maxima nd minima of definite intergral involving unknown function and its derivatives
CO 201.4	Learn Eigen value problem and its applications
CO 201.5	Learn to find an approximate solution of algebraic and transcendental equations, system of linear equations and first order ordinary differential equations by various Numerical Methods
CO 201.6	Formulate simple optimization problem and learn to solve it by Graphical method and Simplex method.

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/3rd sem

Faculty :- Mohd.Azaz

Sem:IIIrd	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):1Hrs**
Subject Code	**BTCVE302T**	**Name of Subject: FLUID MECHANICS**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To impart the importance and practical significance of various fluid properties
2	To discuss and evaluate various forces acting on partially and fully submerged bodies
3	To discuss and evaluate the importance of various parameters on the fluid motion.
4	To discuss various flow measuring devices with their practical applications
5	To deliberate the concept of impulse momentum principle, dimensional analysis and model analysis of a fluid phenomenon

Course Outcome	
After completion of syllabus student able to	
CO 202.1	Understand the importance and practical significance of various fluid properties
CO 202.2	Comprehend and estimate various forces acting on partially and fully submerged bodies
CO 202.3	Evaluate the importance of various parameters on the fluid motion.
CO 202.4	Know various flow measuring devices with their practical applications
CO 202.5	Illustrate the concept of impulse momentum principle, dimensional analysis and model analysis of a fluid phenomenon

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	3										
CO2	3	3	1			-						
CO3	3	3	2									
CO4	3	3	1									
CO5	3	3	2	1								

1 LOW 2 MEDIUM 3 HIGH

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/3rd sem

Faculty :- Dr. Sayyed Aamir hussain

Sem:IIIrd	**Total Hours Distribution per week**		
Total credit:4	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):1Hrs**
Subject Code	**BTCVE303T**	**Name of Subject:** SOLID MECHANICS	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To determine the Mechanical behavior of the body by determining the stresses, strains produced by the application of load and to apply the fundamentals of simple stresses and strains.
2	To determine the Shear Force and Bending Moment at a section for different condition
3	To facilitate the concept of bending and its theoretical analysis in a beam To determine the Bending and shear stress in a given beam.
4	To develop slope and Deflection equations for beams subjected to various loads.
5	To determine the torsion in circular section, Direct and Bending Stresses

Course Outcome	
After completion of syllabus student able to	
CO 203.1	Understand the behaviour of materials under different stress and strain conditions.
CO 203.2	Evaluate and draw shear force diagram and bending moment diagram and their relation
CO 203.3	Formulate the bending and shear stresses equations and able to draw bending and shear stress diagrams.
CO 203.4	Formulate slope and Deflection equations for beams subjected to various loads by Macauleys method
CO 203.5	Analyze and Evaluate the torsion in circular section, Direct and Bending Stresses

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	3	3	3						1		3
CO2	3	3	3	3		-				1		3
CO3	3	3	3	3						1		3
CO4	3	3	3	3	1					1		3
CO5	3	3	3	3	1					1		3

1 LOW 2 MEDIUM 3 HIGH

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/3rd sem

Faculty :- Dr. Rashmi Bade

Sem:IIIrd	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):2Hrs**
Subject Code	**BTCVE304T**	**Name of Subject:** GEOTECHNICAL ENGINEERING	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To impart knowledge about index properties and their determination
2	Introduce to the students, the principle permeability and seepage in the soil
3	To impart knowledge about engineering properties and their determination.
4	Familiarize the students with the procedures used for Shallow and Deep foundation.
5	To impart knowledge about Basic Geology.

Course Outcome	
After completion of syllabus student able to	
CO204.1	Find the index and engineering properties of the soil.
CO204.2	Determine properties & demonstrate interaction between water and soil
CO204.3	Analyze and compute principles of compaction and consolidation settlements of soil.
CO204.4	Ability to analyze to calculate bearing capacity, earth pressure and foundation settlement
CO204.5	Study and identify different type's natural materials like rocks & minerals and soil

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	2	2	2	1	2	2	1	-	-	2	2
CO2	3	2	1	2	-	-	2	1	-	1	-	2
CO3	3	2	2	2	1	2	-	1	-	2	-	2
CO4	3	2	1	1	1	2	2	1	-	2	-	2
CO5	3	2	2	2	2	-	-	1	-	-	2	2

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/3rd sem

Faculty :- Dr. Nasruddin Harris

Sem:IIIrd	**Total Hours Distribution per week**		
Total credit:2	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):1Hrs**
Subject Code	**BTCVE305T**	**Name of Subject:** BUILDING CONSTRUCTION & ELEMENTARY BUILDING DRAWING	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To prepare the students to understand components of buildings and their functions.
2	To prepare students to understand execution of various constructions activities and material.
3	To prepare students to analyse behaviour of structure under different environmental conditions.
4	To prepare students to identify & suggest rectification the various defects in civil engineering works

Course Outcome	
After completion of syllabus student able to	
CO205.1	Identify components of a building
CO205.2	Differentiate and identify types of building materials.
CO205.3	Select appropriate material for building construction.
CO205.4	Plan various construction related activities and their quality control.
CO205.5	Know & identify the latest techniques and materials used.

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3											2
CO2		2			1							3
CO3					3							
CO4				3								
CO5		2										3

1 LOW **2 MEDIUM** **3 HIGH**

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/3rd sem

Faculty :- Dr. Sajid Quazi

Sem:IIIrd	**Total Hours Distribution per week**		
Total credit:2	**Lecture (L):2hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):Hrs**
Subject Code	**BTCVE306T**	**Name of Subject:** EFFECTIVE TECHNICAL COMMUNICATION	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
15 Marks (07 marks for sessional Examination) (08 Marks for Activity based)	35 Marks	23 Marks	2 Hours

Course objective	
1	To enhance competency in English language among learners aspiring to be entrepreneurs.

Course Outcome	
After completion of syllabus student able to	
CO206.1	Participate effectively in groups with emphasis on listening and meta cognitive thinking.
CO206.2	Prepare memorandum and report.
CO206.3	Deliver an effective oral presentation.

CO206.4	Acquire public speaking skills handling the audience professionally
CO206.5	Analyze causes of deterioration of concrete component

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1												
CO2												
CO3												
CO4												
CO5												

1 LOW 2 MEDIUM 3 HIGH

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/4th sem

Faculty :- Aquib ansari

Sem:IV	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE401T**	**Name of Subject:**	**CONCRETE TECHNOLOGY**
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To know different types of cement as per their properties for different field applications, properties of Aggregates and Admixture
2	To know tests on concrete in plastic and hardened stage as well as behaviour of concrete structure
3	To understand Design economic concrete mix proportion for different exposure condition and Intended purpose.
4	To understand the knowledge of Special Concrete.
5	To understand the various repairing techniques and their material.

Course Outcome	
After completion of syllabus student able to	
CO207.1	Think logically for development Concrete technology application in field of Civil Engineering
CO207.2	Gain an experience in the implementation of Concrete Materials on Engineering concepts which are applied on Construction Fields
CO207.3	Understand the process of mix design of concrete.
CO207.4	Differentiate special concrete from conventional concrete.
CO207.5	Analyze causes of deterioration of concrete components

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	-	-	1	1	1	1	-	-	2
CO2	2	2	2	2	-	1	1	1	1	1	2	2
CO3	3	3	2	2	1	1	1	1	2	1	1	2
CO4	3	3	2	1	-	1	1	-	-	-	-	2
CO5	1	2	2	-	-	-	-	-	-	-	-	2
AVG	2.2	2.6	2	1	0.2	0.8	0.8	0.75	1	0.5	0.75	2

1 LOW 2MEDIUM 3HIGH

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/4th sem

Faculty :- Syed Sohailuddin

Sem:IV	**Total Hours Distribution per week**		
Total credit:4	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 1Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE402T**	**Name of Subject:** STRUCTURAL ANALYSIS	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To make students understand the determinate and indeterminate structures, their methods of analysis and construction of influence lines
2	To make students understand the behaviour of beams and frames using Slope Deflection Method and Moment Distribution Method.
3	To make students understand the concept of Influence Line Diagram and analysis of the structural members subjected to Rolling Loads.
4	To make students understand the concept of formulation of Stiffness Matrix, Transformation Matrix, Load Matrix and its application to Beams and Plane Frames.

5	To make students understand the concept of formulation of Stiffness Matrix, Transformation Matrix, Load Matrix and its application to Plane Truss.

Course Outcome	
After completion of syllabus student able to	
CO208.1	Apply knowledge to analyse determinate and indeterminate structures.
CO208.2	Apply knowledge to perform analysis of beams and frames using Slope Deflection Method and Moment Distribution Method.
CO208.3	Apply knowledge of Influence Line Diagram to analyse structural members for rolling loads
CO208.4	Apply knowledge of Direct Stiffness Method to analyse Beams and Plane Frames.
CO208.5	Apply knowledge of Direct Stiffness Method to formulate Stiffness Matrix, Transformation Matrix, Load Matrix to analyse Plane Truss.

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	3	3	3	-	-	-	-	-	3	-	3
CO2	3	3	3	3	-	-	-	-	-	3	-	3
CO3	3	3	3	3	-	-	-	-	-	3	-	3
CO4	3	3	3	3	-	-	-	-	-	3	-	3
CO5	3	3	3	3	-	-	-	-	-	3	-	3

1 LOW 2MEDIUM 3HIGH

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/4th sem

Faculty :- Shahid Arshad

Sem:IV	**Total Hours Distribution per week**		
Total credit:4	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): N/AHrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE403T**	**Name of Subject:** ENVIRONMENTAL ENGINEERING	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	The course will provide students knowledge regarding the sources of water, water demands, population forecasting, characteristics, standards of drinking water
2	To prepare students to analyze, plan and design of various phases of water supply systems and waste water treatment.
3	To provide the students the knowledge regarding the various characteristics of water, waste water estimation of the quantity of water
4	The course will provide students with fundamentals of air pollution and solid waste management, climate change, geo environment and sustainable resource management

Course Outcome	
After completion of syllabus student able to	
CO209.1	Have knowledge of characteristics of water, drinking water standards and necessity of treatment.
CO209.2	Design various units of conventional water treatment plant.
CO209.3	Understand the characteristics of waste water, necessity of treatment, types of treatment processes
CO209.4	Equip with the basic knowledge related to design of waste water treatment
CO209.5	Understand of significance of air pollution, solid waste , climate change, geo environment etc

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3						1	-	3
CO2	3	3	3	3						1	-	3
CO3	3	3	3	3						1	-	3
CO4	3	3	3	3	1					1	-	3
CO5	3	3	3	3	1					1	-	3

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/4th sem

Faculty :- Dr.Sayyed Aamir Hussain

Sem:IV	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): N/AHrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE404T**	**Name of Subject:** TRANSPORTATION ENGINEERING	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	The course will provide students knowledge regarding transpiration technologies, administrative set-up in India, development plans and vision 2025.
2	To prepare students to design the cross section elements and the pavement using latest IRC Codes.
3	To provide the students the knowledge regarding the traffic characteristics, road safety audit and introduction to ITS.
4	The course will provide students with fundamentals of Railway Engineering and Airport Engineering.

Course Outcome	
After completion of syllabus student able to	
CO210.1	Define and describe different objectives and requirements of Highway Development and Planning, Alignments.
CO210.2	Explain, Discriminate and Design various Geometric Features of Highways & Pavement Design.
CO210.3	Understand, analyze, apply and evaluate the parameters of Traffic Engineering.
CO210.4	Explain and describe various terms in railway engineering and should be able to explain, discriminate and design various geometric features of railway track
CO210.5	Understand the aircraft characteristics and terminal area functions, analyze, and evaluate the basic runway length, orientation of runway.

COs to Unit Mapping Matrix

Course Code	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
CO1	**X**					
CO2		**X**				
CO3			**X**			
CO4				**X**		
CO5					**X**	
CO6						**X**

For Entire Course, PO/PSO Mapping; 1 (Low); 2(Medium); 3(High) Contribution to PO

PO1	Engineering Knowledge	**PO7**	Environment & Sustainability
PO2	Problem Analysis	**PO8**	Ethics
PO3	Design & Development	**PO9**	Individual & Team Work
PO4	Investigation	**PO10**	Communication Skills
PO5	Modern Tools	**PO11**	Project Mgt. & Finance

PO6	Engineer & Society	**PO12**	Life Long Learning

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**2**	**1**	**2**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**1**
CO2	**3**	**2**	**2**	**-**	**-**	**2**	**-**	**1**	**-**	**-**	**-**	**1**
CO3	**3**	**3**	**-**	**2**	**1**	**1**	**-**	**1**	**-**	**-**	**-**	**1**
CO4	**3**	**2**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**1**
CO5	**3**	**1**	**2**	**1**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**1**

1 LOW 2 MEDIUM 3 HIGH

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-2nd/4th sem

Faculty :- Mohd.Azaz

Sem:IV	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): N/AHrs**	**Practical (P):4Hrs**
Subject Code	**BTCVE405T**	**Name of Subject:** SURVEYING AND GEOMATICS	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To make the students aware of various surveying instruments, operating principles and their suitability
2	To develop skills of handling instruments, taking measurements and Perform calculations based on the observation
3	Identification of source of errors and rectify them.
4	To prepare the students to plot and also read the various maps.

5	To make the students aware of various surveying instruments, operating principles and their suitability

Course Outcome	
After completion of syllabus student able to	
CO211.1	Measure length and bearing of lines using various instruments and calculate area of given field.
CO211.2	Use the theodolite to measure angle and distances for traversing also identify and correct the errors in traverse. Design and lay-out the various types of curves.
CO211.3	To carry out levelling and contouring also able to determine volume of earthwork.
CO211.4	Use modern instrument like Total work station , GPS, DGPS for surveying and able to prepare maps in CAD
CO211.5	Use Remote Sensing and Geographical Information System(GIS), UAV Drone and LiDAR Survey

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	2	2	1	1	1	1	2	3	1	1	1
CO2	3	2	3	1	2	1	1	2	3	1	2	1
CO3	3	3	3	1	2	1	1	2	3	2	1	1
CO4	3	3	3	2	3	1	1	2	3	2	2	2
CO5	3	3	3	2	3	1	2	2	3	2	2	2

1 LOW 2 MEDIUM 3 HIGH

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DEPARTMENT OF CIVIL ENGINEERING

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /5th sem

Faculty :- Mohd.Azaz

Sem:V	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE501T**	**Name of Subject: Hydraulics Engineering**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To know the boundary layer theory and concept of drag and lift
2	To understand the various losses occurring in pipe flow, various phenomenon occurring in this case
3	To compute uniform flow through open channel and understand the concept of specific energy
4	To analyse the gradual varied flow and hydraulic jump concept

5	To understand the design principle of various hydraulic machines likes turbines and pumps

Course Outcome	
After completion of syllabus student able to	
CO301.1	Understand the concepts related to boundary layer theory and determination of drag and lift forces
CO301.2	Apply the knowledge of theories and equations of pipe flow in analyzing and designing the pipe network systems and to discuss effects of water hammer pressures
CO301.3	Use the concepts of uniform and critical flow through open channels, design of efficient channel sections and application of specific energy concept.
CO301.4	Understand gradually varied flow analysis and its computation, and its application in open channel flow.
CO301.5	Understand and apply basics principles related to turbines & Pumps in water Resources planning

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3		2	2						
CO2	3	3	3		2	2						
CO3	3	3	3		2	2						
CO4	3	3	3	3	2	2						
CO5	3	3	3	3	2	2	1	1				

1 LOW 2 MEDIUM 3 HIGH

ANJUMAN COLLEGE OF ENGINEERING & TECHNOLOGY

MANGALWARI BAZAAR ROAD, SADAR, NAGPUR - 440001.

DEPARTMENT OF CIVIL ENGINEERING

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,NAGPUR

FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /5th sem

Faculty :- Dr.N.Harris

Sem:V	**Total Hours Distribution per week**		
Total credit:4	**Lecture (L):4hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE502T**	**Name of Subject: Reinforced Cement Concrete Designs**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**4 Hrs**

Course objective	
1	To understand phenomenon's of design concepts and learning various codes related to RCC design
2	To understand the structural behavior of steel and concrete
3	To apply conventional methods for design structural components of building.

Course Outcome	
After completion of syllabus student able to	
CO302.1	Understand the fundamental concepts of working stress method as per IS 456- 2000 and Pre-stressed concrete method.
CO302.2	Apply the fundamental concepts of limit state method on limit state of serviceability
CO302.3	Analyze the fundamental concepts of limit state of collapse in flexure, Shear & Bond as per IS 456-2000.
CO302.4	Evaluate the fundamental concepts of limit state of collapse in compression and design of footing as per IS 456-2000.
CO302.5	Design of Simply supported Two-way slab

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	3	3	3			-	-	-				3
CO2	3	3	3			-	-	-				3
CO3	3	3	3			-	-	-				3
CO4	3	3	3			-	-	-				3
CO5	3	3	3			-	-	-				3
AVG	3	3	3			-	-	-				3

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /5th sem

Faculty :- Mohd.Atif

Sem:V	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): NAHrs**	**Practical (P):2Hrs**
Subject Code	**BTCVE503T**	**Name of Subject: Civil Engineering Materials, Testing and Evaluation**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	The properties and importance of various constituent materials of concrete used in construction
2	The mechanical behaviour of engineering materials under compressive and tensile loads
3	The fundamentals of fracture mechanics and identify initiation and propagation of crack around stress-strain fields.

4	The standard testing procedures and assess engineering properties of construction materials
5	The main goal of this course is to provide students with all information concerning principle, way of measurement, as well as practical application of mechanical characteristics.

Course Outcome	
After completion of syllabus student able to	
CO303.1	Evaluate the role of materials in Civil Engineering
CO303.2	Know the mechanical behaviour and properties of steel and concrete by standard testing procedures for identifying their performance
CO303.3	Explain special materials, composite materials and use of new techniques in constructions for satisfying the future needs of industry
CO303.4	Exposure to a variety of established material testing procedures/techniques and the relevant codes of practice
CO303.5	Evaluate and write a technical laboratory report.

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3			2		2					3
CO2	2			2	2	1	2		1			2
CO3	2			2	2	2	3					3
CO4	2	3		2	2							3
CO5	2			3						1	2	3

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /5th sem

Faculty :- Dr.Nawaz Khan

Sem:V	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE504T**	**Name of Subject: Professional Practices ,Law and ethics**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	The objective of this course is to inculcate the sense of social responsibility among learners and to make them realize the significance of ethics in professional environment so as to make them a global citizen

Course Outcome	
After completion of syllabus student able to	
CO304.1	Understand basic purpose of profession, professional ethics and various moral and social issues.
CO304.2	Analyse various moral issues and theories of moral development
CO304.3	Realize their roles of applying ethical principles at various professional levels
CO304.4	Identify their responsibilities for safety and risk benefit analysis
CO304.5	understand their constructive roles in dealing various global issues

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1						2	2	3				1
CO2						2	2	3				1
CO3						2	2	3				1
CO4						2	2	3				1
CO5						2	2	3				1

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /5th sem

Faculty :- Aquib Ansari

Sem:V	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE505T**	**Name of Subject: Advanced Building Materials (Elective-I)**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
This course will enable students to	
1	Understand composition and microstructure of various materials used in civil engineering application.

2	Understand the manufacturing and types of mortars
3	Understand engineering behavior of various materials.
4	Understand the use of advanced materials in construction projects.
5	Understand the sustainable materials used in construction.

Course Outcome	
After completion of syllabus student able to	
CO305.1	Understand the structural, physical and long term performance of building materials used in construction
CO305.2	Understand special mortars and admixtures used in Civil engineering applications.
CO305.3	Understand the properties of Ceramic materials in construction projects.
CO305.4	Understand the uses of polymeric materials in construction.
CO305.5	Understand green building concept and materials

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	1	-	-	-	1	1	2	2
CO2	2	2	2	2	1	-	-	-	1	2	2	2
CO3	2	2	2	1	1	-	-	-	1	1	2	2
CO4	2	2	2	1	1	-	-	-	1	2	2	2
CO5	2	2	2	1	1	-	-	-	1	1	2	2
AVG	2	2	2	1.4	1	-	-	-	1	1.4	2	2

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1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /5th sem

Faculty :-Syed Sohailuddin

Sem:V	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE506T**	**Name of Subject: Advanced Concrete Technology (Elective-II)**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To know different types of cement as per their properties for different field applications, properties of Aggregates and Admixture

2	To understand the knowledge of Special Concrete To know tests on concrete in plastic and hardened stage as well as behaviour of concrete structure
3	To understand Design economic concrete mix proportion for different exposure conditions and intended purpose.
4	To understand the behaviour and strength of concrete structure.
5	To understand the concept of durability and testing of concrete

Course Outcome	
After completion of syllabus student able to	
CO306.1	Think logically for development Concrete technology application in field of Civil Engineering
CO306.2	Differentiate special concrete from conventional concrete Gain an experience in the implementation of Concrete Materials on Engineering concepts which are applied on Construction Fields
CO306.3	Understand the process of mix design of concrete.
CO306.4	Gain an experience in the implementation of Concrete Materials on Engineering concepts which are applied on Construction Fields
CO306.5	To Understand the various factors affecting the concrete and Advanced NonDestructive Testing Methods.

Mapping of CO with PO

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
CO1	2	3	2	-	-	1	1	1	1	-	-	2
CO2	2	2	2	2	-	1	1	1	1	1	2	2
CO3	3	3	2	2	1	1	1	1	2	1	1	2
CO4	3	3	2	1	-	1	1	-	-	-	-	2
CO5	1	2	2	-	-	-	-	-	-	-	-	2
AVG	2.2	2.6	2	1.00	0.2	0.8	0.8	0.75	1	0.5	0.75	2

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /6th sem

Faculty :-Dr.Ashfaque Ansari

Sem:VI	**Total Hours Distribution per week**		
Total credit:4	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 1Hrs**	**Practical (P):2Hrs**
Subject Code	**BTCVE601T**	**Name Of Subject:** Estimating and Costing	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective

1	To differentiate the types of Estimation, adopt specification and Unit Rates.
2	To analyse rates for different items of works
3	To interpret the drawings and estimate the Quantities of various items in civil engineering structures
4	To understand departmental procedures and Take measurement of completed work On successful completion of this course
5	To understand different techniques of preliminary & detailed estimation of buildings & roads

Course Outcome	
After completion of syllabus student able to	
CO307.1	Prepare the preliminary estimate for administrative approval & technical sanction for a civil engineering project.
CO307.2	Write the specification of the works to be undertaken, prepare the tender documents, fill the contracts and make use of knowledge of different contract submission & opening in awarding the work to the contractor.
CO307.3	Use the concept of SD, EMD, MAS, Running Bill, Final Bill during the entire project
CO307.4	Use the technique of Rate analysis in estimating the exact cost of material & manpower and hence the entire project
CO307.5	Estimate the bill of quantities using different techniques of preliminary & detailed estimation of buildings & roads & Arrive the exact value of the asset (movable & immovable) using different Valuation techniques

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2									1	3
CO2	1	2									2	
CO3									2		3	
CO4			2	3	2				-		2	
CO5	3	2				-	-		-		2	
CO6	3		2			2					2	

1 LOW **2 MEDIUM** **3 HIGH**

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /6th sem

Faculty :-Mohd Atif

Sem:VI	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):2hrs**	**Tutorial/Activity (T/A): 1Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE602T**	**Name of Subject:** Construction Engineering and Management	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course Outcome	
After completion of syllabus student able to	
CO308.1	Get themselves acquainted with various economic and managerial aspects of construction industry
CO308.2	Understand the tools and techniques of economic analysis for improving their decision making skills
CO308.3	Analyze the structure of market and effects of inflation with special reference to construction industry.
CO308.4	Understand the importance of marketing management and its effect on construction industry.
CO308.5	Acquire financial acumen for construction business.

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BECVE602T1			2	2	-	1	-	-	-		3	1
BECVE602T2			2	2	-	1	-	-	-		3	1
BECVE602T3			2	2	-	1	-	-	-		3	1
BECVE602T4			2	2	-	1	-	-	-		3	1
BECVE602T5			2	2	-	1	-	-	-		3	1

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /6th sem

Faculty :-Dr.N.Harris

Sem:VI	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): N/AHrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE603T**	**Name of Subject:** Water Resource Engineering	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective

1	To describe occurrence, movement and distribution of water and to estimate water abstractions, runoff and hydrographs
2	To study the concepts of irrigation and different systems and methods of irrigation and to estimate the quantity of water required by crops
3	To determine storage capacity of reservoir and to analyse and design earth dams
4	To analyse and design gravity dams and to study types of spillways and energy dissipators
5	To design unlined and lined channels and study the concept of other irrigation structures

Course Outcome	
After completion of syllabus student able to	
CO309.1	Understand occurrence, movement and distribution of water and estimate water abstractions, runoff and hydrographs.
CO309.2	Illustrate different systems and methods of irrigation and estimate the quantity of water required by crops and estimate the quantity of water required by crops.
CO309.3	Estimate reservoir capacity and analyse and design earth dams
CO309.4	Design and analyse gravity dams and illustrate types of Spillways and energy dissipators
CO309.5	Design unlined and lined channels and illustrate concepts of other irrigation structures

Mapping of CO with PO

CO/PO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BECVE603T CO1	1	3	3	2							-	2
BECVE603T CO2		3	2	2							-	2
BECVE603T CO3	1	3	3	2							-	2
BECVE603T CO4	1	3	3	2							-	2

BECVE603T CO5		3	3	2							-	2

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-3rd /6th sem

Faculty :-Syed Sohailuddin

Sem:VI	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 1Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE604T**	**Name of Subject:** Repairs & Rehabilitation of Civil Engineering Structures (Elective- III)	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	Familiarize Students with deterioration of concrete in structures
2	Equip student with concepts of NDT and evaluation
3	Understand failures and causes for failures in structures
4	Familiarize different materials and techniques for repairs
5	Understand procedure to carryout Physical evaluation of buildingsand prepare report

Course Outcome	
After completion of syllabus student able to	
CO310.1	Explain deterioration of concrete in structures
CO310.2	Carryout analysis using NDT and evaluate structures
CO310.3	Assess failures and causes of failures in structures
CO310.4	Carryout Physical evaluation and submit report on condition of the structure
CO310.5	Carryout analysis of structures and take preventive action as per conditions & Requirement

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2						2		-	-	-	3
CO2	2	2	3	-	-	2	-		-	-	2	2
CO3	2	2	-				2		2	-	3	2
CO4	2			-	2	2	2	-	-	-	2	2
CO5	3	2	2	2	-		2	-	1	1	2	2

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-4th /7th sem

Faculty :-Syed Sohailuddin

Sem:VII	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 1Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE701T**	**Name of Subject:** Design of Steel Structure	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To understand the properties of various rolled and built-up sections.
2	To understand the possible failure modes of structural members.
3	Applying various checks for strength assessment and design the member.

Course Outcome	
After completion of syllabus student able to	
CO401.1	Understand the concepts related to boundary layer theory and determination of drag and lift forces
CO401.2	Apply the knowledge of theories and equations of pipe flow in analyzing and designing the pipe network systems and to discuss effects of water hammer pressures
CO401.3	Use the concepts of uniform and critical flow through open channels, design of efficient channel sections and application of specific energy concept.
CO401.4	Understand gradually varied flow analysis and its computation, and its application in open channel flow.
CO401.5	Understand and apply basics principles related to turbines & Pumps in water Resources planning

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3		2	2						
CO2	3	3	3		2	2						
CO3	3	3	3		2	2						
CO4	3	3	3	3	2	2						
CO5	3	3	3	3	2	2	1	1				

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :4th /7th sem

Faculty :-Dr.Ashfaque Ansari

Sem:VII	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE702T**	**Name of Subject:** Building Construction Practices (Elective – IV)	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective

1	Familiarize Students with types of Construction, Building components & Building code
2	Familiarize Students with Building foundations, specification and related activities
3	Familiarize Students with Construction of sub structure related work & activities
4	Familiarize Students with Construction of super structure related work & activities
5	Understand procedure to carryout building maintenance

Course Outcome	
After completion of syllabus student able to	
CO402.1	Explain classification of Building as per NBC and building component & its function.
CO402.2	Explain different types of foundations & related activities as per requirement.
CO402.3	Carryout construction of sub structure as per conditions & requirement.
CO402.4	Carryout construction of super structure as per conditions & requirement.
CO402.5	Carryout building maintenance work as per conditions & requirement.

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2		2		3	2	1				2	3
CO2	2	2	3	2	2	2	2	2	2		2	2
CO3	2	2	2	2	2	2	2		2	1	3	3
CO4	2	2	2	2	2	2	2		2	1	3	3
CO5	3	2	2	2	2	2	2		2	1	2	3

1 LOW 2 MEDIUM 3 HIGH

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DEPARTMENT OF CIVIL ENGINEERING

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-4th /7th sem

Faculty :-Shahid Arshad

Sem:VII	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE703T**	**Name of Subject:** Air Pollution & Solid Waste Management (Elective-V)	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective

1	The course will provide students' knowledge regarding different aspects of air pollutants, its sources and effects, meteorological parameters, air sampling
2	The course will prepare students to design equipment's for air pollution to reduce its impact on environment
3	The course will prepare students to design equipment's for air pollution to reduce its impact on environment
4	The course will prepare students to learn emerging technologies for air pollution control, design safe collection and disposal methods.

Course Outcome	
After completion of syllabus student able to	
CO403.1	Students will be able to understand different aspects of air pollutants, its sources and effects on man & materials and Meteorological parameters
CO403.2	Students will be able to understand methods of air sampling &design equipments for air pollution to reduce its impact on environment
CO403.3	Students will be able to understand problems arriving in handling large amount of solid waste generated
CO403.4	Students will be able to understand problems arriving in its collection, transportation, and processing&to design safe collection and disposal methods
CO403.5	Students will be able to learn emerging technologies for air pollution control.

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2				2	3					
CO2		1	3			2	3	2				1
CO3	3					3	3					1
CO4		1				3	3					1
CO5			3			3	3					1

1 LOW 2 MEDIUM 3 HIGH

ANJUMAN COLLEGE OF ENGINEERING & TECHNOLOGY

MANGALWARI BAZAAR ROAD, SADAR, NAGPUR - 440001.

DEPARTMENT OF CIVIL ENGINEERING

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY,NAGPUR

FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-4th /7th sem

Faculty :-Aquib Ansari

Sem:VII	**Total Hours Distribution per week** 3-0-0		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE704T**	**Name of Subject:** Earthquake Resistant Structure(Elective-VI)	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective

1	To provide a coherent development to the students for the courses in sector of earthquake engineering.
2	To design earthquake resistant structures as per IS 1893
3	To present the foundations of many basic engineering concepts related earthquake Engineering
4	To involve the application of scientific and technological principles of planning, analysis, design of buildings according to earthquake design philosophy.

Course Outcome	
After completion of syllabus student able to	
CO404.1	Understand the philosophy of earthquake resistant design.
CO404.2	Understand the concept of various effects on structure due to earthquake.
CO404.3	Evaluate seismic forces for various structures as per relevant Indian standards
CO404.4	Design and ductile detailing of structures for seismic resistance as per Indian standards
CO404.5	Apply the concepts of repair and rehabilitation of earthquake affected structures

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	-	-	-	-	-	2	-	3
CO2	3	3	3	3	-	-	-	-	-	2	-	3
CO3	3	3	3	3	-	-	-	-	-	2	-	3
CO4	3	3	3	3	-	-	-	-	-	2	-	3
CO5	3	3	3	3	-	-	-	-	-	2	-	3
Avg CO	3	3	3	3	-	-	-	-		2	-	3

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-4th /8th sem

Faculty :-Dr.Rashmi Bade

Sem:VIII	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 1Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE801T**	**Name of Subject:** Construction Method and Equipment Management	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective

1	To have knowledge about construction industry and construction projects.
2	To know about project organization.
3	To understand construction planning methods
4	To understand construction labour and equipment management.
5	To have knowledge about construction materials management.

Course Outcome	
After completion of syllabus student able to	
CO405.1	Should have the knowledge about construction industry and construction projects.
CO405.2	Should have knowledge about project organization.
CO405.3	Should have knowledge about construction planning methods.
CO405.4	Should have knowledge about constructionlabour and equipment management.
CO405.5	Should have knowledge about construction materials management.

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Sub code & Co No												
CO1	2	3			2		2					3
CO2	2			2	2	1	2		1			2
CO3	2			2	2	2	3					3
CO4	2	3		2	2							3
CO5	2			3						1	2	3

1 LOW 2 MEDIUM 3 HIGH

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FACULITY OF SCIENCE & TECHNOLOGY

B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-4th /8th sem

Faculty :-Mohd.Azaz

Sem:VII	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE802T**	**Name of Subject: Digital Land Surveying & Mapping**	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective	
1	To introduce digital land surveying and its application

2	To provide basics of digital surveying and mapping of earth surface using total station, GPS and mapping software. To provide basics of digital surveying and mapping of earth surface using total station, GPS and mapping software.

Course Outcome	
After completion of syllabus student able to	
CO406.1	Know the basics of digital land surveying and its applications.
CO406.2	Handle the GPS for surveying and plot the details on map.
CO406.3	Know the use of DGPS and its applications and advantages.
CO406.4	Use total station for land surveying and plotting the details.
CO406.5	Use advance software for mapping..

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Subject Code & CO NO												
CO1	1	-	-	-	1	-	-	-	1	-	-	1
CO2	2	1	2	-	3	-	-	-	1	-	-	1
CO3	2	1	2	-	3	-	-	-	1	-	-	1
CO4	2	1	2	-	3	-	-	-	1	-	-	1
CO5	2	1	2	-	3	-	-	1	1	2	-	2

1 LOW 2 MEDIUM 3 HIGH

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B.TECH CIVIL ENGINEERING (CHOICE BASED CREDIT SYSTEM)

Session 23-24

Year/ Semester :-4th /8th sem

Faculty :-Aquib Ansari

Sem:VIII	**Total Hours Distribution per week**		
Total credit:3	**Lecture (L):3hrs**	**Tutorial/Activity (T/A): 0Hrs**	**Practical (P):0Hrs**
Subject Code	**BTCVE803T**	**Name of Subject:** Disaster Management	
Examination Scheme			
Internal Marks:	**University**	**Minimum Passing Marks:**	**Examination Duration:**
30 Marks (15 Marks for sessional examination) (15 Marks for Activity based)	**70 Marks**	**45 Marks**	**3 Hrs**

Course objective

1	To increase the knowledge and understanding of the disaster phenomenon,its different contextual aspect,impacts and public health consequences
2	To increase the knowledge and understanding of the international strategy for disaster Reduction(UN-ISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction(DRR) Strategy.
3	To ensure Skills and abilities to analyse potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects
4	To ensure Skills and abilities to design, implement evaluate research on disasters.

Course Outcome	
After completion of syllabus student able to	
CO407.1	Students will be able to understand different aspects of air pollutants, its sources and effects on man & materials and Meteorological parameters
CO407.2	Students will be able to understand methods of air sampling &design equipments for air pollution to reduce its impact on environment
CO407.3	Students will be able to understand problems arriving in handling large amount of solid waste generated
CO407.4	Students will be able to understand problems arriving in its collection, transportation, and processing&to design safe collection and disposal methods
CO407.5	Students will be able to learn emerging technologies for air pollution control.

Mapping of CO with PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2				2	3					
CO2		1	3			2	3	2				1
CO3	3					3	3					1
CO4		1				3	3					1
CO5			3			3	3					1

1 LOW 2 MEDIUM 3 HIGH