



Shri Sai Shikshan Sanstha's
NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR
DEPARTMENT OF CIVIL ENGINEERING
CO PO MAPPING
ODD/EVEN SEM 2022-23



Sr. No	Name of Faculty	Subject Name Odd Sem	Subject Name Even Sem	Sign of faculty
1	Dr. Syed Zafar	NIL	1.CEM 2.RRCE	
2	Prof. S.S. Kapgate	1.SM	1.SA	
3	Prof. N.A. Maske	1.BCBED 2.RCC	1.CT	
4	Prof. P.H. Salodkar	1.GTE 2.ACM	1.WRE 2.IRR	
5	Prof. G.C.Dhanjode	1.ACS 2.ELEC-II (ACS)	1.ARCCD	
6	Prof.A.M. Kharwade	1.ELEC-I(GEE) 2.FM	1.EE 2.WWWT	
7	Prof. C.N. Gawali	1.RAE 2.TRE-II	1.UPT 2.PD	
8	Prof. J.H.Gurnani	1.CML 2.HYD	1.CEF	
9	Prof.D.D.Menghare	1.E&C 2.CTMTE	1.E&C 2.OE(EE)	
10	Prof.R.N.Bhosale	1.PPLE 2.APSW	1.S&G	
11	Prof. N. S. Khan	NIL	1.TRE 2.	
12	Prof. V.V. Raut	M-III	NIL	
13	Prof. Heena Qureshi	ETC	NIL	

NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR
DEPARTMENT OF CIVIL ENGINEERING
Academic Session: 2022-23 (Odd Sem.)
CO & PO MAPPING

YEAR/SEM :- IIRD yr/ IIIIRD sem

Name Of Faculty : Prof. Vidya Raut

Course Name: Mathematics III

Course Code : BTCHCVE301T

CO1 –Apply Laplace Transform to solve ordinary differential equations, Integral equations and Integro-differential Equations.

CO2 – Apply Fourier series in the analysis of periodic functions in terms sine and cosine Encountered in engineering problems and Fourier Transform to solve integral equations.

CO3 – Understanding the concept of differentiating, integrating and expanding of analytic functions in Complex numbers and their applications such as evaluation of integrals of complex functions.

CO4 – Solve partial differential equations of first order, higher order with constant coefficients and of second order using method of separation of variables.

CO5 – Learn Eigen value problem and its application. Use of Sylvester theorem.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	2	2	-	-	-	-	-	-	-	-	1
CO 2	3	1	2	-	-	-	-	-	-	-	-	1
CO 3	3	1	1	-	-	-	-	-	-	-	-	1
CO 4	3	1	1	-	-	-	-	-	-	-	-	1
CO 5	3	1	1	-	1	-	-	-	-	-	-	1

Prof. Vidya Raut
Sign of Faculty

Dr. Syed Zafar
HoD,CE

Dr. J. G. Chaudhari
Dean, Academics

NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR
DEPARTMENT OF CIVIL ENGINEERING
Third Semester (C.B.C.S)
Effective Technical Communication
Subject Code - BECVE306T

Course Outcomes

1	Students will be able to learn the common errors and grammatical construction of sentences.
2	To learn English language for competitive exams and to understand the interview techniques.
3	Students will be able to understand the proper way and method of formal correspondence.
4	To acquire knowledge of analytical comprehension the art of composition in English.
5	To understand the components of technical and scientific writing.

Mapping of COs and POs

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	---	---	---	03	---	---	---	03	02	03	---	03
CO2	---	---	---	03	---	02	---	03	02	01	---	02
CO3	---	---	---	03	---	01	---	---	01	03	---	02
CO4	---	---	---	03	---	---	---	---	02	02	02	02
CO5	02	02	---	01	02	02	---	---	---	03	03	01

Prof. Heena Qureshi



Subject Teacher

Name of Subject:- SOLID MECHANICS (BTCVE303T)

Course Objectives	
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 Outcomes	
After completion of syllabus, students would be able to	
1	Understand the behaviour of materials under different stress and strain conditions.
2	Evaluate and draw shear force diagram and bending moment diagram and their relation.
3	Formulate the bending and shear stresses equations and able to draw bending and shear stress diagrams.
4	Formulate slope and Deflection equations for beams subjected to various loads by Macauleys method
5	Analyze and Evaluate the torsion in circular section, Direct and Bending Stresses

MAPPING OF CO WITH PO

CO /PO 		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	3	3	3	3	3						1		3
2	3	3	3	3	3						1		3
3	3	3	3	3	3						1		3
4	3	3	3	3	3	1					1		3
5	3	3	3	3	3	1					1		3

1 Low

2 Medium

3 High

(Prof. S.S. Kapgate)

Name of Subject:- Geotechnical Engineering (BTCVE304T)

Course Objectives

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 Outcomes

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

MAPPING OF CO WITH PO

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	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

(Prof. P.H. Salodkar)

Name of Subject:- BUILDING CONSTRUCTION & ELEMENTARY BUILDING DRAWING (BTCVE305T)

Course Objectives	
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 Outcomes	
After completion of syllabus, students would be able to	
1	Identify components of a building.
2	Differentiate and identify types of building materials.
3.	Select appropriate material for building construction.
4.	Plan various construction related activities and their quality control.
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
Subject Code & CONO.												
1	3											2
2		2			1							3
3					3							
4				3								
5		2										3

1 Low

2 Medium

3 High

(Prof. N.A. Maske)

FLUIDS MECHANICS BTCVE302T

Course Objectives	
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 application
5	To deliberate the concept of impulse momentum principle, dimensional and model analysis of fluid
Course Outcomes	
1	Understand the importance and practical significance of various fluid
2	Comprehend and estimate various forces acting on partially and full submerged
3	Evaluate the importance of various parameters on the fluid motion
4	Know various flow measuring devices with their practical application
5	Illustrate the concept of impulse momentum principle, dimensional analysis

CO->PO MAPPING

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

1 LOW

2 MEDIUM

3 HIGH

(Prof. A.M.Kharwade)

NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR
DEPARTMENT OF CIVIL ENGINEERING
Academic Session: 2022-23 (Odd Sem.)
YEAR/SEM :- IInd yr/ IVth sem

Concrete Technology (BTCVE401T)

Course Objectives	
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 conditions and Intended purpose.
4	To understand the knowledge of Special Concrete.
5	To understand the various repairing techniques and their material
Course Outcomes	
1	Think logically for development Concrete technology application in field of Civil Engineering
2	Gain an experience in the implementation of Concrete Materials on Engineering concepts which are applied on Construction Fields
3	Understand the process of mix design of concrete.
4	Differentiate special concrete from conventional concrete
5	Analyze causes of deterioration of concrete components

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
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

1 Low 2 Medium 3 High



Prof. N Khan

Structural Analysis (BTCVE402T)
Civil Engineering

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

MAPPING OF CO WITH PO

CO/PO  	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO9	PO 10	PO11	PO12
1	3	3	3	3						3		3
2	3	3	3	3						3		3
3	3	3	3	3						3		3
4	3	3	3	3						3		3
5	3	3	3	3						3		3

1 Low 2 Medium 3 High

(Prof. S.S.Kapgate)

Transportation Engineering BTCVE404T

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

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
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

Prof. N Khan

Surveying & Geomatics BTCVE405T

Course Objectives	
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 Outcomes	
1	Measure length and bearing of lines using various instruments and calculate area of given field
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.
3	To carry out levelling and contouring also able to determine volume of earthwork.
4	Use modern instrument like Total work station , GPS, DGPS for surveying and able to prepare maps in CAD
5	Use Remote Sensing and Geographical Information System(GIS), UAV Drone and LiDAR Survey.

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	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

ENVIRONMENTAL ENGINEERING (BTCVE403T)

Course Objectives

1	The course will provide students' knowledge regarding the sources of water, water demands, population forecasting, characteristics, standard 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 environmental and sustainable resource management

Course Outcomes

1	Have knowledge of characteristics of water, drinking water standard and necessity of treatment
2	Design various units of conventional water treatment plant
3	Understand the characteristics of waste water, necessity of treatment, type of treatment processes
4	Equip with the basic knowledge related to design of waste water treatment
5	Understand of significance of air pollution, solid waste, climate change, geo environmental

CO->PO MAPPING

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

1 LOW

2 MEDIUM

3 HIGH

(Prof. A.M.Kharwade)

NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR
DEPARTMENT OF CIVIL ENGINEERING
Academic Session: 2022-23 (Odd Sem.)
YEAR/SEM :- IIIrd yr/ Vth sem

Railway Engineering (Elective-II)

Course Objective	
1	Students should be able to explain and describe various terms in railway engineering.
2	Students should be able to explain, discriminate and design various geometric features of railway track.
3	Students should be able to define and describe the construction and maintenance steps of railway track.
4	Understand the influence of railway transportations in the society.
5	Understand the cooperation, interaction & philosophy of railway safety.

Course Outcome	
After completion of syllabus student able to	
1	Explain Components of Railway Track, different Railway Gauges
2	Design track Gradients as per given requirements
3	Discuss various Types of Track Turnouts
4	Explain Interlocking and modern signal system
5	Describe Surface Defects on Railway Track and Their Remedial Measures

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	PO11	PO 12
Subject Code & CO												
CO1	3	3										
CO2	3	2										
CO3	3	3	2									
CO4	3	3	1									
CO5	3	2	2	1								

1 Low

2 Medium



3 High

Hydraulics Engineering (BTCVE501T)

Course Objectives	
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 Outcomes	
After completion of syllabus, students would be able to	
1	Understand the concepts related to boundary layer theory and determination of drag and lift forces.
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.
3	Use the concepts of uniform and critical flow through open channels, design of efficient channel sections and application of specific energy concept.
4	Understand gradually varied flow analysis and its computation, and its application in open channel flow.
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	PO 8	PO9	PO 10	PO11	PO12
1	3	3	3			2						
2	3	3	3		2	2						
3	3	3	3		2	2						
4	3	3	3	3	2	2						
5	3	3	3	3	2	2	1	1				

1 Low 2 Medium 3 High

(Prof.J.H.Gurnani)

Name of Subject: Reinforced Cement Concrete Designs(BTCVE502T)

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

MAPPING OF CO WITH PO

CO/PO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Subject Code & CO NO.												
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 CO	3	3	3	-	-	-	-	-	-	-	-	3

1Low

2 Medium

3 High

(Prof.N.A. Maske)

Vth SEM**Name of Subject: Civil Engineering Materials, Testing and Evaluation (BTCVE 503T)**

Course Objective	
1	The properties and importance of various constituent materials of concrete used in construction
2	The mechanical behavior 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	
1	Evaluate the role of materials in Civil Engineering
2	Know the mechanical behavior and properties of steel and concrete by standard testing procedures for identifying their performance
3	Explain special materials, composite materials and use of new techniques in constructions for satisfying the future needs of industry.
4	Exposure to a variety of established material testing procedures/techniques and relevant codes of practice
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
Subject Code & CO NO.												
1	2	3			2		2					3
2	2			2	2	1	2		1			2
3	2			2	2	2	3					3
4	2	3		2	2							3
5	2			3						1	2	3

1 Low**2 Medium****3 High****(Prof. D.D. Menghare)**

Professional Practice, Law & Ethics BTCVE504T

Course Objectives	
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 Outcomes	
1	Understand basic purpose of profession, professional ethics and various moral and social issues.
2	Analyse various moral issues and theories of moral development.
3	Realize their roles of applying ethical principles at various professional levels
4	Identify their responsibilities for safety and risk benefit analysis.
5	Understand their constructive roles in dealing various global issues.

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
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	1
CO5	3	3	3	2	3	1	2	2	3	2	2	1

1 Low 2 Medium 3 High

Prof. R. N. Bhosle

Name of Subject: Geo Environmental Engineering (Elective-I) (BTCVE505T)

Course Objective	
1	To create a awareness in the field of Geo-Environmental Engineering.
2	To impart the knowledge on Geotechnical aspects in the disposal of waste materials and the remediation of contaminated sites.
3	To familiarise design of landfill and know the effect of change in environment on soil properties.
4	Explain the effects of pollutants in soil properties.

Course Outcome	
After completion of syllabus student able to	
1	Deal with geo-environmental engineering problems
2	Utilize waste in Geotechnical applications
3	Design Landfill & Mange leachate and landfill gas
4	Do investigation on contaminated site and soil remediation
5	Assess variation in engineering properties of soil due to change in environment

MAPPING OF CO WITH PO

1
Low

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1 2 Medium	2	2	2 3 High	1	1	-	-	-	1	1	2	2
CO 2	2	2	2	2	1	-	-	-	1	2	2	2
CO 3	2	2	2	1	1	-	-	-	1	1	2	2
CO 4	2	2	2	1	1	-	-	-	1	2	2	2
CO 5	2	2	2	1	1	-	-	-	1	1	2	2

(Prof. A.M. Kharwade)

Name of Subject: Advanced Concrete Structure (Elective-II) (BTCVE506T)

Course Objective	
1	To understand the design concepts and learning various codes related to advanced reinforced concrete structure.
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	
1	Understand the behavior and failure modes of different RC structural members
2	Analyze and apply the results in designing various RC structural members.
3	Apply the knowledge and skills in practical problems
4	Understand the relevant software and use the same in the analysis and design of RC members.

MAPPING OF CO WITH PO

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

1 Low

2 Medium

3 High

(Prof. G.C. Dhanjode)

NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR
DEPARTMENT OF CIVIL ENGINEERING
Academic Session: 2022-23 (Odd Sem.)
YEAR/SEM :- IIIrd yr/ VIth sem

Name of Subject: Estimating and Costing (BTCVE601T)

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	
1	Prepare the preliminary estimate for administrative approval & technical sanction for a civil engineering project.
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.
3.	Use the concept of SD, EMD, MAS, Running Bill, Final Bill during the entire project
4.	Use the technique of Rate analysis in estimating the exact cost of material & manpower and hence the entire project.
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
Subject Code & CO NO.												
1	2	2									1	3
2	1	2									2	
3									2		3	
4			2	3	2						2	
5	3	2									2	

1 Low

2 Medium

3 High

Construction Engineering & Management BTCVE602T

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

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO 1			2	2		1					3	1
CO 2			2	2		1					3	1
CO 3			2	2		1					3	1
CO 4			2	2		1					3	1
CO 5			2	2		1					3	1

1 Low 2 Medium 3 High

Dr. Syed Zafar

Repairs & Rehabilitation of Civil Engineering Structures (Elective- III) BTCVE604T

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 buildings and prepare report

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

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO 1	2						2					3
CO 2	2	2	3			2					2	2
CO 3	2	2					2		2		3	2
CO 4	2				2	2	2				2	2
CO 5	3	2	2	2			2		1	1	2	2

1 Low 2 Medium 3 High

Dr. Syed Zafar

Name of Subject: Urban Transportation Planning(Elective III)

Sem – 6th

Course Objective	
1	Students should be able to explain and describe improving transport economic efficiency for transport providers and business user
2	Students should be able to explain, generate alternatives for improving transportation system
3	Students should be able to describe the future demand and selecting the best alternative after proper evaluation
4	Improve mobility levels for the urban poor through promotion of affordable urban transport plans, programmes and technologies
5	Increase the efficiency of existing transport operations through improved planning and management of all modes of transport

Course Outcome	
After completion of syllabus student able to	
1	Explain the characteristic of urban transportation, structure of urban transportation and classification of urban roads.
2	Describe the objectives of transportation planning, data collection for planning and environmental impact analysis.
3	Explain the process of travel demand forecasting & need for interation in different modes of transportation.
4	Describe the use of intelligent Transport System and need to accommodate non-motorized transports.

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	PO11	PO 12
Subject Code &CO												
CO1	3	3										
CO2	3	2										
CO3	3	3	2									
CO4	3	3	1									
CO5	3	2	2	1								

1 Low

2 Medium

3 High

Name of Subject: Environmental Engineering (Open Elective-I) (BTCVE605T)

Course Objective	
1	Understanding the concept and principles of environment.
2	To impart knowledge on the sources, effects and control techniques of water pollution.
3	To understand the behavior of air pollutants and the strategies to control their presence in the ambient atmosphere.
4	To provide a comprehensive insights of the types, sources, generation, storage, collection, transport, processing and disposal of solid waste

Course Outcome	
After completion of syllabus student able to	
1	Explore the components of biosphere and impact of human activity on.
2	Summarize the causes and sources of pollutants, and their impact on global environment.
3	Develop ethics and scientific awareness about waste generation and treatment.
4	Identify sources and types of wastes and its management.
5	Understand noise, noise pollution and control.

MAPPING OF CO WITH PO

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	3	1	1	1	1	2	3	1	3	1	1	1
CO 2	3	2	1	2	1	1	3	1	3	1	2	2
CO 3	2	2	1	1	1	2	2	1	2	1	1	1
CO 4	2	2	1	2	1	1	2	1	2	1	1	1
CO 5	2	1	1	2	1	1	2	1	2	1	1	1

1 Low

2 Medium

3 High

Water Resource Engineering (BTCVE603T)

Course Objective	
After completion of syllabus student able to	
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 Outcomes	
After completion of syllabus student able to	
	Understand occurrence, movement and distribution of water and estimate water abstractions, runoff and hydrographs
	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.
	Estimate reservoir capacity and analyse and design earth dams
	Design and analyse gravity dams and illustrate types of Spillways and energy dissipators
	Design unlined and lined channels and illustrate concepts of other irrigation structures

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	1	3	3	2								2
CO2		3	2									2
CO3	1	3	3									2
CO4	1	3	3									2
CO5		3	3	2								2

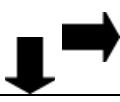
1 Low 2 Medium 3 High

NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR
DEPARTMENT OF CIVIL ENGINEERING
Academic Session: 2022-23 (Odd Sem.)
YEAR/SEM :- IV yr/ VIIth sem

Construction Management and Law (BECVE704T)

Course Outcomes	
On completion of this syllabus, the students should be able to:	
1	Demonstrate the understanding of various types of projects, modern construction techniques and will exhibit the mastery in construction planning, scheduling and various controls.
2	Achieve the knowledge of various types' of equipment's to be used in the construction and its operational cost estimates, understand manpower requirement, planning, resources utilization and management.
3	To know the quality control aspects in planning & management, modern trends project management, application of information system in management of construction projects, safety provisions and equipment's.
4	Analyze the legal aspects in construction projects through the understanding of various laws pertaining to civil engineering and architectural planning & sanctioning, labor & organizational welfare measure, provisions of arbitration and litigations.

MAPPING OF CO WITH PO

CO/PO 	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO9	PO 10	PO11	PO12
1	3	3				3					3	3
2	3	3				3					3	3
3	3	3				3					3	3
4	3	3				3					3	3

1 Low 2 Medium 3 High

Name of Subject: Advanced Concrete Structure (BECVE701)

Course Objective	
1	To understand the design concepts and learning various codes related to advanced reinforced concrete structure.
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	
1	Understand the behavior and failure modes of different RC structural members
2	Analyze and apply the results in designing various RC structural members.
3	Apply the knowledge and skills in practical problems
4	Understand the relevant software and use the same in the analysis and design of RC members.

MAPPING OF CO WITH PO

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

1 Low

2 Medium

3 High

Name of Subject: Estimating and Costing (BECVE702T)

Course Outcome: The Students will be able to	
1	Prepare the preliminary estimate for administrative approval & technical sanction for a civil engineering project.
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.
3	Use the concept of SD, EMD, MAS, Running Bill, Final Bill during the entire project
4	Schedule the project for its timely completion.
5	Use the technique of Rate analysis in estimating the exact cost of material & manpower and hence the entire project.
6	Estimate the bill of quantities using different techniques of preliminary & detailed estimation of buildings & roads
7	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
Subject Code & CONO.												
1	2	2									1	3
2	1	2									2	
3									2		3	
4			2	3	2						2	
5	3	2									2	
6			2	3	2						2	
7	3	2									2	

1 Low

2 Medium

3 High

(Prof. D.D. Menghare)

TRANSPORTATION ENGINEERING-II

Sem- 7th

COURSE OUTCOMES	
1	Understand the functions of various elements of railways, airports, tunnels and docks and harbor.
2	Plan and design various elements of railways, airports, tunnels and docks and harbor.
3	Understand the various principles traffic control in railways, airports, tunnels and docks and harbor
4	Understand layout, design and construction permanent way, runway, taxiways, tunnels, births and jetty.
5	Understand the maintenance of various elements of railways, airports, tunnels and docks and harbor.

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	PO11	PO 12
Subject Code &CO												2
CO1	3											
CO2		3										
CO3	2				2							
CO4	3	3										
CO5											1	2

1 Low

2 Medium

3 High

Air Pollution and Solid Waste Management (BECVE703T)

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 equipments for air pollution to reduce its impact on environment
3	The course will provide students the knowledge regarding problems arriving in handling large amount of solid waste generated, its collection, transportation, and processing
4	The course will prepare students to learn emerging technologies for air pollution control, design safe collection and disposal methods.

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

CO->PO MAPPING

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	1	2				2	3					
CO2		1	3			2	3	2				1
CO3	2					3	3					1
CO4		1				3	3					1
CO5			3			3	3					1

1 Low 2 Medium 3 High

Mr. R. N. Bhosle

3. Advanced Construction Materials (Elective I)

BECVE703T

Course Outcomes	
After completion of syllabus student able to	
1	Understand properties and utilities of cement, mortar, concrete ceramic materials.
2	Understand properties and its utilities of metals and various composites
3	Study the importance of Construction chemicals
4	Study shoring and formwork materials
5	Understand the elementary concepts of smart materials

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	2	2	2	2		1			1	1	2	2
CO2	2	2	2	2		1			1	2	2	2
CO3	2	2	2	2		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

1 Low 2 Medium 3 High

Prof. P. H. Salodkar

NAGPUR INSTITUTE OF TECHNOLOGY, NAGPUR

DEPARTMENT OF CIVIL ENGINEERING


Academic Session: 2022-23 (Odd Sem.)

YEAR/SEM :- IV yr/ VIIth sem

Construction Economics and Finance (BECVE804T)

Course Outcomes	
After completion of syllabus, students would be able to	
1	Acquaint with various economic and financial aspects of construction industry.
2	Understand the tools and techniques of economic analysis for improving their decision making skills.
3	Understand the knowledge of economics and finance with special reference to construction industry.
4	Understand the concept of IRR, turnkey construction projects.
5	Apply knowledge of inflation, recession, financial ratios.

MAPPING OF CO WITH PO

CO/PO 	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO9	PO 10	PO11	PO12
1	1										3	2
2	2	3	3								3	2
3	2	3	3								3	2
4	2	3	3								3	2
5	2	3	3								3	2

1 Low 2 Medium 3 High

Irrigation Engineering (BECVE801T)

Course Outcomes	
After completion of syllabus student able to	
1	Understand the importance and scope of irrigation engineering
2	Understand fully the methods and efficiencies of irrigation, crop water requirement.
3	Understand the planning, design and operation of storage reservoir and make use of it in the practical situation.
4	Understand the basic profile of dams and use the knowledge in checking stability of Gravity dams and Earth dams.
5	Understand the theories of Canal design and apply the concept to design lined and unlined canals and detail out the cross sections.
6	Understand water logging and provide the solution to such problem.

CO->PO MAPPING

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	1	3	3	2								2
CO2		3	2									2
CO3	1	3	3									2
CO4	1	3	3									2
CO5		3	3	2								2
CO6	2	3	3	2								2

1 Low 2 Medium 3 High

PAVEMENT ANALYSIS AND DESIGN (ELECTIVE-II)

Course Outcome	
1	Analyze and Design pavement and under different loading conditions for highways and airfields taking into consideration different characteristics.
2	Propose a pavement management system framework.
3	Design highway appurtenance and highway drainage.
4	Perform different tests considering field conditions and using the knowledge to increase the strength of pavements along with its economy point of view.

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	PO11	PO 12
CO1	3	2	3	1							2	2
CO2	3										1	1
CO3	3	3			2							
CO4	3	2	2	2		2					2	2

ADVANCED REINFORCED CEMENT CONCRETE DESIGN (ELECTIVE-III) BECVE803T

Course Objective	
1	To understand the philosophies of design of reinforced cement concrete and to justify this is the best
2	To know design of advanced structural elements with safety, stability and economical way
3	To study of provisions in IS 1893 and IS 456 for design of structures

Course Outcomes	
After completion of syllabus student able to	
1	Understand the conceptual design of overhead circular service reservoirs.
2	Analysis and design of Highway Bridge: Slab type and Girder type
3	Analyze and Design building frames using Limit state Method.
4	Select the parameters in beam theory for design cylindrical shells
5	Design Silos using Limit state Method.

CO->PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	3	3	3		2			2		3		3
CO2	3	3	3		2			2		3		3
CO3	3	3	3		2			2		3		3
CO4	3	3	3		2			2		3		3
CO5	3	3	3		2			2		3		3

1 Low 2 Medium 3 High

Prof. G.C. Dhanjode

WATER AND WASTE WATER TREATMENT (ELECTIVE III) BECVE803T

Course Objective	
1	To understand the philosophies of design of reinforced cement concrete and to justify this is the best The course will provide students' knowledge regarding the different sources of water & waste water, characteristics, available treatment technologies and designs
2	To know design of advanced structural elements with safety, stability and economical way The course will make students able to design and implement the different water and wastewater treatment units
3	To study of provisions in IS 1893 and IS 456 for design of structures The course will provide students the knowledge regarding real problems finding and handling strategies of water and wastewater treatments.
4	The course will prepare students to learn recent and advanced treatments of water and wastewater and disposals methods.

Course Outcomes	
After completion of syllabus student able to	
1	Understand the process and design components of water treatment such as Aeration, coagulation-flocculation and Sedimentation
2	Understand the process and design the components of water treatment such as Filtration, Disinfection
3	Understand the various sources characteristics and disposal methods of wastewater
4	Understand and design the different preliminary and primary waste-water treatment
5	Understand and design the different Secondary waste-water treatment

CO->PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	3	2	2			2	3	1		1		1
CO2	3	2	2	1	1	2	3	1		1		1
CO3	3	2		1	1	2	3	1		1		1
CO4	2	2	2	1	1	2	3	1		1		1
CO5	2	1	2	1	1	2	3	1		1		1

1 Low 2 Medium 3 High

Prof. A.M. Kharwade

Name of Subject: Construction Method and Equipment Management (BTCVE 801T)

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 labor and equipment management.
5	To have knowledge about construction materials management
Course Outcome	
1	Should have the knowledge about construction industry and construction projects.
2	Should have knowledge about project organization.
3	Should have knowledge about construction planning methods.
4	Should have knowledge about construction labour and equipment management.
5	Should have knowledge about construction materials management.

Name of Subject: Digital Land Surveying & Mapping (BTCVE802T)

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