



List of Revised Courses

Department : Civil Engineering

Programme Name : B.Tech in Civil Engineering

Academic Year: 2024-25

List of Revised Courses

Sr. No.	Course Code	Name of the Course
		NIL



Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2024-24	
School	: Engineering and Technology
Department	: Civil Engineering
Date and Time	:
Venue	:

N. A.



Scheme and Syllabus

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY Scheme of Teaching and Evaluation 2022-2023 (As per NEP-2020)

Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
(Effective from the Academic Year 2022-2023)

I-SEMESTER BTech Mechanical/IP/Chemical/Civil Engineering										
S.N.	Course Code	Course Title	Teaching Hours/week			Examination				Credits
			Theory/Lecture	Tutorial	Practical/ Drawing	Examination in Hours	CIA Marks	SEA Marks	Total Marks	
1	AMEUTH1	Engineering Mathematics - A	3	1	-	03	40	60	100	4
2	CYUATR0	Engineering Chemistry	3	-	-	03	40	60	100	3
3	ECUATR4	Basic Electrical and Electronics Engineering	3	-	-	03	40	60	100	3
4	EGUATR2	Environmental Science and Ecology	2	-	-	03	40	60	100	2
5	CSUATR5	Computer Programming	3	-	-	03	40	60	100	3
6	LACUATR1	Indian Constitution	1	-	-	01	50	-	50	1
7	CYUATR0	Engineering Chemistry Laboratory	-	-	2	03	25	25	50	1
8	CSUATR5	Computer Programming Laboratory	-	-	2	03	25	25	50	1
9	EGUATR2	Engineering Workshop Practices	-	-	2	03	25	25	50	1
10	PEUATR0	Sports and Yoga	-	-	2	-	25	25	50	1
Total			15	1	06	25	350	400	750	20
Note: AM-Mathematics, IP-Physics, ME- Mechanical Engineering, IP- Industrial & Production Engineering, CE- Civil Engineering, CS- Computer Sc. & Engg., IT- Information Technology, PE- Physical Education, PD- Pedagogy, LA- Law, NS- NSS, U- Undergraduate, T- Theory, L- Laboratory.										
BASIC SCIENCE (B)		ENGINEERING SCIENCE (E)		SKILL ENHANCEMENT COURSE (S)		HUMANITIES SCIENCE (H)		MANDATORY COURSE (C)		EXTRA-CURRICULAR ACTIVITIES (E)
1. Mathematics - A		1. Engineering Mechanics		1. Engineering Graphics		1. English for Communication		1. Indian Constitution		1. NSS
2. Physics		2. Introduction to Information Technology		2. Engineering Workshop Practices		2. Human Values and Ethics		2. Environmental Science & Ecology		2. Sports and Yoga
3. Chemistry		3. Basic Electrical Engineering								
4. Mathematics - B		4. Basic Electrical and Electronics Engineering								
		5. Computer Programming								
		6. Basic Communication Engineering								

SCHOOL OF STUDIES OF ENGINEERING AND TECHNOLOGY

Scheme of Teaching and Evaluation 2022-2023 (As per NEP-2020)
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
(Effective from the Academic Year 2022-2023)

II-SEMESTER BTech Mechanical/IP/Chemical/Civil Engineering											
S.N.	Course Code	Course Title	Teaching Hours/week			Examination				Credits	
			Theory/Lecture	Tutorial	Practical/ Drawing	Examination in Hours	CIA Marks	SEA Marks	Total Marks		
											L
1	AMEUTH4	Engineering Mathematics-II	3	1	-	03	40	60	100	4	
2	PPUETH2	Engineering Physics	3	1	-	03	40	60	100	4	
3	ITUETH2	Introduction to Information Technology	3	-	-	03	40	60	100	3	
4	ELUETH3	English for Communication	3	-	-	03	40	60	100	3	
5	CEUETH1	Engineering Mechanics	3	-	-	03	40	60	100	3	
6	ME UETH2/CH UETH2/ IP UETH2/CEUETH2	Human Values and Ethics	1	-	-	02	50	-	50	1	
7	PPUETH2	Engineering Physics Laboratory	-	-	2	03	25	25	50	1	
8	CEUETH1	Engineering Mechanics Laboratory	-	-	2	03	25	25	50	1	
9	MEUETH1	Engineering Graphics	1	-	3	03	25	25	50	3	
10	NSUETH1	NSS	-	-	2	01	25	25	50	1	
Total			17	2	09	27	350	400	750	24	
Note: AM-Mathematics, IP-Physics, ME- Mechanical Engineering, IP- Industrial & Production Engineering, CE- Civil Engineering, CS- Computer Sc. & Engg., IT- Information Technology, PE- Physical Education, NS- NSS, U- Undergraduate, T- Theory, L- Laboratory.											
BASIC SCIENCE (B)			ENGINEERING SCIENCE (E)			SKILL ENHANCEMENT COURSE (S)			HUMANITIES SCIENCE (MANDATORY COURSE (C)		EXTRA-CURRICULAR ACTIVITIES (E)
1. Mathematics - A			1. Engineering Mechanics			1. Engineering Graphics			1. English for communication		1. NSS
2. Physics			2. Introduction to Information Technology			2. Engineering Workshop Practices			2. Indian Constitution		2. Sports and Yoga
3. Chemistry			3. Basic Electrical Engineering						3. Environmental Science		
4. Mathematics - B			4. Basic Electrical and Electronics Engineering						3. Human Values and Ethics & Ecology		
			5. Computer Programming								
			6. Basic Communication Engineering								



DEPARTMENT OF CIVIL ENGINEERING B.TECH. FOURTH YEAR SYLLABUS W.E.F 2022-23

SYLLABUS (SEMESTER-VII)								
Subject Code:	CE07TPE04X	CREDITS:3			SESSIONAL - TA			ESE
Subject:	Professional Elective - 4X	L	T	P	CT 1	CT 2	TOTAL	70
		3	-	-	15	15	30	
Professional Elective-4A or Professional Elective-4B or Professional Elective-4C or Professional Elective-4D or Professional Elective-4E		Any one subject to be Selected from the Professional Electives						
Professional Electives Group -4								
CE07TPE04A	Engineering Hydrology							
CE07TPE04B	Structural Dynamics							
CE07TPE04C	Foundation Engineering							
CE07TPE04D	Rock Mechanics							
CE07TPE04E	Water Resources Planning & Management							



SYLLABUS	(SEMESTER-I)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
Subject Code:	AMUATB1	L	T	P	CT-I	CT-II	Attendance & Assignments	TOTAL		
Subject:	ENGINEERING MATHEMATICS - A	3	1	-	15	15	10	40	60	04

Course Objectives:

1. To study the mean value theorem and nth derivative.
2. To study the indeterminate forms, partial and total differentiation.
3. To study the various concepts of integral calculus such as reduction formula, area, volume and length.
4. To study the ordinary and partial differential equations.
5. To study the applications of ordinary and partial differential equations

Differential Calculus

UNIT-1:

Leibnitz theorem, Roll's theorem, Lagrange's theorem, Mean value theorem, Expansions of functions by McLaurian and Taylor's series, Tangents and normal, Maxima and minima

UNIT-2:

Indeterminate forms, Asymptotes, Radius of curvature, Partial differentiation, Total differentiation

Integral Calculus

UNIT-3:

Reduction formulae, Curve tracing, Area, Volume, Length, Surface area, Double and triple integrals, Gamma and beta function.

Differential Equations

UNIT-4:

Differential equations of first order, Linear differential equation of higher order with constant coefficient, Equations reducible to linear equations with constant coefficients, Cauchy's homogeneous linear equations, Application of linear differential equations, Simultaneous differential equations.

UNIT-5:

Series solution of differential equations about ordinary point, Partial differential equations, linear homogeneous partial differential equations, application of partial differential equations: One dimensional heat equation and wave equation.

Recommended Books:

1. N.P. Bali, A Textbook of Engineering Mathematics, Laxmi publications, 10th edition, 2016.
2. H.K. Das, Higher Engineering Mathematics, S. Chand, 2014
3. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th edition

Course Outcomes: After completing the course, the students will be able to:

1. Expand the function in Maclaurin's and Taylor's series.
2. Find the limit of some indeterminate forms and solve the problems of partial and total differentiation.
3. Solve the problems related to area, volume and length.
4. Solve the ordinary and partial differential equations.
5. Solve the engineering problems using differential equations.

Course Outcomes and their mapping with Programme Outcomes: ENGINEERING MATHEMATICS - A (AMUATB1)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2		1	1				1	2		2	1	1	2
CO2	3	2		1	1				1	2		2	1	1	2
CO3	3	2		1	1				1	2		2	1	1	2
CO4	3	3		1	1				1	2		2	1	1	2
CO5	3	3		1	1				1	2		2	1	1	2

Weightage: 1-Stability, 2-Moderate, 3-Strength



DEPARTMENT OF CIVIL ENGINEERING B.TECH. THIRD YEAR SYLLABUS W.E.F 2022-23

SYLLABUS	(SEMESTER-V)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
Subject Code:	CE205PPC05	L	T	P	CT-I	CT-II	TOTAL	20	50	1
Subject:	Soil Mechanics Lab	0	0	2	-	-	30			

Course Learning Objectives:

The objective of this Course is:

- To learn the basic tests for classification of different soils.
- To conduct compaction tests for laboratory and in-situ.
- To learn the sampling of soil.

Course Content:

Minimum 10 experiments to be performed

Determination of Index Properties

- To determine the specific gravity of soil sample by, a) Pycnometer Bottle Method., b) Density Bottle Method.
- To determine the particle size distribution of a soil by a) by Mechanical Analysis/IS Sieve Method., b) by Hydrometer apparatus.
- Liquid limit and Plastic limit Tests.
- Shrinkage limit and Differential free swell test.

Determination of In-Situ Density and Compaction Characteristics

- To determine the minimum moisture content (OMC) at maximum dry density (MDD) of soil by, a) Light weight Proctor Test, b) Heavy Weight Proctor Test
- To determine in situ dry density of soil by a) Core cutter method, b) Sand replacement method.

Determination of Engineering Properties- Part A

- To determine the permeability of soil by a) Falling Head Methods, b) Constant Head Methods.
- To determine the shear strength parameters: a) Direct shear test in cohesionless soil, b) Unconfined compression test in cohesive soil

Determination of Engineering Properties- Part B

- To determine the shear strength parameters for a) Tri-axial compression test in c- ϕ Soil (Demonstration only), b) One dimensional consolidation test (Determination of co-efficient of consolidation only), c) Laboratory vane shear test in cohesive soil.
- California Bearing Ratio Test.

TextBooks:

- Soil Engineering Laboratory Instruction Manual" published by Engineering College Co-operative Society, Anna University, Chennai, 2010.
- "Sudheba Reddy, E. Ramasastri, K. "Measurement of Engineering Properties of Soils", New age International (P) limited publishers, New Delhi, 2008.
- Lambe T.W., "Soil Testing for Engineers", John Wiley and Sons, New York, 1951. Digitized 2008.
- IS Code of Practice (2720) Relevant Parts, as amended from time to time, Bureau of Indian Standards, New Delhi.
- G.Venkatasappa Rao and Gounham K. Potluri, "Geosynthetics Testing - A laboratory Manual", Sai Master Geosynthetic Services Pvt. Ltd., 1st Edition 2008.
- BenjaM.Das., "Soil Mechanics: Laboratory Manual", Oxford University Press, eighth edition, 2012

REFERENCES:

- Basic and Applied Soil Mechanics by GopalRanjan and A.S.R. Rao, New Age International (P) Limited, Publishers, New Delhi-110002.
- Soil Mechanics and Foundations by Dr. B. C. Punmia, Ashok Kr. Jain & Arun Kr. Jain, Laxmi Publications (P) Ltd, New Delhi-110002

Course Outcomes:

On completion of the course, the student is expected to be able to:

- CO1: Conduct tests to determine the index properties of soils
CO2: Determine the density and compaction characteristics in laboratory as well as in situ.
CO3: Conduct tests to find permeability and shear strength of soils (c & ϕ)
CO4: Understand various tests to find c & ϕ parameters, compressibility and CBR value.



SYLLABUS	(SEMESTER-II)	Periods/ Week			Internal Assessment (IA)				ESE	Grand Total	Credits
Subject Code	AMUBTB4	L	T	P	CT-1	CT-II	Attendance & Assignments	TOTAL			
Subject:	ENGINEERING MATHEMATICS - B	3	1	-	15	15	10	40	60	100	04

Course Objectives:

1. To study the concepts of vector space, linear transformation, matrices and system of linear equations.
2. To find the roots of equations i.e. quadratic and bi-quadratic equations.
3. To study the concept of gradient, divergence, curl, Green's theorem, Gauss's theorem and Stokes's theorem and their applications.
4. To study the properties of complex numbers and to establish the relation between exponential, hyperbolic and logarithm functions.
5. To test the nature of infinite series i.e. convergence, divergence and oscillatory.

UNIT-1: Linear Algebra

Vector space, linear dependence and linear independence of vectors, linear transformations, rank and inverse by elementary transformations, system of linear equations – consistency and inconsistency, eigen value and eigen vectors, Cayley-Hamilton theorem and its application to find the inverse.

UNIT-2: Theory of equations

Polynomial and polynomial equations, division algorithm, roots of equations, remainder theorem, factor theorem, synthetic division, fundamental theorem of algebra, multiplication of roots, Descartes's rule of sign, Descartes's method.

UNIT-3: Vector Calculus

Vector functions, differentiation of vectors, velocity and acceleration, scalar and vector field, gradient of scalar field, directional derivative, properties of gradient, divergence of vector, curl of vector, point function, properties of divergence and curl, integration of vector function, line integral, surface integral, Green's theorem, Gauss theorem, Stoke's theorem (without proof) and their simple applications.

UNIT-4: Complex Number

Complex numbers and its properties, conjugate complex numbers, standard form of complex numbers, De-Moivre's theorem, Roots of complex numbers, exponential function of complex variable, circular form of complex variable, Hyperbolic function of complex numbers, Logarithmic function of complex numbers.

UNIT-5: Infinite Series

Sequence, convergent, divergent, oscillating sequence, infinite series, behavior of infinite series, ratio test, root test, comparison test, Raabe's test, Logarithmic test.

Recommended Books:

1. N.P. Bali, A Textbook of Engineering Mathematics, Laxmi publications, 10th edition, 2016.
2. H.K. Das, Higher Engineering Mathematics, S. Chand, 2014
3. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 44th edition

Course Outcomes: After completion of this course, the students will be able:

1. To know the concept of vector space, matrices and their various properties and also be able to solve the system of linear equations.
2. To solve the quadratic and bi-quadratic equations.
3. To solve the problems of gradients, divergent, curl and the applications of vector calculus.
4. To find the roots of complex numbers with the help of De-Moivre's theorem.
5. To know the convergence and divergence of infinite series using various type of tests.

Course Outcomes and their mapping with Programme Outcomes: ENGINEERING MATHEMATICS – B (AMUBTB4)

CO	PO												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2		1	1				1	2		2	1	1	2
CO2	3	2		1	1				1	2		2	1	1	2
CO3	2	2		1	1				1	2		2	1	1	2
CO4	2	2		1	1				1	2		2	1	1	2
CO5	2	2		1	1				1	2		2	1	1	2

Weightage: 1-Slightly, 2-Moderately, 3-Strongly



DEPARTMENT OF CIVIL ENGINEERING B.TECH. FOURTH YEAR SYLLABUS W.E.F 2022-23

SYLLABUS	(SEMESTER VII)	Periods/ Week			Internal Assessment (IA)			ESE	Grand Total	Credits
Subject Code:	CE07TPE04A	L	T	P	CT-I	CT-II	TOTAL	70	100	3
Subject:	Engineering Hydrology	3	0	0	15	15	30			

Course Learning Objectives:

- To develop the fundamentals of hydrology and Precipitation.
- To study various abstractions of precipitation.
- To understand the concepts of Rainfall-Runoff correlations.
- To learn about the importance of Hydrographs and the basics of the flood.
- To understand the fundamentals of groundwater hydrology.

Course Content:

UNIT-1 Introduction Description of Hydrologic Cycle, Overview of the applications of hydrology in engineering. **Forms of precipitation, measurement, depth-area-duration, and intensity-duration frequency relations.**

UNIT-2 Abstraction from Precipitation, Evaporation - process, measurement, and estimation, Evapotranspiration measurement and estimation Infiltration process, measurement, and estimation.

UNIT-3 Runoff **Surface Runoff and Stream Flow Measurement, Rainfall-Runoff relations.**

UNIT- 4 Hydrograph Factors affecting flow hydrograph, Unit hydrograph, its analysis, and S-curve hydrograph, Synthetic and instantaneous unit hydrographs. Basics of Flood and Flood Routing.

UNIT- 5 Groundwater Occurrence of groundwater, types of aquifers, aquifer properties, Darcy's law, Conductivity and Transmissivity, the yield from a well under steady-state conditions, Laboratory and field measurement of permeability.

Text Books:

1. Engineering Hydrology K.Subramanya, Tata McGraw-Hill Education
2. Hydrology Principles, Analysis and Design H.M.Raghunath, New Age International
3. Hand Book of Applied Hydrology V.T.Chow, McGraw-Hill Inc
4. Ojha, C.S.P., Bhatnagar, P. and Berndtson, R. - Engineering Hydrology, Oxford University Press Canada.
5. K. C. Patra, Hydrology and Water Resources Engg., Narosa Publishing house, New Delhi.
6. D. K. Todd, Groundwater Hydrology, John Wiley and Sons

Course Outcomes- Upon completion of this course students shall be able to

- CO1:** Describe the basic concepts of hydrology and precipitation to integrate them with the physical hydrological processes.
- CO2:** Understand the various process and conduct measurements, and estimations of hydrological components.
- CO3:** Formulate the rainfall-runoff relationship and apply it to engineering practices.
- CO4:** Explain and use the hydrographs for practical purposes and investigations.
- CO5:** Understand and explain the basics of groundwater hydrology.