

Syllabus-2021-2022

(SOET)(BTech-CivilEngineering)

Title of the Course	Evaluation of Industrial Training-1
Course Code	CED0301[P]

Part A

Year	2nd	Semester	3rd	Credits	L	T	P	2
					0	0	2	
Course Type	Lab only							
Course Category	Projects and Internship							
Pre-Requisite/s	subject knowledge of first and second semester			Co-Requisite/s				
Course Outcomes & Bloom's Level	<p>CO1- Understand the 'real' working environment and get acquainted with the organization structure, business operations and administrative functions(BL2-Understand)</p> <p>CO2- To have hands-on experience in the students' related field so that they can relate and reinforce what has been taught at the university(BL2-Understand)</p> <p>CO3- To promote cooperation and to develop synergetic collaboration between industry and the university in promoting a knowledgeable society(BL3-Apply)</p> <p>CO4- Develop the confidence require for group living and sharing of responsibilities of acquire leader ship qualities and democratic attitudes. (BL4-Analyze)</p> <p>CO5- Develop the capacity to meet-emergencies and natural disasters and practice national integration and social harmony(BL5-Evaluate)</p>							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✓ Gender ✓ Human Values ✓ Environment ✓		SDG (Goals)	SDG4(Quality education)				

Part B

Modules	Contents	Pedagogy	Hours
1	Students have to submit a report on training and give a presentation on his/her experience	Presentation	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Industrial training has its own importance in a career of a student who is pursuing a professional degree. It is considered as a part of college curriculum. The objective of an industrial training is to provide us an insight regarding internal working of companies. We understand that theoretical knowledge is not enough for a successful professional career. With an aim to go beyond academics, industrial visit provides students a practical perspective of the work place. Industrial trainings provide an opportunity to learn practically through interaction, working methods and employment practices.	Field work	BL3-Apply	40
Module-II	It gives students an exposure to current work practices as opposed to possibly theoretical knowledge being taught at college. Industrial visits provide an excellent opportunity to interact with industries and know more about industrial environment. Industrial trainings are arranged by TAP cell with an objective of providing us an opportunity to explore different sectors like IT, Manufacturing services, finance and marketing. Industrial visit helps to combine theoretical knowledge with practical knowledge. Industrial realities are opened to the students through industrial visits/trainings.	Field work	BL4-Analyze	40 hrs

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
	50				
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	

Syllabus-2021-2022

(SOET)(BTech-CivilEngineering)

Title of the Course	Strength of Materials						
Course Code	CEL0302[T]						
Part A							
Year	2nd	Semester	3rd	Credits	L	T	P
					3	0	0
Course Type	Embedded theory and lab						
Course Category	Discipline Core						
Pre-Requisite/s	a complete description of the geometry of the member, its constraints, the loads applied to the member and the properties of the material of which the member is composed.			Co-Requisite/s	Mechanics		
Course Outcomes & Bloom's Level	<p>CO1- Students will revise the concept of Mechanics and Forces (BL1-Remember)</p> <p>CO2- To understand the basic concept of analysis and design of members subjected to torsion also the analysis and design of structural elements such as columns and struts(BL2-Understand)</p> <p>CO3- Students are able to Take the Data Concerning strength of various structural elements(BL3-Apply)</p> <p>CO4- To suggest suitable material from among the available in the field of construction and manufacturing(BL4-Analyze)</p> <p>CO5- To evaluate the behavior and strength of structural elements under the action of compound stresses and thus understand failure concepts (BL4-Analyze)</p> <p>CO6- To Complete Determination of SFD, BMD and Deflection of Different Structural Elements(BL4-Analyze)</p>						
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✓ Human Values ✓ Environment ✓		SDG (Goals)	SDG4(Quality education)			

Part B

Modules	Contents	Pedagogy	Hours
1	Simple Stresses & strains: Concept of elastic materials & isotropic materials, various types of stresses & strains, elastic constants, stresses in compound, composite and tapering bars, temperature stresses, Generalized Hooke's law. Complex Stresses & Strains: Two dimensional analyses of stresses and strains with graphical representation. Theory of failure	problem based learning, experimental learning, field trips, case study	10
2	Bending & Shear Stresses: Theory of simple and pure bending. Moment curvature relationship. Distribution of bending and shear stresses across the various sections	problem based learning, experimental learning, field trips, case study	10
3	Deflection computation of determinate beams using Double Integration Methods, Macaulay's Method, Conjugate Beam Method and Moment- Area Method	problem based learning, experimental learning, field trips, case study	8
4	Columns & Struts: Euler's theory of buckling of columns with different end conditions, Effective Length, slenderness ratio, Rankine Formulae, Eccentric loading on columns, slender column.	problem based learning, experimental learning, field trips, case study	8
5	Unsymmetrical Bending & Shear Center: Bending of a beam in a plane which is not a plane of symmetry. Shear center, Curved beams: Pure bending of curved beams of rectangular, circular I sections, Stress distribution and position of neutral axis.	problem based learning, experimental learning, field trips, case study	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Comparative study of tensile strength of different types of steel	PBL	BL4-Analyze	3
2	Comparative study of hardness of steel with other available materials	PBL	BL4-Analyze	3

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	12	60	
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	

Part E

Books	Timushenko. S. P. and Young, Strength of Material, East-West Press
Articles	https://www.google.co.in/books/edition/A_Textbook_of_Strength_of_Materials/2IHEqp8dNWwC?hl=en&gbpv=1&dq=strength+of+materials&printsec=frontcover
References Books	R K Bansal, Strength of Material, Laxmi Publication
MOOC Courses	https://nptel.ac.in/courses/112106141
Videos	https://www.youtube.com/watch?v=8CP714_wKVk

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	2	-	-	3	3	-	-	3	2	3
CO2	3	1	2	2	2	2	2	1	3	3	1	-	3	3	3
CO3	3	2	-	-	-	-	-	-	2	2	1	-	2	3	2
CO4	1	2	2	2	2	-	2	2	-	-	2	1	3	2	3
CO5	2	2	1	-	-	-	-	1	2	1	2	-	2	2	3
CO6	3	2	2	1	-	-	-	1	2	2	2	-	2	3	2

Syllabus-2021-2022

(SOET)(BTech-CivilEngineering)

Title of the Course	Civil Engg. Materials & Concrete Technology						
Course Code	CEL0303[T]						
Part A							
Year	2nd	Semester	3rd	Credits	L	T	P
					3	0	1
							4
Course Type	Embedded theory and lab						
Course Category	Discipline Core						
Pre-Requisite/s	Students must have knowledge of Structural Materials			Co-Requisite/s			
Course Outcomes & Bloom's Level	<p>CO1- To remember the various concepts in theory of Construction materials (BL1-Remember)</p> <p>CO2- To understand & analyze the different function of ingredients of concrete(BL2-Understand)</p> <p>CO3- To implement the different designing concrete mix design(BL3-Apply)</p> <p>CO4- To provide experimental basis, and to enable the students to analyze and test the concrete properties (BL4-Analyze)</p> <p>CO5- To evaluate the applications of different special types of concrete(BL5-Evaluate)</p> <p>CO6- To apply the understanding of destructive and non destructive testing of concrete(BL3-Apply)</p>						
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✓ Human Values ✓ Environment ✓		SDG (Goals)	SDG4(Quality education)			

Part B

Modules	Contents	Pedagogy	Hours
1	Stones: Occurrence, varieties, Characteristics and their testing, uses, quarrying and dressing of stones. Timber: Important timbers, their engineering properties and uses, defects in timber, seasoning and treatment. Brick and Tiles: Manufacturing, characteristics, classification and uses, improved brick from inferior soils. Flooring tiles and other tiles.	lecture with problem based learning, experimental learning, field trips, case study	10
2	Miscellaneous Construction Materials: Use of fly ash in mortars, lime, Fly ash bricks, Stabilized mud blocks, D.P.C. materials, Building materials made by industrial & agricultural wastes, clay products, P.V.C. materials, advance materials for flooring, doors & windows, Aluminum & glass composites.	lecture with problem based learning, experimental learning, field trips, case study	10
3	Concrete: Introduction: classification, properties, grades, advantage & disadvantages of concrete. Ingredients of concrete, manufacturing and types of cement, aggregates, water and admixtures. Properties of Fresh and Hardened Concrete: Workability-Testing of fresh concrete, Compressive & Tensile strength Characteristics of hardened concrete: Shrinkage and Creep of concrete temperature effects, durability,	lecture with problem based learning, experimental learning, field trips, case study	10
4	Design of Concrete Mix: Introduction, Various classical methods of concrete mix design, Mix design using I.S. code method-basic considerations and factors influencing the choice of mix design, acceptance criteria for concrete. Production and Quality Control of Concrete, curing at different temperatures. field control, Inspection & Testing of Concrete	lecture with problem based learning, experimental learning, field trips, case study	8
5	Special Concrete : Brief Introduction of Concreting underwater, hot & cold weather condition, Light weight concrete, Ready mix concrete, Fiber reinforced concrete, Polymer concrete composites, Shotcrete, Rubble concrete, Resin concrete, Heat resistant concrete, Mass concrete, Temperature control of mass concrete.	lecture with problem based learning, experimental learning, field trips, case study	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	To determine the water absorption, compressive strength and efflorescent effect of brick	Experiments	BL5-Evaluate	3
2	To determine the normal consistency, initial and final setting time of cement	Experiments	BL4-Analyze	3
3	To determine the soundness of cement	Experiments	BL3-Apply	3
4	To determine the bulking of sand	Experiments	BL3-Apply	3
5	To determine the compressive strength of cement mortar	Experiments	BL5-Evaluate	3
6	To determine the density & water absorption of aggregates	Experiments	BL4-Analyze	3
7	To determine the workability of concrete by slump cone test/ compaction factor test	Experiments	BL4-Analyze	3
8	To determine the compressive strength of concrete cube	Experiments	BL5-Evaluate	3

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	30
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
0	0	0	0	0	0

Part E

Books	1. S.C. Rangwala - Engineering Materials. , 2. Varshney RS - Concrete Technology; Oxford& IBH publishing co. 3. M S Shetty - Concrete Technology.
Articles	https://civiltechnicalguruji.wordpress.com/wp-content/uploads/2018/07/advanced-concrete-technology-zongjin-li.pdf
References Books	M S Shetty - Concrete Technology.
MOOC Courses	https://archive.nptel.ac.in/courses/105/102/105102012/
Videos	https://civiltechnicalguruji.wordpress.com/wp-content/uploads/2018/07/advanced-concrete-technology-zongjin-li.pdf

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	1	-	-	-	-	-	2	2	3	3	2	2
CO2	3	2	2	1	-	-	-	-	-	2	2	2	2	3	2
CO3	3	3	2	2	-	-	-	-	-	1	3	2	2	3	2
CO4	3	2	3	2	2	-	-	-	1	2	2	3	3	2	2
CO5	3	3	2	2	2	-	-	-	2	2	3	2	3	3	3
CO6	3	2	3	3	-	-	-	-	1	1	2	3	3	2	2



Syllabus-2021-2022

(SOET)(BTech-CivilEngineering)

Title of the Course	Highway and Traffic Engineering							
Course Code	CEL0313[T]							
Part A								
Year	2nd	Semester	3rd	Credits	L	T	P	C
					3	0	1	4
Course Type	Embedded theory and lab							
Course Category	Discipline Core							
Pre-Requisite/s	Basics of Materials			Co-Requisite/s				
Course Outcomes & Bloom's Level	<p>CO1- Students will be able to get Awareness about the road planning & Traffic problems of the country.(BL1-Remember)</p> <p>CO2- To introduce the knowledge of Highway Planning(BL1-Remember)</p> <p>CO3- Students are able to have knowledge of Highway Planning, Alignment, Construction & maintenance of roads(BL2-Understand)</p> <p>CO4- To knowledge of Traffic Jamming & its solutions on Highways & Minimize The numbers of road accidents(BL2-Understand)</p> <p>CO5- To design Highways(BL3-Apply)</p> <p>CO6- To be able to construct roads(BL5-Evaluate)</p>							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		SDG (Goals)	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG5(Gender equality) SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG8(Decent work and economic growth) SDG10(Reduced inequalities) SDG11(Sustainable cities and economies) SDG12(Responsible consumption and production) SDG13(Climate action) SDG14(Life below water) SDG15(Life on land) SDG17(Partnerships for the goals)				

Part B

Modules	Contents	Pedagogy	Hours
1	High way planning, Alignment & Geometric Design: Principles of highway planning, road planning in India and financing of roads, classification patterns. Requirements, Engg. Surveys for highway location.	Experimental learning , case study ,field trips,problem based learning	10
2	Cross sectional elements- width, camber, super-elevation, sight distances, extra widening at curves, horizontal and vertical curves, numerical problems.	Experimental learning , case study ,field trips,problem based learning	10
3	Bituminous & Cement Concrete Payments: Design of flexible pavements, Design of Rigid pavements using IRC charts WBM, , surface dressing, interfacial treatment- seal coat, tack coat, prime coat, wearing coats, grouted macadam, bituminous concrete specification, construction and maintenance. Advantages and disadvantages of rigid pavements, general principles of design, types, construction, maintenance and joints, dowel bars, tie bars	Experimental learning , case study ,field trips,problem based learning	8
4	Low Cost Roads, Drainage of Road and testing: Principles of stabilization, mechanical stabilization, requirements, advantages, disadvantages and uses, quality control, macadam roads-types, specifications, construction, maintenance and causes of failures, highway materials, properties and testing, Channelized and unchannelised intersections, at grade & grade separated intersections, description, rotary-design elements, advantages and disadvantages. Evaluation and maintainance of pavements.	Experimental learning , case study ,field trips,problem based learning	9
5	Traffic Characteristics: road users Characteristics-general human characteristics, physical, mental and emotional factors, factor affecting reaction time, PIEV theory, vehicular characteristics: characteristics affecting road design width, height, length, and other dimensions. Weight, power, speed and breaking capacity of a vehicle. Traffic studies: - spot speed studies and volume studies, speed and delay studies purpose, causes of delay, method of conducting speed and delay studies. Origin and destination studies: various method, collection and interpretation of data. Traffic capacity studies: volume, density, Mass transportation.	Experimental learning , case study ,field trips,problem based learning	9

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	CBR Test	Experiments	BL3-Apply	2
2	Abrasion Test	Experiments	BL3-Apply	2
3	Impact Test	Experiments	BL4-Analyze	2
4	Specific Gravity Test	Experiments	BL2-Understand	2
5	Bitumen Adhesion	Experiments	BL4-Analyze	2
6	Penetration Test	Experiments	BL3-Apply	2
7	Viscosity Test	Experiments	BL4-Analyze	2
8	Ductility Test	Experiments	BL5-Evaluate	2

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	12	60	
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	

Part E

Books	Khanna S. K. , Justo C. E. G. Highway & Traffic Engineering, Nem Chand Publishers
Articles	https://www.google.co.in/books/edition/Highway_Engineering/86QEEAAAQBAJ?hl=en&gbpv=1&dq=justo+khanna&printsec=frontcover
References Books	Kadiyali L.R, Highway Engineering, Khanna Publications
MOOC Courses	https://nptel.ac.in/courses/105105107
Videos	https://www.youtube.com/watch?v=k117-foOK_Y&list=PLk7ptZcl9vmgQsUoS5XcIloFVi383V6E9

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	-	-	-	-	2	3	-	2	3	2	2
CO2	3	2	2	2	-	-	-	-	2	-	-	-	3	2	2
CO3	2	3	1	1	-	-	-	-	1	2	1	-	2	2	2
CO4	2	3	2	1	-	-	-	-	-	-	-	2	2	3	2
CO5	3	2	2	2	-	-	-	-	2	2	-	-	3	3	2
CO6	3	2	2	3	1	-	-	-	-	2	-	1	3	1	1



Syllabus-2021-2022

(SOET)(BTech-CivilEngineering)

Title of the Course	Elementary design of structures (RCC)							
Course Code	CEL0331[T]							
Part A								
Year	2nd	Semester	3rd	Credits	L	T	P	
					3	0	1	4
Course Type	Embedded theory and lab							
Course Category	Discipline Core							
Pre-Requisite/s	Basics of Materials Properties and Knowledge of Mechanics			Co-Requisite/s				
Course Outcomes & Bloom's Level	CO1- Students will be able to get knowledge about Structural Members(BL1-Remember) CO2- To introduce the knowledge of Beams and Slab Designs(BL2-Understand) CO3- Students are able to understand yield Line theory of Slabs(BL2-Understand) CO4- To analyze the concept of Soft Storey(BL4-Analyze) CO5- To Apply Codal Provision in designing methods(BL3-Apply) CO6- To be able to create different basic elements of a building(BL4-Analyze)							
Courses Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		SDG (Goals)	SDG11(Sustainable cities and economies)				

Part B

Modules	Contents	Pedagogy	Hours
1	Basic Principles of Structural Design : Assumptions, Mechanism of load transfer, Various properties of concrete and reinforcing steel, Introduction to working stress method and limit state methods of design, partial safety factor for load and material.	Experimental learning , case study ,field trips,problem based learning	10
2	Design of Beams: Singly & Doubly reinforced sections	Experimental learning , case study ,field trips,problem based learning	8
3	Design of Slabs: One way slab, Two way slab, Yield line theory	Experimental learning , case study ,field trips,problem based learning	8
4	Concept of Soft Storey: Mechanism of load transfer in soft storey, Stiffness and Stability criteria, Design problems	Experimental learning , case study ,field trips,problem based learning	8
5	Design and drawing details of the various RCC structures, Discussion of Codal provisions of IS 456-2000, SP-16.	Experimental learning , case study ,field trips,problem based learning	10

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Patterns of Reinforcements in Beams	Experiments	BL3-Apply	2
2	Patterns of Reinforcements in Columns	Experiments	BL3-Apply	2
3	Patterns of Reinforcements in Slabs	Experiments	BL3-Apply	2
4	Types of Beams	Experiments	BL2-Understand	2
5	Types of Columns	Experiments	BL2-Understand	2
6	Types of Slab	Experiments	BL2-Understand	2
7	Drawings of Beams in AutoCad	Experiments	BL4-Analyze	2
8	Drawings of Columns in AutoCad	Experiments	BL4-Analyze	2

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	12	60	
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	

Part E

Books	1. B.C. Punmia Ashok Kumar Jain, RCC Designs, Laxmi Publication 2. A.K. Jain, Reinforced Concrete: Limit State Design, Nem Chand & Brothers
Articles	https://www.google.co.in/books/edition/Reinforced_Concrete_Structures_Vol_I/6g1fu4pRDckC?hl=en&gbpv=1&dq=design+of+rcc+structures&printsec=frontcover
References Books	N.Krishnaraju, Design of R.C structures, CBS Publishers and distributors
MOOC Courses	https://nptel.ac.in/courses/105105104
Videos	https://www.youtube.com/watch?v=x2_W127EFrU&list=PLH1Yxo6h9TZk49Yx84IbpJeYfe87Kt69I

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	-	3	3	-	-	2	3	2
CO2	1	-	1	1	1	2	-	-	2	3	-	-	3	2	2
CO3	-	-	2	1	-	-	-	-	2	1	-	-	3	2	2
CO4	-	-	2	3	1	-	-	-	-	-	-	-	3	2	2
CO5	-	1	-	2	1	-	-	-	-	-	-	-	3	1	2
CO6	-	1	-	2	2	2	-	-	2	-	-	-	2	2	1

Syllabus-2021-2022

(SOET)(BTech-CivilEngineering)

Title of the Course	Building Design						
Course Code	CEP333[P]						
Part A							
Year	2nd	Semester	3rd	Credits	L	T	P
					0	0	2
Course Type	Lab only						
Course Category	Discipline Core						
Pre-Requisite/s	Students must have basic knowledge of Engineering Graphics and Building Elements			Co-Requisite/s			
Course Outcomes & Bloom's Level	CO1- To Remember basic fundamentals of building Design(BL1-Remember) CO2- To Understand the concept of drawing basic elements of buildings(BL2-Understand) CO3- To Analyse different techniques for different views of building(BL4-Analyze) CO4- To apply knowledge of different plans on real life building structures(BL3-Apply) CO5- To develop plans of superstructure and substructure details of a building(BL5-Evaluate)						
Courses Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		SDG (Goals)	SDG11(Sustainable cities and economies)			

Part B

Modules	Contents	Pedagogy	Hours
1	Appreciate types of Drawings and its importance, Draw various types of Projections. Use building drawing Symbols, Conventions, and Abbreviations, Apply various types of scales as per needs.	problem based learning, experimental learning,case study	5
2	Apply the Bye-laws and Principles of Planning for residential and other public buildings.	problem based learning, experimental learning,case study	6
3	Develop concept plan of buildings, Prepare detail drawings for single and two storied residential building and public building	problem based learning, experimental learning,case study	8
4	Generate perspective view of simple building by different methods, Develop building models	problem based learning, experimental learning,case study	5
5	Draw details of parts of buildings, provide scope and provisions for building components and services	problem based learning, experimental learning,case study	4

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Interpretation of building drawings approved under local authority	Experiments	BL2-Understand	2
2	Draw symbols , conventions and Abbreviations in sketch book	Experiments	BL2-Understand	2
3	Study of building by-laws act and national building code (NBC)	Experiments	BL3-Apply	2
4	Draw detail plan on drawing sheet - 1 plan ,elevation and section of existing building (actual Measurement Drawing)	Experiments	BL3-Apply	2
5	Draw detail of foundation plan of one room building /two room building in sketch book	Experiments	BL4-Analyze	2
6	Draw working drawings sheet -2 for single storied residential building (bungalow)on 250sq.m plot with scale and show following detail: GF & FF plan with elevation, section and opening schedule	Experiments	BL4-Analyze	2
7	Prepare concept plan of any one other type of building considering local bye laws: high school building, Shopping centre, Hospital and Industrial Building in sketch book.	Experiments	BL4-Analyze	2
8	Develop perspective view of single room residential building with verandah & steps by any methods.	Experiments	BL3-Apply	2

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	0

Syllabus-2021-2022

(SOET)(BTech-CivilEngineering)

Title of the Course	Engineering Mathematics							
Course Code	MAL0308[T]							
Part A								
Year	2nd	Semester	3rd	Credits	L	T	P	C
					4	0	0	4
Course Type	Theory only							
Course Category	Discipline Core							
Pre-Requisite/s	Basic knowledge of equations			Co-Requisite/s	Basic knowledge of roots			
Course Outcomes & Bloom's Level								
Courses Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✗ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗		SDG (Goals)	SDG4(Quality education)				

Part B

Modules	Contents	Pedagogy	Hours
Unit 1	Introduction to numerical computing, Approximation and error in numerical computations, Numerical solution of algebraic and Transcendental equations. Regula-Falsi method, Newton-Raphson method, Graffes-Root squaring method, Iterative method. Solution of simultaneous linear equation, Gauss-Elimination method, Jacobi's method Gauss- Seidel method Iterative method. Numerical differentiation and integration(Trapezoidal rule Simpson's 1/3rd rule , Simpson's 3/8rule)	lecture with Board , Quiz, Seminar,	8
Unit 2	Difference operators, Interpolation: Newton's forward and backward method, Lagrange method, Central difference interpolation, Numerical solution of ordinary differential equations: Picard's method, Euler method, Modified Euler method and Runge- Kutta Method, Numerical solution of partial differential equation: Elliptic (Laplace Equation), Parabolic (Heat conduction equation)	lecture with Board , Quiz, Seminar,	8
Unit 3	Laplace Transform: Laplace Transform of elementary functions, Laplace Transform of derivatives, integrals and multiplication by t^n and division by t , Inverse Laplace Transform., convolution Theorem (application, only), application to solution of differential equations.	lecture with Board , Quiz, Seminar,	8
Unit 4	Fourier transform, Fourier complex transform Fourier integral theorem, Fourier sine and cosine transform of simple function of derivatives, Finite Fourier sine & cosine transform, inverse of Fourier transform, Application to differential equation, solution of one dimensional heat and wave equations through Fourier transform.	lecture with Board , Quiz, Seminar,	8
Unit 5	Transform: Definition of Z -transform, Z-transform of simple sequences. Properties of Z -transform. Initial and final value theorem, Inverse Z -transform, partial fraction method, convolution theorem, residue method, Application to finite difference equation.	lecture with Board , Quiz, Seminar,	8

