Syllabus-2019-2020

(SOET)(BTech-CivilEngineering)

Title of the Course	Industrial Training
Course Code	CED0501[P]

Part A

Year	3rd	**Semester**	5th	**Credits**	L	T	P	C
					0	0	2	2
Course Type	Lab only							
Course Category	Projects and Internship							
Pre-Requisite/s	Basic Knowledge of Civil Engineering			**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** Understand the 'real' working environment and get acquainted with the organization structure, business operations and administrative functions**(BL2-Understand)** **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)** **CO3-** To promote cooperation and to develop synergetic collaboration between industry and the university in promoting a knowledgeable society**(BL3-Apply)** **CO4-** Develop the confidence require for group living and sharing of responsibilities of acquire leader ship qualities and democratic attitudes. **(BL4-Analyze)** **CO5-** Develop the capacity to meet emergencies and natural disasters and practice national integration and social harmony**(BL5-Evaluate)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✓ Environment ✕		**SDG (Goals)**	SDG9(Industry Innovation and Infrastructure) SDG11(Sustainable cities and economies)				

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	

Part E

Books	
Articles	
References Books	
MOOC Courses	
Videos	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	P
CO1	2	0	1	0	2	1	3	2	3	2	0	2	1	1	2
CO2	2	1	0	0	2	1	2	3	3	2	1	2	2	1	1
CO3	2	1	0	0	2	1	3	3	2	2	0	2	2	2	1
CO4	2	0	1	0	2	0	3	2	2	2	0	2	1	2	1
CO5	2	1	0	0	2	1	3	3	3	2	0	2	2	1	1
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2019-2020

(SOET)(BTech-CivilEngineering)

Title of the Course	Hydraulics & fluid machine
Course Code	CEL0510[T]

Part A

Year	3rd	**Semester**	5th	**Credits**	L	T	P	
					3	1	2	6
Course Type	Embedded theory and lab							
Course Category	Foundation core							
Pre-Requisite/s	Students should have the knowledge of basic concepts of Fluid Mechanics			**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** CO1: To remember the various concepts of fluid machines.**(BL1-Remember)** **CO2-** CO2: To understand & analyze the different fluid flow problems.**(BL2-Understand)** **CO3-** CO3: To implement the different designing concepts of fluid machines.**(BL3-Apply)** **CO4-** CO4: To provide experimental basis, and to enable the students to analyze the working of various machines and its different components.**(BL4-Analyze)** **CO5-** CO5: To evaluate the applications of fluids in various fields such as research & industries.**(BL5-Evaluate)** **CO6-** CO6: To apply the understanding of fluids in identifying the fluids and its different types.**(BL3-Apply)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕		**SDG (Goals)**	SDG9(Industry Innovation and Infrastructure) SDG11(Sustainable cities and economies)				

Part B

Modules	Contents	Pedagogy	Hours
1	Turbulent flow : Laminar and turbulent boundary layers and laminar sub layer, hydro dynamically smooth and rough boundaries, velocity distribution in turbulent flow, resistance of smooth and artificially roughened pipes.	Lectures with problem based learning, experimental learning, case study, field trips	10
2	Pipe flow problems : Losses due to sudden expansion and contraction, losses in pipe fittings and valves, concepts of equivalent length, hydraulic and energy gradient lines, siphon, pipes in series, pipes in parallel, branching of pipes. Study of weir and notches (rectangular, triangular, trapezium section) Pipe Network : Water Hammer , transmission of power, Hardy Cross Method.	Lectures with problem based learning, experimental learning, case study, field trips	9
3	Uniform flow in open channels : Channel geometry and elements of channel section, velocity distribution, energy in open channel flow, specific energy, types of flow, critical flow and its computations, uniform flow and its computations, Chezy's and Manning's formulae, determination of normal depth and velocity, Normal and critical slopes, Economical sections.	Lectures with problem based learning, experimental learning, case study, field trips	9
4	Non uniform flow in open channels : Basic assumptions and dynamic equations of gradually varied flow, characteristics analysis and computations of flow profiles, rapidly varied flow hydraulic jump in rectangular channels and its basic characteristics, alternate depth in term of Froude's number surges in open channels & channel flow routing, venturi flume.	Lectures with problem based learning, experimental learning, case study, field trips	10
5	Turbines : Pelton turbine-their construction and settings, characteristic curves. Reaction turbines: construction & settings, draft tube theory, cavitation. Pumps: Centrifugal pumps : Various types and their important components, net positive suction head, specific speed, cavitation, principle of working and characteristic curves. Reciprocating pumps: Principle of working, Coefficient of discharge, slip, single acting and double acting pump, Manometric head, Acceleration head.	Lectures with problem based learning, experimental learning, case study, field trips	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Impact of Jets	Experiments	BL2-Understand	4
2	To study the characteristics of Hydraulic Jumps	Experiments	BL4-Analyze	4
3	To study the characteritics of Pelton Turbine	Experiments	BL5-Evaluate	4
4	To study the characteristics of Francis Turbine	Experiments	BL3-Apply	4
5	To study the characteristics of Kaplar Turbine	Experiments	BL4-Analyze	4

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	Hydraulics & Fluid Machines by P N Modi & Seth Hydraulic Machanics - K.R. Arora
Articles	https://archive.nptel.ac.in/courses/112/103/112103249/
References Books	Fluid mechanics and hydraulic machine - Dr. R.K. Bansal
MOOC Courses	https://archive.nptel.ac.in/courses/112/103/112103249/
Videos	https://books.google.co.in/books/about/Fluid_Mechanics_Hydraulic_Machines.html?id=-EZJzwEACAAJ&source=kp_cover&redir_esc=y

Course Articulation Matrix

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

Syllabus-2019-2020

(SOET)(BTech-CivilEngineering)

Title of the Course	Advanced Surveying
Course Code	CEL0511[T]

Part A

Year	3rd	**Semester**	5th	**Credits**	L	T	P	
					3	1	2	6
Course Type	Embedded theory and lab							
Course Category	Foundation core							
Pre-Requisite/s	Students should have the basic knowledge of fundamentals of surveying			**Co-Requisite/s**				
Course Outcomes & Bloom's Level	**CO1-** CO1: Students will revise the concept of Surveying with its Principles. **(BL1-Remember)** **CO2-** CO2: Students are able to understand the surveying with advance instrument like remote sensing, GPS and GIS, hydrographic survey and Arial Photogrammetry.**(BL2-Understand)** **CO3-** CO3: Students are able to Take the Data concerning different types of Surveying Instruments.**(BL3-Apply)** **CO4-** CO4:To analyze Indeterminate structures and towers according to dynamic loading**(BL4-Analyze)** **CO5-** CO5: Students will be able to Process the GIS and GPS and Hydrographic Data and evaluate the Different Dimensions of Image projections**(BL5-Evaluate)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**						

Part B

Modules	Contents	Pedagogy	Hours
1	Modern equipments for surveying: Digital levels and theodolites, Electronic Distance measurement (EDM), Total Station and Global Positioning Systems (GPS), Digital Planimeter.	Lectures with problem based learning, experimental learning, case study, field trips	10
2	Hydrographic Surveying: various type of survey for hydrographic, sounding, method of observation, equipment for sounding, computations and plotting, discharge measurement, area measurement, rain gauging, marine surveying.	Lectures with problem based learning, experimental learning, case study, field trips	8
3	GPS Surveying: Introduction & components of GPS, Space segment, control segment and user segment, Elements of Satellite based surveys-Map datum, GPS receivers, GPS observation methods and their advantages over conventional methods.	Lectures with problem based learning, experimental learning, case study, field trips	10
4	Photogrammetry: Principle, definitions and classifications of terrestrial and aerial photogrammetry, flight planning for aerial photography, scale and relief displacements of vertical aerial photographs, stereoscopic vision on vertical photographs, computation of position, length and elevations of objects using photographs and photo mosaic.	Lectures with problem based learning, experimental learning, case study, field trips	8
5	Remote Sensing: Principle, components, classification, remote sensing data acquisition process, different types of remote sensing satellite imagery with special relevance to Indian Remote Sensing Satellites (IRS) and applications. Geographic Information Systems (GIS): Definition, components and advantages.	Lectures with problem based learning, experimental learning, case study, field trips	9

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	To study the intersection method of Plane Table Survey	Field work	BL2-Understand	4
2	To study the contouring for different levels	Field work	BL3-Apply	4
3	To study the Resection method by Plane Tabling	Field work	BL4-Analyze	4
4	To determine levels by Reciprocal Levelling	Field work	BL5-Evaluate	4
5	To determine the location by Global Positioning System	Field work	BL6-Create	4

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. Interna Evaluation**
0	0	0	0	0	0

Part E

Books	Advance Surveying volume II & III - B.C.Punmia
Articles	https://khannapublishers.in/index.php?route=product/product&path=60&product_id=142, Advanced-Surveying-Station-Remote-Sensing/dp/8131700674
References Books	Advanced Surveying Vol. II - S.K. Duggal
MOOC Courses	http://acl.digimat.in/nptel/courses/video/105107121/L22.html
Videos	

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	-	1	3	-	2
CO2	1	-	1	2	1	3	-	-	3	3	-	2	3	2	2
CO3	-	1	-	1	2	-	2	-	1	-	-	-	3	2	2
CO4	1	-	1	2	2	-	2	-	1	-	-	-	3	-	2
CO5	-	-	1	2	2	-	-	-	-	-	-	-	3	-	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2019-2020

(SOET)(BTech-CivilEngineering)

Title of the Course	Fundamentals of Structural design(RCC)
Course Code	CEL0512[T]

Part A

Year	3rd	**Semester**	5th	**Credits**	L	T	P	C
					3	1	2	6
Course Type	Embedded theory and lab							
Course Category	Foundation core							
Pre-Requisite/s	Student should have the basic knowledge of structures & drawing concepts			**Co-Requisite/s**	Students have to follow the concept of Structural drawing			
Course Outcomes & Bloom's Level	**CO1-** • CO1: To remember the various concepts in theory of Rcc structures**(BL1-Remember)** **CO2-** • CO2: To understand & analyze the different Rcc components along with the guidelines of Indian Standard Code IS 456-2000.**(BL3-Apply)** **CO3-** • CO3: To implement the different designing concepts of Rcc.**(BL3-Apply)** **CO4-** • CO4: To provide experimental basis, and to enable the students to analyze the behaviour of various Rcc structures and its Functional properties**(BL2-Understand)** **CO5-** • CO5: To evaluate the applications of different Rcc structural members in various fields such as research & industries.**(BL3-Apply)** **CO6-** • CO6: To apply the understanding of different Rcc problems in identifying the quality of Rcc and its different types**(BL3-Apply)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕		**SDG (Goals)**					

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.	Lectures with problem based learning, experimental learning, case study, field trips	9
2	Design of Beams: Singly & Doubly reinforced sections.	Lectures with problem based learning, experimental learning, case study, field trips	10
3	Design of Slabs: Slabs spanning in one & two direction, Yield line theory	Lectures with problem based learning, experimental learning, case study, field trips	10
4	Columns & Footings: Design of column of various cross section, Design of various footings	Lectures with problem based learning, experimental learning, case study, field trips	9
5	Staircases: Staircases with waist slab having equal and unequal flights with different support conditions, tread-riser staircase.	Lectures with problem based learning, experimental learning, case study, field trips	7

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Types of Bars	Field work	BL6-Create	4
2	Types of Column	PBL	BL6-Create	2
3	Beam Design	PBL	BL5-Evaluate	3
4	Staircase	PBL	BL6-Create	2
5	One Way lab		BL4-Analyze	4

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	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	RCC Designs B.C. Punmia Laxmi Publications.
Articles	https://books.google.co.in/books/about/Reinforced_Concrete_Structures_Vol_I.html?id=6g1fu4pRDCkC&redir_esc=y
References Books	Reinforced Concrete Design, New Age Publication House Krishna Raju New Age Publishers
MOOC Courses	
Videos	https://archive.nptel.ac.in/courses/105/105/105105105/

Course Articulation Matrix

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

Syllabus-2019-2020

(SOET)(BTech-CivilEngineering)

Title of the Course	Advanced Methods of Structural Analysis
Course Code	CEL0514[T]

Part A

Year	3rd	**Semester**	5th	**Credits**	L	T	P	
					3	1	0	4
Course Type	Embedded theory and lab							
Course Category	Foundation core							
Pre-Requisite/s	Students should have the basic knowledge in Engg. Mechanics, Strength of Materials, etc			**Co-Requisite/s**	Analyzing Reactions			
Course Outcomes & Bloom's Level	**CO1-** • CO1:Students will revise the concept of Conventional Methods of analysis of Determinate Structures**(BL2-Understand)** **CO2-** • CO2:To make the student familiar with latest computational techniques used for structural analysis.**(BL4-Analyze)** **CO3-** • CO3:Students are able to apply these methods for analyzing the indeterminate structures to evaluate the response of structures**(BL3-Apply)** **CO4-** • CO4:To analyze Indeterminate structures and towers according to dynamic loading**(BL4-Analyze)** **CO5-** • CO5:Students will be able to determine response of structures by classical, iterative and matrix methods**(BL5-Evaluate)** **CO6-** • CO6:To enable the student get a feeling of how real-life structures behave.**(BL2-Understand)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕		**SDG (Goals)**					

Part B

Modules	Contents	Pedagogy	Hours
1	Moment distribution and slope deflection methods in analysis of frames with sway, analysis of box frame, analysis of beams and frames by Kani's method.	Lectures with problem based learning, case study	8
2	Plastic analysis of beams and frames	Lectures with problem based learning, case study	10
3	Analysis of tall frames, wind and earthquake loads, codal provisions, Approximate analysis of multistory frames for vertical and lateralloads	Lectures with problem based learning, case study	9
4	Matrix method of structural analysis: force method and displacement Method	Lectures with problem based learning, case study	9
5	Influence lines for intermediate structures by using Muller Breslau Principle	Lectures with problem based learning, case study	10

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Prototype analysis in framed strctures	PBL	BL5-Evaluate	12

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	12	60	0

Part E

Books	Intermediate structural analysis Wang C k McGraw Hill, New York
Articles	https://archive.nptel.ac.in/courses/105/105/105105166/
References Books	Theory of structure Dhanpat rai Publications S. Ramamutham
MOOC Courses	
Videos	https://www.youtube.com/watch?v=qhEton-EEOw

Course Articulation Matrix

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

Syllabus-2019-2020

(SOET)(BTech-CivilEngineering)

Title of the Course	Advanced Geotech Engineering
Course Code	CEL0515[T]

Part A

Year	3rd	**Semester**	5th	**Credits**	L	T	P	C
					3	1	2	6
Course Type	Embedded theory and lab							
Course Category	Foundation core							
Pre-Requisite/s	Students should have the knowledge of basics of Geo technical Engineering			**Co-Requisite/s**	Students will attain general practice of lab testing of soil.			
Course Outcomes & Bloom's Level	**CO1-** CO1: Students will revise the concept of mechanics of soil.**(BL2-Understand)** **CO2-** CO2: Students are able to understand the concept of excavation and different types of foundations.**(BL2-Understand)** **CO3-** CO3: Students are able to apply the knowledge of different foundations for construction practices.**(BL3-Apply)** **CO4-** CO4: To analyze different theories of bearing capacities and settlements regarding structures.**(BL4-Analyze)** **CO5-** CO5: Students will be able to conduct several tests and evaluate different parameters of foundation**(BL6-Create)** **CO6-** CO6: To complete foundation work at a construction site.**(BL6-Create)**							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕		**SDG (Goals)**	SDG9(Industry Innovation and Infrastructure) SDG11(Sustainable cities and economies)				

Part B

Modules	Contents	Pedagogy	Hours
1	Soil Exploration and Foundations on Expansive and Collapsible soils: Methods of soil exploration. Planning of exploration programme for buildings, highways and earth dams. Disturbed and undisturbed samples and samplers for collecting them. Characteristics of expansive and collapsible soils, their treatment, Construction techniques on expansive and collapsible soils. CNS layer	Lectures with problem based learning, experimental learning, case study, field trips	10
2	Shallow Foundations: Type of foundations shallow and deep. Bearing capacity of foundation on cohesion less and cohesive soils. General and local shear failures. Factors effecting B.C. Theories of bearing capacity -Prandle, Terzaghi, Skempton, Meyerhof and Hansan. I.S. code on B.C. Determination of bearing capacity. Limits of total and differential settlements. Plate load test	Lectures with problem based learning, experimental learning, case study, field trips	9
3	Sheet piles/Bulkheads and Machine foundation: Classification of sheet piles/bulkheads. Cantilever and anchored sheet piles, Cofferdams, materials, types and applications. Modes of vibration. Mass-spring analogy, Natural frequency. Effect of vibration on soils. Vibration isolation. Criteria for design. Design of block foundation for impact type of machine.	Lectures with problem based learning, experimental learning, case study, field trips	9
4	Deep Foundation: Pile foundation, Types of piles, estimation of individual and group capacity of piles in cohesion less and cohesive soils. Static and dynamic formulae.. Pile load test, Settlement of pile group, Negative skin friction, under- reamed piles and their design. Piles under tension, inclined and lateral load Caissons.	Lectures with problem based learning, experimental learning, case study, field trips	10
5	Well foundation. Equilibrium of wells. Analysis for stability tilts and shifts, remedial measures.	Lectures with problem based learning, experimental learning, case study, field trips	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	To determine the consistency of soil by Casagrande'ss Appratus	Experiments	BL4-Analyze	4
2	To determine dry density by Standard Proctor Test	Experiments	BL5-Evaluate	4
3	To determine particle size distribution by sieve analysis method	Experiments	BL2-Understand	4
4	To determine specific gravity by Pycnometer	Experiments	BL4-Analyze	4
5	To apply permeabilty test	Experiments	BL6-Create	4

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	Soil Mechanics & Foundation Engg. B.C. Punamia Geotech. Engg - C.Venkatramaiah
Articles	https://www.hzu.edu.in/engineering/Geotechnical_Engineering.pdf
References Books	Soil Mechanics and Foundation - Dr. K. R. Arora
MOOC Courses	
Videos	http://www.digimat.in/nptel/courses/video/105101001/L01.html, https://archive.nptel.ac.in/courses/105/101/105101001/

Course Articulation Matrix

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