

(SOET)(BTech-CivilEngineering)

Title of the Course	Minor Pro	pject									
Course Code	CED060	1[P]						n n			
			Part A					₿			
Year	3rd Semester		6th	Credits	L	Т	Р	4			
real				Orealts	2	1	1	4			
Course Type	Project										
Course Category	Discipline	scipline Core									
Pre-Requisite/s		ge of Civil engineering iplinary subjects.	Co-Requisite/s								
Course Outcomes & Bloom's Level	CO2- To CO3- To		ability.(BL3-Apply) express innovative o	2-Understand) ppinion and thoughts(BL4) nent in students.(BL5-Eva							
Coures Elements	Skill Development ✓ Entrepreneurship ✓ Employability ✓ Professsonal Ethics × Gender × Human Values × Environment × SDG (Goals) SDG11(Sustainable cities and econo										

Part B

Modules	Contents	Pedagogy	Hours
1	Project/Problem Identification	Project Work	8
2	Project Analysis, Requirement Gathering	Project Work	8
3	Implementation of Project/Solution	Project Work	8
4	Testing and Verification	Project Work	8
5	Presentation and Report Writing	Project Work	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module-I	Identification of a problem and formulation of a topic of project/thesis	PBL	BL3-Apply	15 hrs
Module-III	Dissertation and Viva-voci	PBL	BL5-Evaluate	20 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	H. H.
100	50	40	20	60		- 6
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Part E

Books	
Articles	
References Books	
MOOC Courses	
Videos	

COs	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	1	2	1	1	1	-	-	-	-	-	-	-	-
CO2	1	1	1	1	1	2	2	1	-	-	-	-	-	-	-
CO3	1	1	1	2	1	2	1	2	-	-	-	-	-	-	-
CO4	1	1	1	1	1	2	1	2	-	-	-	-	-	-	-
CO5	1	1	1	2	1	2	1	-	-	-		-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



(SOET)(BTech-CivilEngineering)

Title of the Course	Water R	esource & Irrigation	Engineering								
Course Code	CEE060)1[T]									
			Part A						н н н		
			CH		L	Т	Р	С			
Year	3rd	Semester	6th	Credits	3	2	0	5	4		
Course Type	Theory	only			•						
Course Category	Disciplin	Discipline Core									
Pre-Requisite/s	known a	known about the soil properties Co-Requisite/s known about basic structure									
Course Outcomes & Bloom's Level	CO2- To CO3- To CO4- To Analyze CO5- To	o understand & ana o implement the diff o provide experimer e) o evaluate the appli	lyze the different i erent designing co ntal basis, and to e	neory of irrigation engg.(rrigation engg problems. oncepts of canal and wel enable the students to ar t irrigation engg in variou	(BL2-U I structu nalyze t	ndersta ures.(BL he flood	nd) 3-Apply prediction	ón. (E	3L4-		
Coures Elements	industries.(BL5-Evaluate) Skill Development ✓ Entrepreneurship × Employability ✓ Professsonal Ethics × Gender × Human Values × Environment × SDG (Goals) SDG11(Sustainable cities and economies)										

Part B

Modules	Contents	Pedagogy	Нс	ours
unit 1	Hydrology: Hydrological cycle, precipitation and its measurement, recording and non recording rain gauges, estimating missing rainfall data, raingauge over a drainage area, mass rainfall curves, intensity Infiltration and infiltration indices, evaporation stream gauging, run off and its estimation, hydrograph analysis, unit hydrograph S curve hydrograph, synthetic unit hydrograph.	precipitation and donon recording grainfall data, a, mass rainfall infiltration uging, run off and ysis, unit in, synthetic unit Description control measures, fined and poperties, y flow conditions, ter recharge oving ground revention. Salt its. Reclamation of lands. did soil necessity, the ypes and their ion purposes, acity, optimum and its surface and rrigation. Duty of did methods to rifor irrigation, oal crops and their als, Kennedy's Lectures with problem based learning, experimental learning, case study, field trips 10 10 10 10 10 10 10 10 10 1		
unitll	Floods and Ground water: Types of floods and their estimation by different methods, probability and frequency analysis, flood routing through reservoirs and channels, flood control measures, economics of flood control, confined and unconfined aquifers, aquifer properties, hydraulics of wells under steady flow conditions, infiltration galleries. Ground water recharge necessity and methods of improving ground water storage. Water logging prevention. Salt efflorescence-causes and effects. Reclamation of water logged and salt affected lands.		9	
unit III	Irrigation water requirement and soil necessity, advantages and disadvantages, types and methods. Irrigation development. types and their occurrence, suitability for irrigation purposes, wilting coefficient and field capacity,optimum water supply, consumptive use and its determination. Irrigati methodssurface and subsurface, sprinkler and drip irrigation. Duty of water, factors affecting duty and methods to improve duty, suitability of water for irrigation, crops and crop seasons, principal crops and their water requirement, crop ratio and crop roation, intensity of irrigation		8	
unit IV	Canal irrigation: Types of canals, alignment, design of unlined and lined canals, Kennedy's and Lacey's silt theories, typical canal sections, canal losses, lininings economics. Canal falls & cross drainage works, regulators. escapes and outlets, canal transitions	Lectures with problem based learning, experimental learning, case study, field trips	10	ı
unit V	Well irrigation: Types of wells, well construction, yield tests, specific capacity level and specific yield, hydraulic design of open wells and tube wells, methods of raising well water, characteristics of pumps and their selection, interference of wells, well losses, advantages and disadvantages of well irrigation. Rain water harvesting	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	module of canal designing by khosla theory	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	<u> </u>	•		
Total Minimum Passir Marks Marks		External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Interna Evaluation		
0	0	0	0	0	0	2	

Part E

Books	Irrigation and water power engg B.c. punamia	4
Articles	https://muthuramanp.wordpress.com/wp-content/uploads/2020/01/ce8603-notes.pdf	
References Books	Water resource and Irrigation engg by s.k. garg	
MOOC Courses	https://www.mooc-list.com/tags/irrigation	
Videos	https://www.youtube.com/watch?v=01ixEzcKABc	

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



(SOET)(BTech-CivilEngineering)

Title of the Course	Geo-sy	nthetics and Reinf	orced Soil Structu	ıres									
Course Code	CEE06	02[T]											
			Part A						щ				
Year	3rd	C	CAL	Consulta-	L	Т	Р	С					
Year	3rd	Semester	6th	Credits	3	1	0	4	4				
Course Type	Theory	heory only											
Course Category	Discipli	Discipline Electives											
Pre-Requisite/s		Co-Requisite/s											
Course Outcomes & Bloom's Level	CO2- A CO3- U Unders CO4- E	Analyze &compute Inderstand the em stand) Design the Reinford	different propertion erging trends of Cocced Earth Walls u	I their relevance (BL2-Ures of Geosynthetics(BL4 Geosynthetic in geotechn sing Geosynthetic mater sing Geosynthetic materi	-Analy: ical app al(BL5	ze) plications -Evalua	te)						
Coures Elements	Entrepo Employ Profess Gender Human	evelopment ✓ reneurship ✓ rability ✓ ssonal Ethics X r X values X nment X	SDG (Goals)	SDG9(Industry Innovation and Infrastructure) SDG11(Sustainable cities and economies)									

Part B

	Modules	Contents	Pedagogy	Hours
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Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Students will use different materials for soil stabilization	PBL	BL4-Analyze	15
2	Incresing the compressive strength of soil with different fibres	PBL	BL4-Analyze	15

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	0
			Practical	•	·
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation

Part E

Books	Koerner, R.M. "Designing with Geosynthetics", Prentice Hall, New Jersey, USA, 4thedition, 1999 Jewell, R.A. "Soil Reinforcement with Geotextiles", Special Publication No. 123,CIRIA, Thomas Telford. London, UK, 1996
Articles	https://www.researchgate.net/publication/330788128_A_Study_on_Geosynthetics_Material_in_soil_Reinforcement
References Books	Geosynthetics - New Horizons, Eds. G.V. Rao, PK Banerjee, J.T. Shahu, G.V. Ramana, Asian Books Private Ltd., New Delhi, 2004
MOOC Courses	https://archive.nptel.ac.in/courses/105/106/105106052/
Videos	https://www.youtube.com/watch?v=7Im_fxGLUmk&t=1s

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



(SOET)(BTech-CivilEngineering)

Title of the Course	Introduct	ntroduction to Finite Element Analysis											
Course Code	CEE060	3[T]											
			Part A						H _H				
Year	3rd	Semester	6th	Credits	L	Т	Р	С	€ 3				
roui	ora	Gemester	our	Orealis	3	1	0	4	4				
Course Type	Theory	heory only											
Course Category	Disciplin	Discipline Electives											
Pre-Requisite/s		Co-Requisite/s											
Course Outcomes & Bloom's Level	problem CO2- Fo & force CO3- So formulat CO4- Do using co	s(BL2-Understand ormulate finite elem- matrices, and applic olve structural, therr tions(BL4-Analyze) emonstrate the abili ommercial finite eler	ent models using cation of boundary mal, and dynamic ty to create mode nent packages(BI	of finite element method appropriate element sele conditions (BL3-Apply) problems using the devels for structural, thermal, a-3-Apply) approduct and system des	ction, d loped fi and flui	evelopr nite ele d flow a	ment of ment applicati		ess				
Coures Elements	Entrepre Employa Professa Gender	sonal Ethics X X Values X	SDG (Goals)	SDG9(Industry Innovation and Infrastructure) SDG11(Sustainable cities and economies)									

Part B

Modules Contents	Pedagogy	Hours
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Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Comparative study of different properties of materials	PBL	BL3-Apply	15

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	0
			Practical	•	
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation

Part E

Books	Rao, S.S., "The Finite Element Method in Engineering", 6/e, Butterworth-Heinemann Publisher, 20
Articles	Reddy J.N, "An Introduction to Finite Element Method", McGraw-Hill International Education, 3/e., 2005
	Chandrupatla, T.R., and Belegundu, A.D., "Introduction to Finite Element in Engineering", 4/e, Prentice Hall of India Pvt. Ltd.', New Delhi, 2012
MOOC Courses	https://www.amrita.edu/course/introduction-to-finite-element-method/
Videos	https://www.youtube.com/watch?v=2iUnfPRk6Ro

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



(SOET)(BTech-CivilEngineering)

Title of the Course	Smart C	Smart Cities										
Course Code	CEE060	04[T]							н -			
			Part A						n H			
Year	3rd	Semester	6th	Credits	L	Т	Р	С	□ }			
rear	Siu	Semester	Out	Credits	3	1	0	4	4			
Course Type	Theory	Theory only										
Course Category	Discipli	Discipline Electives										
Pre-Requisite/s				Co-Requisite/s								
Course Outcomes & Bloom's Level	CO2- D Apply) CO3- V CO4- T	Develop work break Vork out the most on understand the in	down structure, energy efficient te mportance of diffe	smart cities planning and scheduling and project machinique for development erent smart system(BL2-Led in intelligent building(E	anagen of Sma Jnderst	nent of sr rt Cities(I and)	nart citie 3L4-An a	s(BL	3-			
Coures Elements	Entrepr Employ Profess Gender Human	Skill Development Intrepreneurship Imployability Intrepreneurship Intrepreneursh										

Part B

Modules	Contents	Pedagogy	Hours
1	Introduction to Smart cities: Introduction to city planning Concept, Principle stakeholders, key trends in smart cities developments	Lectures with Presentation, Seminars	10
2	Smart Cities Planning and Development: Understanding smart cities, Dimension of smart cities, Global Standards and performance benchmarks, Practice codes, Smart city planning and development	Lectures with Presentation, Seminars	10
3	Financing smart cities development, Governance of smart cities	Lectures with Presentation, Seminars	6
4	Project management in Smart Cities: Phases, Stages of project and work break down Structure, Project organization structure, Planning, Scheduling and CPM, Project cost analysis, resource allocation & leveling, Line of balancing technique, Project monitoring and control, Project risk management	Lectures with Presentation, Seminars	8
5	Green building in smart cities: Introduction to green buildings, Rating system, Energy saving system	Lectures with Presentation, Seminars	6

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	Smart material associated with smart building	PBL	BL4-Analyze	8
2	Technology involved in different construction of smart building	PBL	BL3-Apply	8
3	Model preparation on smart city	PBL	BL4-Analyze	8
4	Case study on ITS.	Case Study	BL3-Apply	10
5	Case study on smart city	Case Study	BL3-Apply	10

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	0						
	•		Practical								
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation						

Part E

Books	Jo Beall (1997); "A city for all: valuing differences and working with diversity"; Zed books limited, London (ISBN: 1-85649-477-2)
Articles	(http://indiansmartcities.in/downloads/CONCEPT_NOTE3.12.2014REVISED_AND_LATESTpdf)
References Books	William J. V. Neill (2004); "Urban Planning and cultural identity"; Routledge, London (ISBN: 0- 415- 19747-3)
MOOC Courses	https://archive.nptel.ac.in/courses/105/105/105105160/
Videos	https://www.youtube.com/watch?v=qX516jcwCKE

COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PS 🗟
CO1	3	2	1	2	1	1	1	-	-	-	1	1	2	1	2
CO2	3	2	1	2	1	2	1	-	-	-	1	2	2	2	3
CO3	3	2	2	1	1	2	1	-	-	-	2	1	3	2	2
CO4	2	2	2	2	1	2	1	-	-	-	1	1	3	1	1
CO5	2	2	1	1	3	1	1	-	-	-	1	1	2	1	1
CO6	-	-	-	_	-	-	-	-	-	-	-	-	_	-	-



(SOET)(BTech-CivilEngineering)

Title of the Course	Basic of S	Structural Design (Steel))										
Course Code	CEL0617	[T]											
	1		Part A					_ " <u>"</u> "					
Year	3rd	Semester	6th	Credits	L	Т	Р	□					
rear	Sid	Semester	Out	Credits	3	1	2	4					
Course Type	Embedde	Embedded theory and lab											
Course Category	Discipline	Discipline Core											
Pre-Requisite/s	basics of steel, strentgh of material Co-Requisite/s												
Course Outcomes & Bloom's Level	CO2- To CO3- To Steel stru CO5- To research CO6- To CO	understand & analyze the timplement the different provide experimental bactures and its properties evaluate the application & industries.(BL5-Eval	ne different steel stru designing concepts c asis, and to enable th s.(BL4-Analyze) is of different steel str uate)	steel structures(BL1-Renctures problems.(BL2-Ur) of steel structures(BL3-A) he students to analyze the ructural members in variouslems in identifying the	ndersi pply) be beha ous fie	t and) iviour Ids su	ch as						
Coures Elements	Entreprer Employat	onal Ethics X ′alues X	SDG (Goals)										

Part B

Modules	Contents	Pedagogy	Hours
unit 1	Various loads and mechanism of the load transfer, partial load factors, structural properties of steel, design of structural connections- bolted, riveted and welded connections	Lectures with problem based learning, experimental learning, case study, field trips	10
unitll	Design of basic structural elements-tension, compression, flexure. Provision of IS 800-2007	Lectures with problem based learning, experimental learning, case study, field trips	10
unit III	Design of trusses-angular and tubular	Lectures with problem based learning, experimental learning, case study, field trips	8
unit IV	Design of Simple and Compound Column base grillage foundation	Lectures with problem based learning, experimental learning, case study, field trips	10
unit V	Introduction to flexural member, Design of beam- simple and built up, Laterally supported and laterally unsupported beam.	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
I	drawing of riveted connection	Experiments	BL2-Understand	3
II	drawing of bolted conecction	Experiments	BL2-Understand	2
III	drawing of wellded connection	Experiments	BL4-Analyze	2
IV	drawing of joints	Experiments	BL2-Understand	3

Part D(Marks Distribution)

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		Part D(N	Marks Distribution)		-
			Theory		
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	40	20	60	20
			Practical		
Total Minimum Passing Marks Marks		External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
0	0	0	0	0	0

Part E

Books	Steel Structure
Articles	
References Books	Steel Structure
MOOC Courses	
Videos	

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



(SOET)(BTech-CivilEngineering)

Title of the Course	Advance	ed Structural Desi	gn (RCC)								
Course Code	CEL061	9[T]									
	Part A										
Year	3rd	Semester	6th	Credits	L	Т	Р	С	=3		
						1	1	4	4		
Course Type	Embedo	Embedded theory and lab									
Course Category	Disciplin	Discipline Core									
Pre-Requisite/s	basic kr	nowledge of mech	anics	Co-Requisite/s	basics of strength of materials						
Course Outcomes & Bloom's Level	CO2- To CO3- To Apply) CO4- To CO5- To	ounderstandthe co o implementthe dif oprovidedifferent to odesignthe silos a	ncept of design of ferent designing of pes of structural and bunkers(BL5-E	el Design.(BL1-Rememb f Multi-Storey Buildings.(l concepts retaining of eart elements as per the requ Evaluate) ictures with designing(BL	BL2-Ur h work iremen	with retai	ning wa	· ·			
Coures Elements	Entrepre Employa Profess Gender	Values X	SDG (Goals)								

Part B

Modules	Contents	Pedagogy	Hours
unit 1	Design of Multistory Buildings - Sway and non sway buildings, Shear walls and other bracing elements	Lectures with problem based learning, experimental learning, case study, field trips	10
unitII	Earth Retaining Structures: Cantilever and counter fort types retaining walls	Lectures with problem based learning, experimental learning, case study, field trips	10
unit III	Water Tanks: Tanks on ground and underground tanks: Square, rectangular, circular tanks, Overhead tanks: square, rectangular, circular &intze tanks	Lectures with problem based learning, experimental learning, case study, field trips	8
unit IV	Silos and Bunkers	Lectures with problem based learning, experimental learning, case study, field trips	10
unit V	T-beam & Slab bridges- for highway loading (IRC Loads). Prestressing concepts materials, systems of prestressing& losses Introduction to working & limit State Design	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	component design of silos	Experiments	BL4-Analyze	3
II	component design of water tank	Experiments	BL4-Analyze	2
III	design of bunker	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	12	60				
	•	•	Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation			
100	40	40	12	60				

Part E

Books	R.C.C Vol 2 N krishna raju
Articles	https://www.academia.edu/40762446/BC_Punmia_SURVEYING_Vol_1_By_EasyEngineering_net_1_
References Books	BC Punmia
MOOC Courses	https://onlinecourses.nptel.ac.in/noc22_ce65/preview
Videos	https://www.youtube.com/watch?v=GJHHtS2t140

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



(SOET)(BTech-CivilEngineering)

Title of the Course	Quantity	Surveying & Costi	ng								
Course Code	CEL062	CEL0621[T]									
	Part A										
Year	3rd	Semester	6th	Credits	L	Т	Р	С			
1001	Old Comester	Comedici	ou i	Ground	2	1	1	4	4		
Course Type	Embedo	Embedded theory and lab									
Course Category	Disciplin	ne Core									
Pre-Requisite/s	introduction of material			Co-Requisite/s	basi	basic knowledge of materials					
Course Outcomes & Bloom's Level	CO2- To CO3- : CO4- To estimate CO5- To research	o understand & ana To implement the di to provide experime es.(BL3-Apply) to evaluate the appli h & industries.(BL3 To apply the unders	Ilyze the different of fferent designing on tal basis, and to occations of differen E-Apply)	neory of Specification(BLQuantity Estimates(BL4-,concepts of Quantity Estienable the students to an Estimation and Costing nalysis in solving problen	Analyz mation ialyze t in vario	e) . (BL5-E he quan ous field	valuate tity and s such a	cost			
Coures Elements	Entrepro Employa Profess Gender	Values X	SDG (Goals)								

Part B

Modules	Contents	Pedagogy	Hours
unit 1	Purpose and importance of estimates, principles of estimating methods of taking out Quantities of items of work. Mode of Measurement, Measurement sheet and adstract sheet; bills of quantities	Lectures with problem based learning, experimental learning, case study, field trips	10
unitll	Types of estimate, plinth area rate, cubical content rate, preliminary original, revised and supplementary estimates different projects preparing detailed estimates of various types of Building, RCC work earth work calculations for roads and estimating of culverts. Services for building such as water supply, drainage.	Lectures with problem based learning, experimental learning, case study, field trips	9
unit III	Rate Analysis: Task for average artisan, various factors involved in the rate of an item, material and labour requirement for various trades; preparation for rates of important items of work. Current schedule of rates (C.S.R), Specification.	Lectures with problem based learning, experimental learning, case study, field trips	8
unit IV	Cost works: Factors affecting cost of work, overhead charges Contingencies and work charge establishment, various percentage for different services in building.	Lectures with problem based learning, experimental learning, case study, field trips	10
unit V	Valuation: Purpose, depreciation, sinking fund. scrap value year's purchase, gross and net income, dual rates interest. Method of Valuation, rent fixation of buildings.	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	module of bulding	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	12	60	0			

Part E

Books	BN Dutta
Articles https://www.scribd.com/document/545528438/Estimating-and-Costing-in-Civil-Engineernge 24th-Ed	
References Books	Estimation and Costing in Civil Engineering by S. Dutta
MOOC Courses	https://www.my-mooc.com/en/mooc/construction-cost-estimating/
Videos	https://www.youtube.com/watch?v=aO3Ol3XLHkI

n n Course Articulation Matrix PS 🛱 PO1 PO2 PO3 PO4 COs PO5 P06 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 PSO2 2 1 1 CO1 1 3 2 3 3 CO2 2 3 2 3 1 2 1 1 CO3 2 1 3 1 1 2 1 2 3 1 1 CO4 2 1 1 2 3 CO5 -CO6



(SOET)(BTech-CivilEngineering)

Title of the Course	Environr	mental Engineering								
Course Code	CEL063	EL0634[T]								
			Part A						H_H	
Year	3rd	Semester	6th	Credits	L	Т	Р	С	E \$	
leai	Jac	Semester		Credits	3	1	2	6	4	
Course Type	Embedo	Embedded theory and lab								
Course Category	Disciplin	Discipline Core								
Pre-Requisite/s				Co-Requisite/s						
Course Outcomes & Bloom's Level	CO2- To CO3- To biologic CO4- To	o understand & o provide experime al impurities(BL4-A o evaluate the appli	o; analyze the con ntal basis, and to Analyze) cations of rain wa	theory of sources of water cept of population forecas enable the students to an ater harvesting(BL5-Evalu eatment(BL3-Apply)	ting (B alyze p	L2-Und	ersťand		d	
Coures Elements	Entrepre Employa Profess Gender	Values X	SDG (Goals)	SDG6(Clean water and sanitation) SDG7(Affordable and clean energy) SDG9(Industry Innovation and Infrastructure) SDG11(Sustainable cities and economies)						

Part B

Modules	Contents	Pedagogy	Hours
1	Sewerage schemes and their importance, collection & p; conveyance of sewage, storm water quantity, fluctuation in sewage flow, flow through sewer, design of sewer, construction & p; maintenance of sewer, sewer appurtenances, pumps & pumping stations.	Lectures with Presentation, Site Visit to STP	8
2	Characteristics and analysis of waste wate, rcycles of decomposition, physical, chemical & properties amp; biological parameters. Oxygen demand i.e. BOD & properties amp; COD, TOC, TOD, Th OD, Relative Stability, population equivalent, instrumentation involved in analysis, natural methods of waste water disposal i.e. by land treatment & properties amp; by dilution, self purification capacity of stream, Oxygen sag analysis.	Lectures with Presentation, Seminar and experiments	8
3	Unit operations for waste water treatment, preliminary treatment such as screens, grit chamber, floatation tank, sedimentation and chemical clarification, role of micro-organism in biological treatment, Sewage filtration- theory & mp; design.	Lectures with Presentation, Site Visit to STP	8
4	Methods of Biological Treatment (Theory & Eamp; Design) - Activated Sludge process, Oxidation ditch, stabilization ponds, aerated lagoon, anaerobic lagoons, septic tank & Eamp; imhoff tank, sources & Eamp; treatment of sludge, sludge thickening and digestion sludge drying beds, sludge disposal.	Lectures with Presentation, Seminar and experiments	8
5	Advanced Waste Water treatment - Diatomaceorus earth filters, ultrafiltration, Adsorption by activated carbon, Phosphorus removal, Nitrogen removal, Physico chemical waste water treatment, Solid waste disposal - classification, composition, collection, & amp; disposal methods. Rural sanitation - collection & amp; disposal of refuse, sullage & amp; night soil.	Lectures with Presentation, Seminar and experiments	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours	
1	Physical examination of Sewage/Water: a. Total Solid b. Total dissolve solid c. Total suspended solid d. pH, color and odor	Experiments	BL4-Analyze	8	
2	Chemical estimation of Sewage/Water and soil a. Determination of Chlorides b. Estimation of Chemical oxygen Demand	Experiments	BL4-Analyze	4	
3	Microbial examination of Sewage/Water a. Confirmation of coliforms b. Biological oxygen demand	Experiments	BL4-Analyze	4	
4	Determination of soil microbial biomass carbon	Experiments	BL4-Analyze	2	_ 1
5	Examination of different bacteria, algae, fungi, plants and animals by microscopic or morphological examination	Experiments	BL4-Analyze	2	7

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

Part E

Books	S.K.Garg, Environmental engineering volume 1 and 2 Khanna publisher B.C.Punamia Environmental engineering volume 1 and 2 Laxmi Publication
Articles	https://sciendo.com/journal/CEE
References Books	Viesman, Hammer and Chadik Water supply and pollution control PHI Publication
MOOC Courses	https://nptel.ac.in/courses/103107084
Videos	http://www.digimat.in/nptel/courses/video/105107176/L01.html

COs	PO1	PO2	РО3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PS	O3
CO1	2	2	2	1	-	-	2	-	-	-	1	2	2	2	1	
CO2	2	2	2	2	-	-	2	-	-	-	1	3	2	2	2	
CO3	2	2	1	2	-	-	3	-	-	-	2	2	2	3	3	
CO4	2	3	1	2	-	-	2	-	-	-	1	2	2	3	2	
CO5	2	2	1	2	-	-	3	-	-	-	1	3	2	3	2_	
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	щ щ









