

ERODE SENGUNTHAR ENGINEERING COLLEGE



(An Autonomous Institution, Affiliated to Anna University) PERUNDURAI, ERODE - 638 057

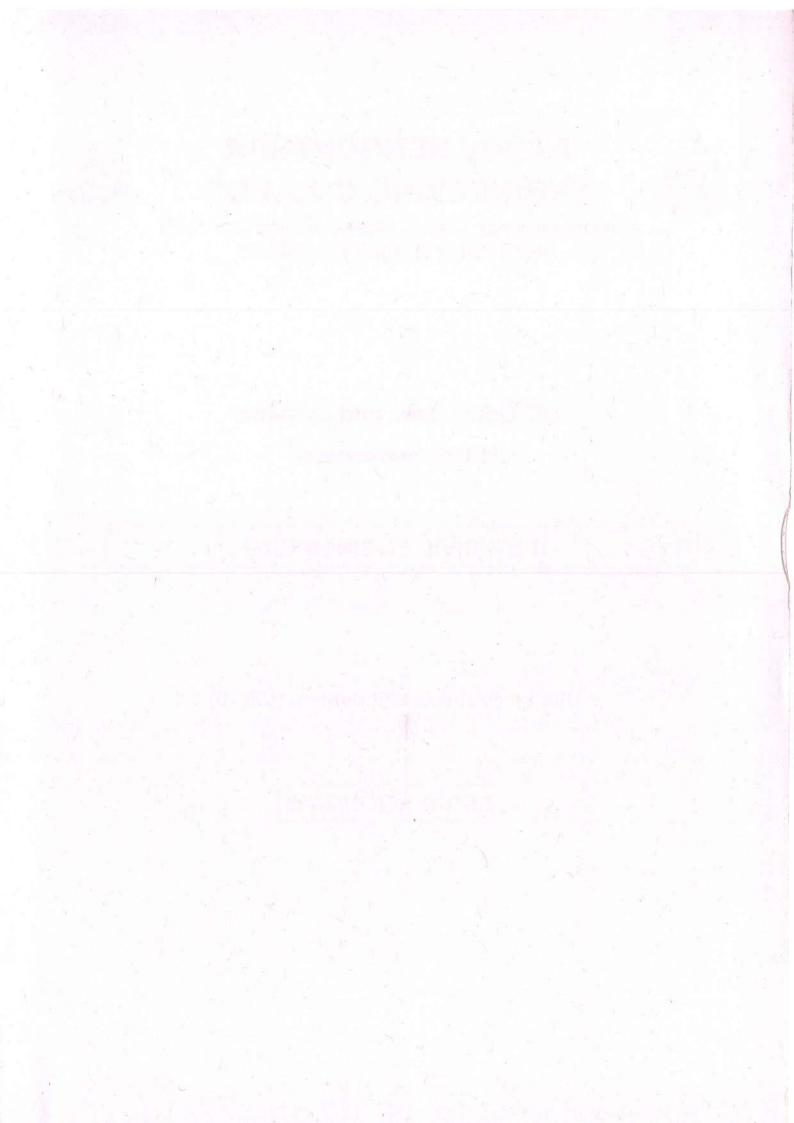
UG Curriculum and Syllabus

(1 to 8 Semesters)

B.E – CIVIL ENGINEERING

Choice Based Credit System (CBCS)

REGULATION 2019



ERODE SENGUNTHAR ENGINEERING COLLEGE, ERODE DEPARTMENT OF CIVIL ENGINEERING REGULATIONS – 2019 CHOICE BASED CREDIT SYSTEM I TO VIII SEMESTERS CURRICULUM

Induction Program (Mandatory)	3 weeks duration
Induction program for students to be offered right at the stat of the first year	 Physical activity Creative Arts Universal Human Values Literary Proficiency Modules Lectures by Eminent People Visits to local Areas Familiarization to Dept. / Branch & Innovations

				VIL ENC otal Cre			G					
		- C.	5	SEMEST	ER I							
				THEOF	RY		1.8.					
Code No	Course		bjective Dutcome		Ĺ	т	Р	с	Max	dimum	Marks	Category
		PEOs	POs	PSOs		1.19			CA	ES	Total	Joursell
19BS101	Calculus and its Applications	1,111	1,2,3, 4,12	1	3	1	0	4	40	60	100	BS
19BS102	Engineering Physics	1,111	1,2,4, 5,6,8, 9	1	2	0	2	3	40	60	100	BS
19BS103	Engineering Chemistry	1,11	1,2,3, 4,5,7, 12	1	3	0	0	3	40	60	100	BS
19HS101	Communicative English	Ш	2,3,6, 9,10,1	1	3	0	0	3	40	60	100	HS
19ES102	Basics of Electrical and Electronics Engineering	1 ,111	1,2,3, 4,9	1	2	0	2	3	40	60	100	ES
19TPS01	Soft Skills – I	ш	8,9,10 ,12	1	1	0	0	1	40	60	100	EEC
33	ie in the second second second	A	F	RACTIC	CAL				1.1.1.			
19ES106	Engineering Graphics	II	1,2,3,5 ,10,12	2	0	0	4	2	60	40	100	ES
19ES107	Workshop Practices	П	1,3,9, 12	3	0	0	2	1	60	40	100	ES
	TOTA	L			15	1	11	20	360	440	800	-

kn

Chairman - Bo. Dept. of Civil Engg. - ESEC

208 1 - 1303 m

			S	EMEST	A STATISTICS OF A STATISTICS			4				
Code	Course		bjective Outcomes		L	Т	Р	с	Max	imum	Marks	Category
No	oouise	PEOs	POs	PSOs	5			Ū	CA	ES	Total	Jungory
19BS201	Vector Calculus and Complex Variables	1 ,111	1,2,3, 4,12	1	3	1	0	4	40	60	100	BS
19BS203	Applications of Physics to Civil Engineers	1,11	1,5,7	1	3	0	0	3	40	60	100	BS
	Language Elective	III	2,3,6, 9,10,1 2	1	3	0	0	3	40	60	100	HS
19ES201	Problem Solving and Python Programming	ĮI.,	1,2,3, 4,5	1	3	0	0	3	40	60	100	ES
19ES209	Mechanics for Engineers	Ш	1,2,3, 4,6,7, 8,9,10	1	3	0	0	3	40	60	100	ES
19MC201	Environmental Science and Engineering	1,11	1,2,3, 4,5,6, 7,8,12	1	3	0	0	0	40	60	100	МС
19TPS02	Soft Skills – II	Ш	8,9,10 , 12	1	1	0	0	1	40	60	100	EEC
1			P	RACTIC	AL				2.1			X
19ES212	Computer Aided Drawing Practices	U.	1,5,6	2	0	0	4	2	60	40	100	ES
19ES213	Problem Solving and Python Programming Laboratory	Ш	1,2,3, 4,5,12	1	0	0	2	1	60	40	100	ES
19BS208	Engineering Chemistry Laboratory	1 ,111	1,2,3, 4,5	1	0	0	4	2	60	40	100	BS
	Total				21	2	11	22	460	540	1000	-

Chairman - BoS Dept. of Civil Engg. - ESEC

3

Chairman - B2. Dept. of Civil Engg. - E25.

			5	SEMEST	0			_				
Code	Course		bjective Dutcome		L	Т	Р	с	Мах	cimum	Marks	Category
No		PEOs	POs	PSOs					CA	ES	Total	outegoi
19BS303	Transform Techniques and Partial Differential Equations	1,111	1,2,3, 4	1	3	1	0	4	40	60	100	BS
19CE301	Mechanics of Solids	I, III	1,2,3, 4,6	. 1	3	0	0	3	40	60	100	PC
19ES309	Fluid Mechanics and Machineries	1, 111	1,2,3, 4,5,6, 7,8,1 0,12	1	3	0	0	3	40	60	100	ES
19CE302	Surveying	1,111	1,4,5, 6,8,9, 11,12	1	3	0	0	3	40	60	100	PC
19ES301	Applied Geology	Ш	1,2,6, 7,12	1	3	0	0	3	40	60	100	ES
19CE303	Construction Materials and Practices	1,111 -	1,5,6, 7,8	1	2	0	2	3	40	60	100	PC
19MC301	Indian Constitution	IV	6,8,1 0,11, 12	1	2	0	0	0	40	60	100	MC
19TPS03	Quantitative Aptitude and Logical Reasoning - I	Ш	1,2,9, 10,12	1	2	0	0	0	40	60	100	EEC
24				PRACTIC	CAL							
19CE304	Surveying Practical	′ I ,II, IV	1,2,4 5,6,8, 9,11, 12	3	0	0	4	2	60	40	100	PC
19HS301	Communication skills	, , ,IV	9,10, 12	3	0	0	4	2	60	40	100	HS
	Total				21	1	10	23	440	560	1000	-

Chamber - 305 The to Church - 6410

K.M. Of.

			SI	EMESTE					_			
				THEOR	RY				-			
Code	Course		bjective & outcomes		L	т	Р	с	Max	imum	Marks	Category
No		PEOs	Pos	PSOs					CA	ES	Total	<u>-</u> j,
19BS402	Numerical Methods	1 ,111	1,2,3, 4	1	3	1	0	4	40	60	100	BS
19CE401	Strength of Materials	1, 11	1,2,3, 4,6,11 ,12	1	3	0	2	4	, 40	60	100	PC
19CE402	Soil Mechanics	1,111	1,2,3, 4,6,7, 12	1	3	0	0	3	40	60	100	PC
19CE403	Concrete Technology	1,111	1,6,7, 10,11, 12	1	3	0	0	3	40	60	100	PC
19CE404	Water Resource and Irrigation Engineering	1,111	1,2,3, 5,6,7, 8,11,1 2	1	3	0	0	3	40	60	100	PC
19HS402	Universal Human Values 2 : Understanding Harmony	1,111	2, 3, 5, 6, 8, 11,12	1	3	0	0	3	40	60	100	HS
19TPS04	Quantitative Aptitude and Logical Reasoning - II	1 , II, III ,IV	1,2,9,1 0,12	3	2	0	0	0	40	60	100	EEC
			F	RACTIO	CAL				48			
19CE405	Hydraulic Engineering Laboratory	I ,IV	1,4,5, 6,10,1 1	2	0	0	4	2	60	40	100	PC
19CE508	Survey Camp	I ,II, IV	1,2,3, 4,5,6, 9	1	0	0	2	0	100	-	100	EEC
1 B	Total				17	1	8	22	360	440	800	-

Kml

Chairman - BoS Dept. of Civil Engg. - ESEC

			S	EMEST	ER V	1						
				THEOF	RY							
Code No	Course		bjective a outcomes		T.	т	P	с	Max	imum	Marks	Category
		PEOs	Pos	PSOs	-				CA	ES	Total	Juligory
19CE501	Analysis of Indeterminate Structures	1, 111	1,2,3, 6	1	3	0	0	3	40	60	100	PC
19CE502	Foundation Engineering	1,111	1,2,3, 6	1	3	0	0	3	40	60	100	PC
19CE503	Design of RCC Elements	I, III	1,2,3, 6	1	3	0	0	3	40	60	100	PC
19ES501	Water Supply Engineering	1,111	1,2,3, 6,7	1	3	0	0	3	40	60	100	ES
	Professional Elective I		(#.		3	0	0	3	40	60	100	PE
	Professional Elective II		•		3	0	0	3	40	60	100	PE
19TPS05	Quantitative Aptitude and Logical Reasoning - III	III	1,2,9, 10,12	1	2	0	0	0	40	60	100	EEC
			Р	RACTIC	AL							
19CE504	Soil Engineering Laboratory	I ,II, IV	1,2,3,4 ,5,6,9	1	0	0	4	2	60	40	100	PC
19ES502	Environmental Engineering Lab	I ,II, IV	1,2,3,4 ,5,6,9	1	0	0	4	2	60	40	100	ES
	Total				20	0	10	22	600	500	1100	-

K.m. Of

Chairman - BoS Dept. of Civil Engg. - ESEC

			SE	EMESTE THEOF		8				-	~	
Code No	Course		bjective &	۶.	L	Т	Р	с	Max	imum	Marks	Category
Code No	Course	PEOs	Pos	PSOs	L	-		C	CA	ES	Total	Category
19CE601	Advanced Structural Analysis	1, 111	1,2,3,6	1	3	0	0	3	40	60	100	PC
19CE602	Design of RCC Structures	I, III	1,2,3,6	1	3	0	0	3	40	60	100	PC
19CE603	Basic Structural Design	- I, III	1,2,3,6	1	3	0	0	3	40	. 60	100	PC
19ES601	Waste Water Engineering	1,111	1,2,3,6 ,7	1	3	0	0	3	40	60	100	ES
	Professional Elective II				3	0	0	3	40	60	100	PE
	Open Elective I				3	0	0	3	40	60	100	OE
19TPS06	Quantitative Aptitude and Logical Reasoning - IV	III, IV	1,2,9, 10,12	3	0	0	2	0	40	60	100	EEC
			PF	RACTIC	ALS							
19CE604	Concrete and Highway Laboratory	I ,II, IV	1,2,3,4 ,5,6,9	1	0	0	4	2	60	40	100	PC
19CE605	Comprehensive Review	IV	2,4,9, 10	3	0	0	2	1	100	-	100	EEC
	Tota				18	0	12	21	540	460	1000	-

Km of

Chairman - BoS Dept. of Chin Singly - ESEC

12 David

			SE	MESTE	The second							
		Objecti	ve & Out			-	-	-	Max	imum	Marks	0.1
Code No	Course	PEOs	Pos	PSOs	L	т	P	С	CA	ES	Total	Category
19CE701	Estimation and Costing	1,111	1,2,3,6	1	3	0	0	3	40	60	100	PC
19CE702	Structural Dynamics and Earthquake Engineering	I, III	1,2,3,6	1	3	0	0	3	40	60	100	PC
	Professional Elective III				3	0	0	3	40	60	100	PE
	Professional Elective IV		1.57		3	0	0	3	40	60	100	PE
	Open Elective II				3	0	0	3	40	60	100	OE
			PF	RACTIC	ALS			6		i sa l		
19CE703	Computer Aided Design and Drafting Laboratory	I, II, III, IV	1, 5, 6, 9	2	0>	0	4	2	60	40	100	PC
19CE704	Design Project	I,II, IV	1,2,3,4, 5,6,7,8, 9,11,12	3	0	0	4	2	60	40	100	EEC
19CE705	Industrial Training	I, IV	1, 5,6 ,8,9,10 ,11,12	3	0	0	0	1	100	-	100	EEC
1 2	1. Jack											
2.0	Total	16		14	14	0	12	20	520	380	900	-

Dept of Civil Engg. - ESEC

			SE	MESTE	R VIII	br						
			a sheet	THEOR	Y							
Code		Objecti	ve & Out	comes		-		-	Max	imum	Marks	Catoman
No.	Course	PEOs	Pos	PSOs	L	Т	P	C	CA	ES	Total	Category
	Professional Elective V				3	0	0	3	40	60	100	PE
	Professional Elective VI				3	0	0	3	40	60	100	PE
	Open Elective III				3	0	0	3	40	60	100	OE
			Р	RACTIC	ALS							
19CE801	Project Work	I,II, IV	1,2,3,4 ,5,6,7, 8,9,10, 12	3	0	0	12	6	60	40	100	EEC
	Tota	100			6	0	10	15	140	160	300	-

Kim. Of

ELECTIVES

		LANGU	AGE ELECTIVE	S	1			
Code	Course	Ob	jective & Outco	mes	1	т	Р	с
No	Course	PEOs	POs	PSOs				U
19HX201	English for Engineers	4	2,3,6,9,10,12	1	3	0	0	3
19HX202	Hindi	1	2,3,6,9,10,12	1	3	0	0	3
19HX203	Japanese	1	2,3,6,9,10,12	1	3	0	0	3
19HX204	French	1.	2,3,6,9,10,12	1	3	0	0	3

		PHYSIC	S ELECTIVES	5			21012	
Code No	Course	Obje	ective & Outco	omes	L	т	Р	с
Coue No	Course	PEOs	POs	PSOs			011184 S. S. S.	
19BX201	Physics for Electronics Engineering	1,11	1,2,3,5,7,1 2	1	3	0	0	3
19BX202	Physics for Information Science	1,11	1,2,3,5,7,1 2	1	3	0	0	3
19BX203	Physics of Materials	1,11	1,2,3,5,7,1 2	1	3	0	0	3
19BX204	Materials Science	1,11	1,2,3,5,7,1 2	1	3	0	0	3
19BX205	Application of Physics to Civil Engineers	1,11	1,5,7	1	3	0	0	3

Knlef

Chairman - BoS Dept. of Civil Engg. - ESEC

Terry and the second second

					0			_
Code No.	Course		ective & Outco		s. L	Т	Р	С
		PEOs	POs	PSOs				
	PF	ROFESSIO	ONAL ELECTI	VE – I				1
19CEX01	Hydrology	1	1,2,3,6,7	1	3	0	0	3
19CEX02	Highway Engineering	1,11,111	1,2,3,6,8	1	3	0	0	3
19CEX03	Total Station and GPS Surveying	′ I,III	1,2,3,4,5,6	2	3	0	0	3
19CEX04	Disaster Management	- 1	1,2,4,5,6,7	1	3	0	0	3
19CEX05	Ground Improvement Techniques	I	1,5,7	1	3	0	0	3
	PR	OFESSIC	NAL ELECTIV	/E – II			iu	
19CEX06	Traffic Engineering and Management	T	1,6,9,10,11	1	3	0	0	3
19CEX07	Remote Sensing and GIS	I	1,2,3,5,7	1,2	3	0	0	3
19CEX08	Air Pollution and Control Engineering	I	1,5,6,7,8	1	3	0	0	3
19CEX09	Railways, Airports and Harbour Engineering	l	1,6,9,10,11	1	3	0	0	3
19CEX10	Municipal Solid Waste Management	I,III	1,6,7,8,9	1	3	0	0	3
	PR	OFESSIO	NAL ELECTIV	/E – III				
19CEX11	Sustainable construction methods	Ĩ	1,2,3,4,5,6	1	3	0	0	3
19CEX12	Industrial Structures	1,111	1,6,9,10,11	1	3	0	0	3
19CEX13	Design of Prestressed Concrete Structures	1,111	1,2,3,5,7	1	3	0	0	3
19CEX14	Construction Planning and Scheduling	1	1,2,3,4,5,6	1	3	0	0	3
19CEX15	Building Services	1	1,2,3,4,5,6	1	3	0	0	3
	PR	OFESSIO	NAL ELECTIV	/E - IV				
19CEX16	Safety in Construction Practices	Ĩ	1,2,3,5,7	1	3	0	0	3
19CEX17	Housing Planning and Management	1,11	1,2,3,4,5,6	1	3	0	0	3
19CEX18	Public transportation system	1,11	1,2,3,4,5,6	1	3	0	0	3
19CEX19	Bridge Engineering	I	1,2,3,4,5,6	1	3	0	0	3
19CEX20	Design of Timber, Masonry and Steel Elements	1	1,2,3,4,5,6	1	3	o	0	3
	and the second se	OFESSIO	NAL ELECTIV	/E – V				
19CEX21	Industrial Waste Management	1,11	1,2,3,4,5,6	1	3	0	0	3
19CEX22	Prefabricated Structures	I, III	1,2,3,6	1	3	0	0	3
19CEX23	Ecological Engineering	1,11	1,2,3,4,5,6	1	3	. 0	(80)	3

Chairman - BoS Dept. of Civil Engg. - ESEÇ

19CEX24	Fundamentals of Nano Science	1	1,2,3,5,7	1	3	0	0	3
19CEX25	Intelligent transport Engineering	1,11	1,2,3,4,5,6	1	3	0	0	3
	PRO	DFESSIC	ONAL ELECTIVE	E – VI				
19CEX26	Ground Water Engineering	1,111	1,2,3,4,5,6	1	3	0	0	3
19CEX27	Repair and Rehabilitation of Structures	1,11	1,2,3,4,5,6	1	3	0	0	3
19CEX28	Construction Management	1,11	1,2,3,5,7	1	3	0	0	3
19CEX29	Entrepreneurship development	1,11	1,2,3,4,5,6	1	3	0	0	3
19CEX30	Instrumentation and sensor Technologies for civil engineering	1,11	1,2,3,4,5,6	1	3	0	0	3
	PRC	FESSIO	NAL ELECTIVE	E – VII	f profession fr			
19CEX31	Environmental Impact Assessment	1,111	1,6,7,8,9	1	3	0	0	3
19CEX32	Finite Element Analysis	1,111	1,6,7,8,9	1	3	0	0	3
19CEX33	Coastal Engineering	1	1,6,7,8,9	1	3	0	0	3
19CEX34	Geo Environmental Engineering	1,111	8,9,10,11	1	3	0	0	3
19CEX35	Concepts of Engineering Design	1	1,2,3,4,5,6	1	3	0	0	3

Km of

Chainnain - 855 Dept of Civil Engy, - 5551

	OPEN EL	ECTIVES	offered to othe	er Departme	nts			
0.1.1.	0	Ot	ojective & Outo	omes		т	Р	с
Code No	Course	PEOs	POs	PSOs			F	U
		OPE	N ELECTIVE -	·I				
19CEY01	Green Buildings	ſ	1,2,11,12	1	3	0	0	3
19CEY02	Hazardous Waste Management	I	1,2,3	1	3	0	0	3
19CEY03	Disaster Preparedness And Planning	I	6,7,8	1	3	0	0	3
19CEY04	Mass transportation system	1	1,2,6	1	3	0	0	3
19CEY05	Transport and Environment	Ĺ	1,2,4,5,6	1	3	0	0	3
19CEY06	Contract Management	1	1,2,4,5,6,7	1	3	0	0	3
19CEY07	Wealth From Waste	I	1,2,5,6,7	1	3	0	0	3
19CEY08	Risk and Safety Management	1	1,2,5	1	3	0	0	3
19CEY09	Project Formulation And Appraisal	I	1,2,4,5,6	1	3	0	0	3
19CEY10	Integrated Water Resource Management	1	1,2,4,5,6,7	1	3	0	0	3
19CEY11	Renewable Energy Sources	I	1,2,5,6,7,8	11	3	0	0	3
19CEY12	Architecture and Urban Planning	I	1,2,4,	1	3	0	0	3
19CEY13	Modern Construction Materials	1	1,2,4,5,6,7	1	3	0	0	3

K.m. Of.

	ADD	ITIONAL	ONE CREDIT (COURSES				
Code No.	Course	Ob	jective & Outc	omes	1	Т	Р	с
Code No.	Course	PEOs	POs	PSOs	L	-		U
19CEZ01	E-Waste Management	1	1,2,5	1,2	1	0	0	1
19CEZ02	Interior Design	1	1,2,5	1	1	0	0	1
19CEZ03	Construction Communication	I	1,2,5	1	1	0	0	1
19CEZ04	Lesson From Failure Of Structures	1	1,2,5,6	1	1	0	0	1
19CEZ05	Topographic Maps	1	1,2,5	1	1	0	0	1
19CEZ06	Practical Project Guidance And Personality Development	Т	1,2,5,14	1	1	0	0	1
19CEZ07	Recent Practices In Planning, Design, Construction And Maintenance Of Building	1,11	1,2,5	1	1	0	0	1
19CEZ08	Arbitration And Dispute Resolution	1	1,2,6,7,8,1 1	1	1	0	0	1
19CEZ09	Valuation Practice Of Immovable Properties - I	l	1,2,4,5	1	1	0	0	1
19CEZ10	Project Delivery Systems In Building Sector	1	1,2,5,12,14	1	1	0	0	1

Km (0

Charman - SoS Dept. or Cruit Engal - ESEC

.	0.4			Cre	dits Pe	r Seme	ester			Total	AICTE
S.No.	Category	1	11	Ш	IV	V	VI	VII	VIII	Credit	Credit
1	BS	10	9	4	4	÷	-	-	-	27	26
2	ES	6	9	6	-	5	3	-	-	29	29
3	HS	3	3	2	3	-	-	-	-	11	12
4	PC		-	11	15	11	11	8	-	56	47
5	PE	-	-	1.8.791		6	3	6	6	21	23
6	OE		-	-	-	=	3	3	3	9	11
7*	EEC	1	1	-	2 A -	-	1	3	6	12	12
8	МС										
	Total	20	22	23	22	22	21	20	15	165	160

Summary of Credit Distribution

BS- Basic Science PE- Professional Elective MC – Mandatory course ES- End semester Examination

ES-Engineering Science OE- Open Elective

CA – Continuous Assessment

HS-Humanities and Social Science PC- Professional Core

EEC-Employability Enhancement Course

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEER	ING			1	R 2019	Semester	1
Course Code	Course Name	Но	urs/	Week	Credit	Total	Maximum M	larke
		L	Т	Р	С	Hours		aina
19BS101	CALCULUS AND ITS APPLICATIONS	3	1	0	4	60	100	
 Interpret phenome Find eige arising ir Summar several v Develop Course Outco Apply dif differenti Identify a 	the introductory concepts of Limit and co the introductory concepts of calculus, thi ena involving continuous change of variate en values and eigen vectors which is one the field of engineering. ize and apply the methodologies involver variables. enough confidence to identify surface and mes: At the end of this course, learners v ferentiation to solve maxima and minima tation to differentiate functions and model the real time problems using f	is wil oles of th ved <u>d are</u> vill b prob	l ena le po in se <u>ea th</u> e ab lems orde	owerful olving ere by le to: s use b	tools to problem solving u	handle p s related using inte imit defin	ractical proble to functions gration	ems s of s of
AnalyzeCharacte	e the higher order ordinary differential eques the characteristics of a linear system with erize the functions of several variables and	Eige d get	en va the	solutio	ons of the			
 Integrate 	the functions for evaluating the surface a	area	and	volume	Э.			
Jnit I LIMI1	IS AND CONTINUITY				1		2.0.0	12
	of a function-Limit of a function-Continuity	-Der	ivati	ves-Di	fferentiat	ion rules	-Maxima and	
inima of one v					-			
	NARY DIFFERENTIAL EQUATIONS			الركب مر ا		1. S. 1.		12
quations of hig ariation of para Jnit III MUL	al equations of second and higher ord gher order with variable coefficients: Ca meters for second order differential equat TIVARIABLE CALCULUS vo Variables - Total Differential - Derivat	auch	y's -Vibr	linear rating s	differenti string-Ele	al equat ectrical ci	ion - Methoo rcuits	d of 12
axima and min				ipiicit i	unctions	Jacobic		licu
Jnit IV MUL	TIPLE INTEGRALS							12
Double integrat	tion with constant and variable limits-Regi integral in cartesian coordinates. Triple ir						der of integra	tion
	N VALUES AND EIGEN VECTORS	negi		Cartes	sian cooi	unates.		12
Constant and the second s	d Eigen Vectors of a real matrix - Propert	ioc	f Eid		luos Ca		the second se	
	rix- Diagonalisation-Quadratic form: Redu		the second second	a contra a service de la contra d				em
REFERENCE(S				a quuu	ratio rom	110 0 001		
and the second se	Calculus, 14th Edition by Pearson							
	eyszig , Advanced Engineering Mathemat	tics,	Tent	h Editi	on, Wiley	/ India Pi	rivate Limited	,
3. Peter V. Private L	O Neil, Advanced Engineering Mathe imited, 2018							0.25
	Wylie and C Louis Barrett, Advanced Hill Publishing Company Ltd, 2003.	Eng	ginee	ering N	<i>I</i> athema	tics, Six	th Edition, T	ata
5. Glyn Jan	nes, Advanced Engineering Mathematics,	Thir	d Ec	dition, \	Wiley Ind	ia, 2014.	t. (.0	Ò
Hosson							Chairman	Bo

Chairman - BoS Dept. of Maths - ESEC

1

Course Objective (s): • To enhance the f of Engineering an • To get the basic • To acquire knowl • To enhance the k • To understand basic • To gain knowledge • To acquire knowledge • To acquire knowledge • To have adequate • To get knowledge tunneling microso • To understand knowledge tunneling microso	knowledge on the properties ledge in Ultrasonic, Laser an knowledge in quantum theor asic concepts of thermal pro- the end of this course, learn e on the basics of properties edge on the concepts of Ultra- knowledge on the concepts on advanced Physics conce	L 2 s cours physics s of ma nd fibe ry operties ners w s of ma asonic s of fibe epts of	s and atters rs s of m ill be atter a and er & L quar	P 2 its app its app nateria able : and its their a aser a	ls applicatio applicatio	ions ons applicatio	ons	
19BS102ECourse Objective (s):• To enhance the fof Engineering ar• To get the basic• To acquire knowl• To enhance the k• To understand basic• To gain knowledge• To gain knowledge• To acquire knowle• To gain knowledge• To get knowledge• To get knowledge• To get knowledge• To get knowledge• To understand knowledge </th <th>The purpose of learning this fundamental knowledge in F nd Technology knowledge on the properties ledge in Ultrasonic, Laser an knowledge in quantum theor asic concepts of thermal pro- the end of this course, learn e on the basics of properties edge on the concepts of Ultra- knowledge on the concepts on advanced Physics conce copes and owledge on the concepts of</th> <th>2 s cours hysics s of ma nd fibe ry operties ners w s of ma asonic s of fib epts of</th> <th>0 se is s and atters rs s of m ill be atter a and er & L quar</th> <th>2 its app nateria able : and its their a _aser a</th> <th>3 olications Is application application and their</th> <th>60 s relevant ions ons applicatio</th> <th>100 t to various str</th> <th></th>	The purpose of learning this fundamental knowledge in F nd Technology knowledge on the properties ledge in Ultrasonic, Laser an knowledge in quantum theor asic concepts of thermal pro- the end of this course, learn e on the basics of properties edge on the concepts of Ultra- knowledge on the concepts on advanced Physics conce copes and owledge on the concepts of	2 s cours hysics s of ma nd fibe ry operties ners w s of ma asonic s of fib epts of	0 se is s and atters rs s of m ill be atter a and er & L quar	2 its app nateria able : and its their a _aser a	3 olications Is application application and their	60 s relevant ions ons applicatio	100 t to various str	
Course Objective (s): • To enhance the f of Engineering an • To get the basic • To acquire knowl • To enhance the k • To understand basic • To gain knowledge • To acquire knowledge • To acquire knowledge • To have adequate • To get knowledge tunneling microso • To understand knowledge tunneling microso	The purpose of learning this fundamental knowledge in F nd Technology knowledge on the properties ledge in Ultrasonic, Laser an knowledge in quantum theor asic concepts of thermal pro- the end of this course, learn e on the basics of properties edge on the concepts of Ultra- knowledge on the concepts on advanced Physics conce copes and owledge on the concepts of	s cours Physics s of ma nd fibe ry operties ners w s of ma asonic s of fibe epts of	se is s and atters rs s of m ill be atter a and er & L quar	its app nateria able : and its their a _aser a	olications Is applicatio applicatic	ons applicatio	t to various str	eam
 To enhance the f of Engineering and To get the basic To acquire knowle To enhance the key To understand basic To gain knowledge To acquire knowle To have adequate To get knowledge tunneling microsof To understand knowledge 	fundamental knowledge in F nd Technology knowledge on the properties ledge in Ultrasonic, Laser an knowledge in quantum theor asic concepts of thermal pro- the end of this course, learn e on the basics of properties edge on the concepts of Ultra- knowledge on the concepts on advanced Physics conce copes and owledge on the concepts of	Physics s of ma nd fibe ry operties ners w s of ma asonic s of fib epts of	s and atters rs s of m ill be atter a and er & L quar	nateria able : and its their a _aser a	ls applicatio applicatio	ions ons applicatio	ons	eam
			al pro	perties	s of mate	rials and	their applicati	ons
	RTIES OF MATTER							6
Unit II ULTRASON ntroduction–Classificatio enerator-cavitations-ultr	d non-uniform bending: theo ICS on of Sound- Ultrasonic Pro rasonic cleaning-Non De on modes- A, B and C – sca	oductic	on - N ve	/lagnet Testing	tostrictio g- Puls	n generat e echo	tor - Piezo el system thi	roug
20	FIBRE OPTICS					X. The		6
omojunction and heter perture and acceptance ensors: pressure and dis Unit IV QUANTUM F lack body radiation – P wave particle duality – chrödinger's wave equ		fibres	ns of (mate oton e f wav	laser erial, re effect: re func	Fiber efractive theory a	optics: pr index, m nd experi d its phys	rinciple, num node) – fibre rimental verific sical significar	erica opti 6 catio
imensional rigid box.						1.1		~
Unit V THERMAL P	- thermal expansion of sol	ids an	d liqu	ids –	expansio	on iointe	- bimetallic st	6 rips
nermal conduction, conv isc method: theory and	vection and radiation – hea d experiment - conduction ngers, ovens and solar wate	it cond n throu	uction ugh c	ns in s	solids - t	thermal c	conductivity - I	Lee'
EFERENCE(S):							a ta	
2. Serway, R.A. & Jev	ck, R. & Walker, J. —Princip wett, J.W. —Physics for Scie losca, G Physics for	entists	and I	Engine	ersll. Ce	engage Le		
IST OF EXPERIMENTS	(Any Eivo)	205				k	S	
. š	Chairman - E					Div		

t, of Physics

- Determination of rigidity modulus Torsion pendulum
 - 2. Determination of Young's modulus by non-uniform bending method
 - 3. Determination of Young's modulus by uniform bending method
 - 4. Determination of wavelength and particle size using Laser
 - 5. Determination of acceptance angle and numerical aperture in an optical fiber
 - 6. Determination of thermal conductivity of a bad conductor Lee's Disc method
 - 7. Determination of velocity of sound and compressibility of liquid Ultrasonic interferometer
 - 8. Determination of wavelength of mercury spectrum spectrometer grating
 - 9. Determination of band gap of a semiconductor
 - 10. Determination of thickness of a thin wire Air wedge method

Chairman - BoS Dept. of Physics - ESEC

Fi

Chairman - BoS Dept. of Civil Engg. - ESEC

Chairin Mine 24

	B.E CIVIL EN	IGINEE	RINC	3	9 19 - P	R 2019	Semester	1
Course Code	Course Name	Hour	s/W	eek	Credit	Total	Maximu	m
Course Code	Course Name	L	Т	Р	С	Hours	Marks	
19BS103	ENGINEERING CHEMISTRY	3	0	0	3	45	100	
 Understa Know the Understa Gain kno 	re (s): The purpose of learning this and the basic concepts of water ch e fundamental concepts of electroo and the principles and generation of wledge on polymers. e types of fuels and the manufactu	aracter chemist of energ	izatio ry and gy in b	n and d corre atterie	osion. es and nue	clear read		
 Make the Know th Impart knowstorage de Aware the Impart knowstorage 	es: At the end of this course, learn students conversant with water tra- ne reaction involved in corrosion an owledge on renewable energy sou evices a synthesis & industrial application owledge on different types of fue and combustion process.	eatmen nd corro urces lik of poly	t tech osion ce nuc mers	nique protec clear a	s ction meth ind to impa	art knowl		erg
			MIGT	PV	·			
reatment-boiler conditioning (WATE er – types – Estimation of hardr troubles (scales, sludge, prim carbonate, phosphate, sodium	ness of ing, fo	wate bamin	rbyE g, ca	ustic em	brittleme	mt) – Inte	ate
Hardness of wate reatment-boiler conditioning (Demineralization Unit II Electrochemical of Electro Chemica electrochemical of	er – types – Estimation of hardr troubles (scales, sludge, prim carbonate, phosphate, sodium process – Reverse Osmosis. ELECTROCHEN cell - redox reaction, electrode po I series-Standard hydrogen elec corrosion (galvanic, differential a	ness of ing, fo alumi IISTRY tential- ctrode-(eration	wate pamin nate AND Nern Calom) - ty	r by E g, ca and COR st equ nel Ele pes-fa	ROSION ation (der actrode. (actors influ	brittleme .Externa rivation a Corrosion uencing (mt) – Inte I treatmen nd problems : chemical	ate rna t 9 s). &
Hardness of wate conditioning (in Demineralization Unit II Electrochemical of Electro Chemical electrochemical of corrosion control	er – types – Estimation of hardr troubles (scales, sludge, prim carbonate, phosphate, sodium process – Reverse Osmosis. ELECTROCHEN cell - redox reaction, electrode po I series-Standard hydrogen elect corrosion (galvanic, differential a - sacrificial anode and impressed	ness of ing, fo alumi IISTRY tential- trode-(eration current	wate pamin nate AND Nern Calom) - ty catho	r by E g, ca and COR st equ nel Ele pes-fa pdic pr	ROSION ation (der actrode. (actors influ	brittleme .Externa rivation a Corrosion uencing (mt) – Inte I treatmen nd problems : chemical	ate rn: t 9 s). &
Hardness of wate reatment-boiler conditioning (i Demineralization Unit II Electrochemical of electrochemical of corrosion control Unit III Introduction- nuc eactor- breeder	er – types – Estimation of hardr troubles (scales, sludge, prim carbonate, phosphate, sodium process – Reverse Osmosis. ELECTROCHEN cell - redox reaction, electrode po I series-Standard hydrogen elect corrosion (galvanic, differential a - sacrificial anode and impressed	ness of ing, fo alumi IISTRY tential- ctrode-C eration current current RGY SC clear fu Types	wate pamin nate AND Nern Calom) - ty catho DURC	r by E g, ca and COR st equ el Elo pes-fa odic pr ES	ROSION ROSION lation (der ectrode. (actors influ- rotection n ear chain	rivation a Corrosion uencing on nethod.	mt) – Inte I treatment nd problems : chemical corrosion ra	rna t 9 s). & te 9
Hardness of wate reatment-boiler conditioning (i Demineralization Unit II Electrochemical of Electrochemical of corrosion control Unit III Introduction- nuc eactor- breeder pattery- lithium ion	er – types – Estimation of hardr troubles (scales, sludge, prim carbonate, phosphate, sodium process – Reverse Osmosis. ELECTROCHEN cell - redox reaction, electrode po I series-Standard hydrogen electrone corrosion (galvanic, differential a - sacrificial anode and impressed ENER lear energy- nuclear fission- nur reactor. Batteries and fuel cells: n battery. Fuel cell :H2 -O2 fuel con POLYM	ness of ing, fo alumi IISTRY tential- ctrode-C eration current RGY SC clear fu Types ell. IER CH	wate pamin nate AND Nern Calom) - ty catho DURC usion- of ba	r by E g, ca and COR st equ hel Elo pes-fa odic pr ES nucle atterie	ROSION ROSION lation (den ectrode. (actors influ- rotection n ear chain s- alkaline	rivation a Corrosion uencing o nethod. reaction	mt) – Inte I treatment nd problems : chemical corrosion ra s- light wat lead storag	9 s). % ter ge
Hardness of wate reatment-boiler conditioning (in Demineralization Unit II Electrochemical of Electrochemical of corrosion control Unit III Introduction- nuc eactor- breeder battery- lithium ion Unit IV Monomers - poly polymers based copolymerization. and thermoplast	er – types – Estimation of hardr troubles (scales, sludge, prim carbonate, phosphate, sodium process – Reverse Osmosis. ELECTROCHEN cell - redox reaction, electrode po I series-Standard hydrogen electrone corrosion (galvanic, differential a - sacrificial anode and impressed ENER lear energy- nuclear fission- nur reactor. Batteries and fuel cells: n battery. Fuel cell :H2 -O2 fuel cell POLYN mers - polymerization - function on source and applications. Typ Preparation, properties and appl ics (poly vinyl chloride, poly	IISTRY tential- ctrode-C eration current RGY SC clear fu Types ell. IER CH nality - pes of ications tetraflu	wate pamin nate AND Nern Calom) - ty catho of ba URC usion- of ba degree polyn s of th ioroet	r by E g, ca and COR st equ hel Elo pes-fa odic pr ES nucle atterie	ROSION ROSION Iation (denectrode. (actors influ- rotection n ear chain s- alkaline polymeriz tion: addi setting (ep	brittleme .Externa rivation a Corrosion Jencing on nethod. reaction e battery- cation - of tion, con poxy resi	mt) – Inte I treatment nd problems : chemical corrosion ra s- light wat lead storage classification densation a n and bakel	9 s). & ter ge
Hardness of wate reatment-boiler conditioning (i Demineralization Unit II Electrochemical of Electrochemical of corrosion control Unit III Introduction- nuc eactor- breeder battery- lithium ion Unit IV Monomers - poly polymers based copolymerization. and thermoplast	er – types – Estimation of hardr troubles (scales, sludge, prim carbonate, phosphate, sodium process – Reverse Osmosis. ELECTROCHEN cell - redox reaction, electrode po I series-Standard hydrogen elect corrosion (galvanic, differential a - sacrificial anode and impressed ENER lear energy- nuclear fission- nuclear reactor. Batteries and fuel cells: n battery. Fuel cell :H2 -O2 fuel co POLYM mers - polymerization - function on source and applications. Typ Preparation, properties and appl	ness of ing, fo alumi IISTRY tential- ctrode-C eration current Ceration current RGY SC clear fu Types ell. IER CH nality - bes of ications tetraflu extrusio	wate pamin nate AND Nern Calom) - ty catho DURC Usion- of ba degre polyn s of th ioroet on).	r by E g, ca and COR st equ hel Elo pes-fa odic pr ES nucle atterie	ROSION ROSION lation (den ectrode. (actors influ- rotection n ear chain s- alkaline polymeriz tion: addi setting (ep e and P	brittleme .Externa rivation a Corrosion Jencing on nethod. reaction e battery- cation - of tion, con poxy resi	mt) – Inte I treatment nd problems : chemical corrosion ra s- light wat lead storage classification densation a n and bakel	9 s). &

Chairman - Bos Chairman - Bos Dent. of Chemistry - ESE Dept. of Civil Engg. - ESEC

TEXT	BOOK(S):
1.	Jain P.C. and Monica Jain, "Engineering Chemistry", Dhanpat Rai Publishing Company (P) Ltd., New Delhi, 2019
2.	Ravikrishnan A., "Engineering Chemistry", Sri Krishna Hi-tech Publishing Company Pvt. Ltd. Chennai, 2019
REFE	RENCE(S):
1.	Dara S.S, Umare S.S, "Engineering Chemistry", S. Chand & Company Ltd., New Delhi 2016
2	Sivasankar B., "Engineering Chemistry", Tata McGraw-Hill Publishing Company, Ltd., New Delhi, 2017.
3.	GowarikerV.R, Viswanatha. N.V,Jayadev Sreedhar-"Polymer Science", Publishing company New Age International Publishers, New Delhi,2015.
4.	Ozin G. A. and Arsenault A. C., "Nanochemistry: A Chemical Approach to Nanomaterials", RSC Publishing, 2017.
5	AshimaSrivastava and Janhavi N N., "Concepts of Engineering Chemistry", ACME Learning Private Limited., New Delhi., 2015.

11.

Kmll

Chairman - BoS Dept. of Civil Engg. - ESEC

Chairman - BoS Dept. of Chemistry - ESEC

Chaitrean - BoB Dept. of Civil Engls - ESEC

Department	CIVIL ENGINEE	RING	3			R 2019	Semester I	BS
Course	Course Name	Ηοι	ırs /	Week	Credit	Total	Maximu	1.000
Code	20	L	T	Р	С	Hours	Mark	S
19HS101	COMMUNICATIVE ENGLISH	3	0	0	3	45	100	
To devel To enhan To impro To devel To devel Ourse Outco Improve Develop Acquire t Enhance Commun Unit I LAN arts of speech ense forms - S Unit II LIST	re basic English grammar. op listening skills to listen lectures and nee the reading skill to comprehend tech ove writing skills to express thoughts free op speaking skills to speak fluently in re- mes: At the end of this course, learners language usage in LSRW skills. listening skills to comprehend general / the ability to understand different written the writing skills to express the ideas of nicate fluently in real time context. GUAGE FOCUS - Word formation - Sentence types (dec ubject - Verb agreement ENING	nnical ely. eal co will b techr texts f the l larativ	writi ntex e ab ical earn ve, ir	ings. ts. le to: talks. ers. nperat				9 2) - 9
onversations -	ecific information: Short conversations / Telephone etiquette - Note-taking - List yrics - Clear individual sounds - Word st	ening						nd
Jnit III REA	DING					Y-		9
	sentences - Prediction - Skimming for gi		canr	ning for	specific	informati	on -	
Inderstanding to	ext and sentence structure - Close readi	ing	La			1. 1. 1. 1.		0
aragraph writin	g (descriptive, narrative, expository & po	ersua	sive) - Lett	er (forma	al and info	ormal) -	9
	- E-mail - Instructions				- and the		and the second second	
CARTINE AND	AKING		- II day				1	9
xperiences and greement / disa EXT BOOK(S) I. Communica 2017.	tive English by KN Shoba , Lourdes Jo	essing	ı opiı	nions a	ind justif	ying opini	ons -	ty
EFERENCE(S)):	_						_
1 Murphy, Ray learners Of I	/mond. English Grammar in Use – A Se English .lved. United Kingdom: Cambrid	lf-Stu ge Ui	dy R niver	eferen sity Pr	ce and F ess. 201	Practice B 2.	ook For Inter	mea
Press. 2005.								
	enneth et al. Study Speaking: A Course ambridge University Press 1992.	in Sp	ooke	n Engl	ish for A	cademic I	Purposes. Un	ited
4 Wren and M	artin, High school English Grammar and	d Com	npos	ition, F	ublisher	: S.Chand	2019.	
					K	·M. (2	

Chairman - BoS Dept. of English - ESEC

0

Depart	ment	CIVII	ENC	GINE	ERING	3	R 2019	Semester I	ES
Cou	rse	Course	Hou	ırs / \	Week	Credit	Total	Maximu	
Co	de	Name	L	Т	Р	C	Hours	Mark	(S
19ES		BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	2	0	2	3	60	100	
• L • II	Indersta Iustrate levices.	tive (s): The purpose of learning this and the basic concepts of electric circ the construction and operation of va e fundamentals of communication sys	uits a rious	ind m elect				niconductor	
• A • A • E • A	apply th apply th analyze analyze	omes: At the end of this course, learn e fundamental laws to electric circuits e laws of magnetism for the operation the construction and working princip the different speed control methods of the performance characteristics and	and of D le of of DC	comp C mo diffe moto	oute th otor. rent A ors an	C machir d specia	nes. I machir	nes	s 6
Kirchoffs techniqu Definitio	n of V Law & es - Ge n of rea	CTRIC CIRCUITS oltage, Current, Electromotive force k its applications - Series and Paral eneration of alternating emf - RMS v I, reactive and apparent power.	lel cir	cuits	- Vol	tage divi	sion and	d Current divis	and sion ctor-
Unit II		MACHINES nagnetic circuits-Law of electromagnet	atic in	ducti	on El	amina's F	Right and	l l eft hand	6
rule-type	s of inc	luced EMF-Definitions of self and mu	tual ir	nduct	ance-[DC Motor	- Constr	ruction -	
		le –Applications.							
Unit III	and the second second	MACHINES							6
		ansformer - Alternator - Three phase Vorking Principle - Applications.	indu	ction	motor	- Single	phase in	duction motor	-
Unit IV	ELE	CTRICAL DRIVES			1.14	- I I was had			6
		f DC shunt motor and series motor-A f DC servo motor and stepper motor-	rmatu	ire vo	oltage	control-F	lux conti	rol-Constructio	n
Unit V		CTRONIC DEVICES AND COMMUN	ICA'	TION					6
Characte Junction	eristics Transis	of PN Junction Diode and Zener Diod stor – Operation of NPN and PNP trai Systems	de - H	lalf w	ave a				
1. T.	K. Nags	arkar and M. S. Sukhija, Basic of Ele	ctrica	I Eng	gineeri	ng, Oxfo	rd Unive	rsity Press, 20	011.
2. Sm		hosh, Fundamentals of Electrical and							
REFER			11 C		100	1.8. 2.1		- Southast	
C 221 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Sudhak , 2010	ar, Shyammohan S Palli, Circuits and	Net	works	s Analy	ysis and	Synthes	is, Tata McGra	aw
SL. NO			IST O	FEX	PERI	MENTS			
	and the second second second	on DC Shunt motor			1.19.1				e.l.
		on DC Series motor	10.5		1.0		C. Arch	0	_
3 Lo	ad test	on single phase transformer							
	and the second se	on single phase transformer ntrol of DC shunt motor	-				1	$(\land A)$	

an lain

5	Load test on single phase Induction Motor.	
6	VI characteristics of Diodes	
7	Half and full wave rectifier with and without filter-observe the w	aveform using CRO
SL. NO	NAME OF EQUIPMENT	NO OF QUANTITY
1	DC Shunt motor	2
2	DC Series motor	1
3	Single phase transformer	2
4	Single phase Induction motor	1
5	Ammeter AC & DC	20
6	Voltmeter AC & DC	20
7	Wattmeter LPF & UPF	4
8	Dual regulated Power Supply	4
9	CRO	4
10	AC Signal generator	4
11	Diode	As required

K.m. Of

Dep	partment	CIVIL ENGIN	IEERI	NG			R 2019	Semester I	ES
	ourse ode	Course Name		urs /	Week		Total Hours	Maximum I	Marks
191	ES106	ENGINEERING GRAPHICS		0	P 4	C 2	60	100	
Cou	rse Obiect	ive(s): The purpose of learning thi	s cour	rse is					
		nventions and use of drawing tool				neering d	rawings.		
		thographic projection of points and							
•	To draw the	e projection of planes and simple s	solids.				· ····		
		e section of solids and obtain the d			nt of si	infaces o	f given so	lids.	
		e isometric projection of the given			he ek	a ta:			
		ne(s): At the end of this course, le the conventions and apply constru					00		
		rthographic projection of points and			iginee	ing curv	65.		
		rojection of planes and simple solid							
		ection of solid drawings and develo		nt of	surface	es of give	en solids.		
		ometric projection of the given obj				9			
		CONVENTIONS (Not for Exami		n)					01
Importa	ance of gra	aphics in engineering applications	– Us	e of	draftin	g instrur	ments – E	BIS convention	ns an
specific	cations – S	ize, layout and folding of drawing s	sheets	s – Le	ettering	g and din	nensioning	g.	
Unit I		ECURVES							12
Basic (Geometrica	al constructions, Curves used in e	engine	ering	g pract	tice: Cor	nics - Co	nstruction of	ellipse
		perbola by Eccentricity method -						ction of Invol	lutes of
		nd circle – Drawing of tangents an	d norr	mal t	o the a	bove cur	ves.		00
Unit II		ECTION OF POINTS AND LINES				is ation of		of points Dr	09
Orthog	raphic proj	ection – principles - Principal plan	es-Firs	st an	gle pro	jection-p	Indection	of points. Pro	of tru
		only First angle projection) incline nclinations by rotating line method		both	the pi	incipal p		elemination	ortiu
Unit III		ECTION OF PLANES & SOLIDS	•	-		2000			14
		nes (polygonal and circular surfac	es) in	cline	d to b	oth the r	principal r	lanes, Proje	
simple	solids like	prisms, pyramids, cylinder and o	cone v	wher	the a	xis is in	clined to	one of the p	rincip
		g Object method.							- 148 - 10 00 - 174
Unit IV		ECTION OF SECTIONED SOLIDS	AND	DE	VELOF	MENT	OF SURF	ACES	12
Section	ning of abo	ve solids in simple vertical position	on whe	en th	ne cutti	ing plane	e is incline	ed to the one	e of th
princip	al planes a	and perpendicular to the other - o	btaini	ng tr	ue sha	ape of se	ection. De	velopment of	flatera
Contraction of the local division of the loc		e and sectioned solids – prisms, py							
Unit V		TRIC VIEW / PROJECTION & PE							12
Princip	les of Isom	etric view – isometric scale – Isom	netric p	proje	ctions	of simple	e solids - I	Prisms, pyran	nids,
	Contraction of the second s	combination of two solid objects in	n simp	ble ve	ertical	positions	. Introduc	tion to Perspe	ective
project						the second second	a deservation of		
	BOOK(S					Lul D	l. l'ala ana	Ohannai 00	10
		.V., "A text book of Engineering G							
2.	Venugopa	I K. and Prabhu Raja V., "Enginee	ring G	raph	ICS", N	ew Age	Internation	hal (P) Ltd, 20	J08.
3.		arwal and Agarwal C.M., "Enginee	ering D	Irawi	ng", Ta	ata McGr	aw Hill Pi	ublishing Con	npany
		ew Delhi, 2008.			_	No.			
REFE	RENCE(S)								
				1		1000 100 100 100			
1. B	hatt N.D. a 010.	nd Panchal V.M., "Engineering Dr	awing	", Ch	narotar	Publishi	ng House	, 50th Edition	۱,

2.	Luzzader, Warren.J. and Duff, John M., "Fundamentals of Engineering Drawing with an introduction
	to Interactive Computer Graphics for Design and Production, Eastern Economy Edition, Prentice
	Hall of India Pvt. Ltd, New Delhi, 2005.
3.	Gopalakrishna K.R., "Engineering Drawing" (Vol. I&II combined), Subhas Stores, Bangalore, 2007.
4.	N S Parthasarathy and Vela Murali, "Engineering Graphics", Oxford University, Press, New Delhi, 2015.
5.	Shah M.B., and Rana B.C., "Engineering Drawing", Pearson, 2 nd Edition, 2009.

K.M. Q.

No. 1 Carl English Street

Dep	partment	CIVIL ENGINE	ERING				R 2019	Semester I	E S
	ourse Code	Course Name Hours / Week Credit		Total Hours	Maximum Marks				
19	ES107	WORKSHOP PRACTICE		T 0	P 2	C 1	30	100	_
•	To provide equipment, To acquire To develop To provide pumps. To develop irse Outcom Fabricate si Make fitting	the skill for making fitting joints a the skill for preparing the green hands-on training in assemblin the skill for making wood/sheet ne(s): At the end of this course, imple components using carpent joints and household pipe line c	of comp and hous sand m ng and metal m learners try, shee	seho ould. disn nodel s will et me	nts u Id pij nantl s usi be a etal a	be line co ing of p ng suital ible to: nd weldi	onnections etrol engine ble tools. ng equipme	using suitable es, gear boxe	tools
	Assemble a	een sand mould. Ind dismantle petrol engines, gea		s and	l pur	nps.			
• Exp No.		e models using wood and sheet Name	metal. e of the	Exp	erim	ents			
1		of simple object in sheet metal u	usina su	uitabl	e too	ls (Exan	nple: Dust b	oin / Tray)	
2		ion of a simple component using							
3		n-exercise: Wood work, joints by							
		a simple component using carp						and Teal band	
4	box)	a simple component using carp	entry po	ower	tools	s. (Exam	ple: Pen st	and/1001 box/	Lette
4	box) Prepare	a "V", Half-round or Square joint	t from th	he giv	ven r	nild stee	flat plate.		
	box) Prepare Construc bend, ga		t from th ions us a pipe	ne giv ing p coni	ven r ipes, necti	nild stee Tee-joir on for d	l flat plate. ht, Four-way	y joint, elbow,	unio
5	box) Prepare Construct bend, ga pump) u	a "V", Half-round or Square join ct a household pipe line connect ateway and taps (or) Construct	t from th ions us a pipe nges an	ne giv ing p coni nd foc	ven r ipes, necti ot val	nild stee Tee-joir on for d ve.	l flat plate. ht, Four-way	y joint, elbow,	unio
5 6	box) Prepare Construct bend, ga pump) u Prepare	a "V", Half-round or Square joint of a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar	t from th ions us a pipe nges an pattern	ne giv ing p coni nd foc /split	ven r ipes, necti ot val patte	nild stee Tee-joir on for d ve. ern.	l flat plate. ht, Four-wa omestic ap	y joint, elbow,	unio
5 6 7 8 9	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V	a "V", Half-round or Square joint et a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke aration of butt joints, lap joints an Velding practice.	t from th ions us a pipe nges an pattern and fou d T- joir	he giv ing p coni nd foc /split ur-stro	ven r ipes necti ot val patte oke p	nild stee Tee-joir on for d ve. ern. petrol eng	l flat plate. ht, Four-wa omestic ap gine.	y joint, elbow,	unio
5 6 7 8 9	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro	a "V", Half-round or Square joint et a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compo	t from the ions use a pipe nges an patterna and fou d T- joir nents).	ne giv ing p coni nd foc /split ur-stro nts by	ven r ipes necti ot val patte oke p	nild stee Tee-joir on for d ve. ern. petrol eng	l flat plate. ht, Four-wa omestic ap gine.	y joint, elbow,	unio
5 6 7 8 9 10 ST	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro	a "V", Half-round or Square joint et a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke aration of butt joints, lap joints an Velding practice.	t from the ions use a pipe nges an patterna and fou d T- joir nents).	ne giv ing p coni nd foc /split ur-stro nts by	ven r ipes necti ot val patte oke p	nild stee Tee-joir on for d ve. ern. petrol eng	l flat plate. ht, Four-wa omestic ap gine.	y joint, elbow,	unioi
5 6 7 8 9 10 ST .N	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro	a "V", Half-round or Square joint et a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compo	t from the ions use a pipe nges an pattern and fou d T- join nents).	he giv ing p conind foc /split ur-stro nts by	ven r ipes, necti patte patte oke p y Ele	nild stee Tee-joir on for d ve. ern. petrol eng	l flat plate. ht, Four-wa omestic ap gine.	y joint, elbow,	unio
5 6 7 8 9 10 ST . N 5.	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepare b) Gas V Mini-Pro OF EQUIPN Assorted c	a "V", Half-round or Square joint et a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compo- IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist	t from the ions use a pipe nges an pattern, and fou d T- join nents). UDENT QUIPM	he giv ing p conind foc /split ur-stro nts by S IENT	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent	unio rifug ITY
5 6 7 8 9 10 ST . .	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro OF EQUIPN Assorted c flexible pip	a "V", Half-round or Square joint et a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compo- IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, p	t from the ions use a pipe nges an pattern, and fou d T- join nents). UDENT QUIPM	he giv ing p conind foc /split ur-stro nts by S IENT	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set	unio rifug ITY
5 6 7 8 9 10 ST . N 0.	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro OF EQUIPM Assorted c flexible pip Carpentry	a "V", Half-round or Square joint ct a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compor IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, pl Vice (fitted to work bench)	t from the ions use a pipe nges an pattern, and fou d T- join nents). UDENT QUIPM	he giv ing p conind foc /split ur-stro nts by S IENT	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set	unio rifug ITY s.
5 6 7 8 9 10 ST . N . N	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro OF EQUIPM Assorted c flexible pip Carpentry Standard v	a "V", Half-round or Square joint ct a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compor IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, pl Vice (fitted to work bench) vood working tools	t from the ions us a pipe nges an pattern and fou d T- join nents). UDENT QUIPM ing of me lugs and	he giv ing p conind foc /split ur-stronts by S IENT netall d oth	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set	unio rifug ITY s. s.
5 6 7 8 9 10 ST . N . N	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro OF EQUIPN Assorted c flexible pip Carpentry Standard v Models of i	a "V", Half-round or Square joint ct a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compo- IENT FOR A BATCH OF 30 ST NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, pl Vice (fitted to work bench) vood working tools ndustrial trusses, door joints, fur	t from the ions us a pipe nges an pattern and fou d T- join nents). UDENT QUIPM ing of me lugs and	he giv ing p conind foc /split ur-stronts by S IENT netall d oth	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set 15 No 15 Set	unio rifug ITY s. s. h
5 6 7 8 9 10 ST . N	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro OF EQUIPN Assorted c flexible pip Carpentry Standard v Models of i Power Too	a "V", Half-round or Square joint ct a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compor IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, pl Vice (fitted to work bench) vood working tools industrial trusses, door joints, fur ls: (a) Rotary Hammer	t from the ions us a pipe nges an pattern and fou d T- join nents). UDENT QUIPM ing of me lugs and	he giv ing p conind foc /split ur-stronts by S IENT netall d oth	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set 15 No 15 Set 5 eac	unio rifug ITY s. s. s. h s.
5 6 7 8 9 10 ST . N 5. 1. 2. 3. 4.	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepare b) Gas V Mini-Pro OF EQUIPM Assorted c flexible pip Carpentry Standard v Models of i Power Too (b) Circular	a "V", Half-round or Square joint ct a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compor IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, pl Vice (fitted to work bench) vood working tools industrial trusses, door joints, fur ls: (a) Rotary Hammer	t from the ions us a pipe nges an pattern and fou d T- join nents). UDENT QUIPM ing of me lugs and	he giv ing p conind foc /split ur-stronts by S IENT netall d oth	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set 15 No 15 Set 5 eac 2 Nos	unio rifug ITY s. s. s. h s.
5 6 7 8 9 10 ST . N 5. 1. 2. 3. 4.	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro OF EQUIPN Assorted c flexible pip Carpentry Standard w Models of i Power Too (b) Circular (c) Planer	a "V", Half-round or Square joint ct a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compor IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, pl Vice (fitted to work bench) vood working tools industrial trusses, door joints, fur Is: (a) Rotary Hammer r Saw	t from the ions us a pipe nges an pattern and fou d T- join nents). UDENT QUIPM ing of me lugs and	he giv ing p conind foc /split ur-stronts by S IENT netall d oth	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set 15 No 15 Set 5 eac 2 Nos 2 Nos	unio rifug ITY s s. s. h s. s.
5 6 7 8 9 10 ST	box) Prepare Construct bend, ga pump) u Prepare Dismant a) Prepa b) Gas V Mini-Pro OF EQUIPN Assorted c flexible pip Carpentry Standard w Models of i Power Too (b) Circular (c) Planer	a "V", Half-round or Square joint ct a household pipe line connect ateway and taps (or) Construct sing pipes, bend, gate valve, flar a green sand mould using solid ling and assembly of two-stroke tration of butt joints, lap joints an Velding practice. ject (Fabrication of small compo IENT FOR A BATCH OF 30 STI NAME OF THE E omponents for plumbing consist es, couplings, unions, elbows, pl Vice (fitted to work bench) vood working tools industrial trusses, door joints, fur ls: (a) Rotary Hammer	t from the ions us a pipe nges an pattern and fou d T- join nents). UDENT QUIPM ing of me lugs and	he giv ing p conind foc /split ur-stronts by S IENT netall d oth	ven r ipes, necti patte patte pke p y Ele	nild stee , Tee-joir on for d ve. ern. petrol eng ctric Arc	flat plate. ht, Four-way omestic ap gine. Welding.	y joint, elbow, plication (cent QUANT 15 set 15 No 15 Set 5 eac 2 Nos 2 Nos 2 Nos	ITY s. s. h s. s.

Chairman - BoS Dept. of Civil Engg. - ESEC

7.	Welding booth with exhaust facility	2 Nos.
8.	Welding accessories like welding shield, chipping hammer, wire brush, etc.	5 Sets.
9.	Oxygen and acetylene gas cylinders, blow pipe and other welding outfits	2 Nos.
10.	File Sets	2 Nos.
11.	Hearth furnace, anvil and smithy tools	2 Sets.
12.	Moulding table, foundry tools	2 Sets.
13.	Power Tool: Angle Grinder	2 Nos.
14.	Study-purpose items: Centrifugal pump, Air-conditioner	One each.
15.	2S & 4S IC Engines	One each.

K.M. Sf.

Department	CIVIL ENGINEERI	NG	1.1			R 2019	Semester	EEC
Course Code	Course Name		Hour Wee		Credit	Total	al Maximu	
		L	T	Ρ	С	Hours	Marks	
19TPS01	SOFT SKILLS -I	1	0	0	1	30	100	
 To deve To enha To impresent To deve To deve<!--</td--><td>tive (s): The purpose of learning this lop basic grammar knowledge in Engl ince Speaking Skills in English ove Verbal and Non-verbal Communic lop Confidence and Emotional Intellig lop Inter Personal Skills. mes: At the end of this course, learne impetent knowledge of grammar uent English by enriching Vocabulary od Presentation Skills through verbal any Situation with confidence by being a team by having team coherence and ctive English – Written English</td><td>ish. ation ence rs will Know and n g emot</td><td>Skills be a ledge on ve</td><td>ible t e. erbal Ily st</td><td>commun able.</td><td>ication.</td><td></td><td>6</td>	tive (s): The purpose of learning this lop basic grammar knowledge in Engl ince Speaking Skills in English ove Verbal and Non-verbal Communic lop Confidence and Emotional Intellig lop Inter Personal Skills. mes: At the end of this course, learne impetent knowledge of grammar uent English by enriching Vocabulary od Presentation Skills through verbal any Situation with confidence by being a team by having team coherence and ctive English – Written English	ish. ation ence rs will Know and n g emot	Skills be a ledge on ve	ible t e. erbal Ily st	commun able.	ication.		6
asic rules of Gr	ammar - Parts of Speech – Tenses – Writing. Exercises to practice and imp					iction.Dial	ogues and	
	tive English – Spoken English							6
	lioms & Phrases – Synonyms – A ctice and improve these skills.	ntony	ms.E	Dialo	gues ar	nd Conve	rsations –W	riting
	f Communication & The Hidden Da	ta Inv	olve	d				6
on Verbal Com	ication - Effective Communication - A munication - Body Language of self elings in communication - dealing with	and o	thers	5.		1.0	eedback.	
UNIT 4 Worl	d of Teams – Part -01							6
elf Enhanceme notional intellig	nt - importance of developing assert ence.	ive sk	ills-	deve	eloping se	elf confide	ence – devel	opin
the second se	d of Teams – Part -02							6
	am work – Team vs. Group - Attribut aling with People- Group Decision Ma		a suc	ces	sful team	 Barriers 	involved Wo	orking
		то	TAL	: 30	(15 Theo	ry + 15 Pr	ractical) Hou	irs
						k.	n Of	

REFERENCES:

- 1. The Seven Habits of Highly Effective People Stephen R. Covey.
- 2. All the books in the "Chicken Soup for the Soul" series.
- 3. Man's search for meaning Viktor Frankl
- 4. The greatest miracle in the world Og Mandino
- 5. Goal Eliyahu Goldratt.
- 6. Working with Emotional Intelligence David Goleman.
- 7. Excel in English Sundra Samuel, Samuel Publications
- 8. Developing Communication Skills by Krishna Mohan and Meera Banerji; MacMillan India Ltd., Delhi
- 9. Essentials of Effective Communication, Ludlow and Panthon; Prentice Hall of India.
- 10. Effective Presentation Skills (A Fifty-Minute Series Book) by Steve Mandel
- 11. "Strategic interviewing" by Richaurd Camp, Mary E. Vielhaber and Jack L. Simonetti Published by Wiley India Pvt. Ltd
- 12. "Effective Group Discussion: Theory and Practice" by Gloria J. Galanes, Katherine Adams , John K. Brilhart

Chairman - BoS Dept. of Civil Engg. - ESEC

Chairman - 808 Deet of Cluff Entry - 1 ***

Clining of the second

Department	Common to ALL Bran	ches	5			R 2019	Semester II	B	
Course Code	ode Course Name			s/ k	Credit	Total Hours	Maximu Marks	Sector Contractor	
		L	Т	P	C	nours	Warks	-	
19BS201	VECTOR CALCULUS AND COMPLEX VARIABLES	3	1	0	4	60	10	00	
 Summar Apply the Different Impleme and elect Develop appropria Defining Course Outco Characte Apply the Recognia Identify the Use the optimization 	tive (s): The purpose of learning this courties problems related to fundamental print e methodologies involved in solving problems relation and Vector Integration. In the Complex Analysis, an elegant method to the Complex Analysis, an elegant method to statics. enough confidence to identify and model at solutions, using the skills learned in the complex function and solving through of mes: At the end of this course, learners we theoretical aspects of vectors. The theoretical aspects of vector integral calls the differentiation properties of complex functions and their mapping is concepts of integration to complex functions ERENTIATION OF VECTORS ction- Directional derivative - Gradient -D calar potential	hod main neir i comp will b culu x fun n ce ons i	s of relation in the nter blex be all s in nction ertain n ce	Vector ated to the study active integration their ons. their ons. their ons.	to fundar udy of he al patterr e and su gration o: core are nplex pla regions.	mental prir at flow, flu ns in real w pporting e eas.	id dynamic vorld and of nvironment	s ffer	
Jnit II INTE Work done - Lii	GRATION OF VECTORS ne Integral - Surface integral- Green's the rem- Applications involving cubes and pa				ane- Str	oke's Theo	orem- Gaus	12 s	
	LYTIC FUNCTIONS	ranc	icpi	peu.				12	
	ns- Necessary and Sufficient conditions on mination of Analytic Function using Milne ential Flow								
the second s	PING OF COMPLEX FUNCTIONS	9						12	
	oing- Application of transformation: translations - Linear fractional Transformation (d inversion	of	
and the second	PLEX INTEGRATION				1			12	
	mental Theorem - Cauchy's Integral Forn Singularities - Cauchy's Residue Theorei		- Ta	aylor'	s and La	urent's se	ries-		
REFERENCE(S									
1 Erwin Krey New Delhi	szig , Advanced Engineering Mathematic 2015	s, T	enth	n Edit	tion, Wile	ey India Pr	ivate Limite	d,	
	lie and C. Louis Barrett, Advanced Engin ng Company Ltd, 2003	eerii	ng N	lathe	ematics,	Tata McGi	raw-		
	and R. V. Churchill, Complex Variables	and	App	olicat	ions , Si	kth Edition	, McGraw		
	Neil, Advanced Engineering Mathematic	s, E	ight	h Ec	lition, Ce	engage Lea	arning India		
	s, Advanced Engineering Mathematics, T	hird	Edi	tion,	Wiley In	dia,2007		1)	
Ar	2002			100			mal	Z	

Chairman - BoS Dept. of Maths - ESEC

Classification of sound- Weber–Fechner law – Sabine's formula- derivation using growth and derivation description Coefficient and its determination –factors affecting acoustics of buildings and the emedies. Methods of sound absorptions - absorbing materials - noise Unit II THERMAL PROPERTIES 9 Mode of heat transfer- Thermal conductivity-Thermal diffusivity- Heat transfer through fenestratio hermal insulation and its benefits - heat gain and heat loss estimation - factors affecting the therm beerformance of buildings, thermal measurements, climate and design of solar radiation, shading device sentral heating. Principles of natural ventilation - ventilation measurements, design for natural ventilation for extrative ventilation systems for different types of buildings. Protection against fire to be caused by A.C.Systems. 9 Unit II NANOMATERIALS 9 Introduction – synthesis-top down approach- bottom up approach- precipitation technique-hydrotherm nethod-Properties of nanomaterials-Applications of nanomaterials-Photocatalytic activity-role of met and non metals in catalytic activity. Industrial waste treatment-metal removal from effluent 9 Unit IV NEW ENGINEERING MATERIALS 9 Composites - definition and classification - Fibre reinforced plastics (FRP) and fiber reinforced netals (FRM) - Metallic glasses - Shape memory alloys - Ceramics - Classification - Crystalline - N. Properties - thermal, mechanical, electrical and chemical ceramic fibres - ferroelectric a erromagnetic ceramics 9 Unit V HAZARDS	Department	CIVIL ENGINEER	RING	i - ^M			R-2019	Semester II	BS
19BS203 APPLICATIONS OF PHYSICS TO CIVIL ENGINEERS 1 P C Intervent of the construction of the constructin on the construction of the constene of the constructio		Course Name	ŀ			Credit	CONTRACTOR AND A		
1952/03 CIVIL ENGINEERS 3 0 0 3 45 100 Course Objective (s): The purpose of learning this coustics, nanomaterials and new materials for civil engineering applications. Course Outcomes: At the end of this course, learners will be able: • To have knowledge on the acoustic properties of buildings, • To gain knowledge on the properties and performance of new engineering materials, and • To understand the hazards of buildings. Unit I ACOUSTICS Classification of sound-Weber-Fechner law – Sabine's formula- derivation using growth and deemethod – Absorption Coefficient and its determination –factors affecting acoustics of buildings and the medies. Methods of sound absorptions - absorbing materials - noise Unit II THERMAL PROPERTIES 9 Wode of heat transfer- Thermal conductivity-Thermal diffusivity- Heat transfer through fenestratio berefits - heat gain and heat loss estimation – factors affecting the ther berformance of buildings, thermal measurements, climate and design of solar radiation, shading device entral heating. Principles of natural ventilation - ventilation measurements, design for natural ventilation ventilation = synthesis-top down approach- bottom up approach- precipitation technique-hydrother method-Properties of nanomaterials-Applications of nanomaterials-Photocatalytic activity-role of met and non metals in catalytic activity. Industrial waste treatment-metal removal from effluent Unit II NANOMATERIALS 9 Y	Code		L	Т	Ρ	С	Hours	wark	S
To introduce the principles of thermal, acoustics, nanomaterials and new materials for civil engineering applications. Course Outcomes: At the end of this course, learners will be able: To acquire knowledge on the acoustic properties of buildings, To gain knowledge on the properties and performance of buildings, To gain knowledge on the properties and performance of new engineering materials, and To understand the hazards of buildings. Unit I ACOUSTICS Acoustic the properties of normaterial's and its uses, To goin knowledge on the properties and performance of new engineering materials, and To understand the hazards of buildings. Unit I ACOUSTICS Satisfication of sound- Weber–Fechner law – Sabine's formula- derivation using growth and deen nethod – Absorption Coefficient and its determination –factors affecting acoustics of buildings and the meredies. Methods of sound absorptions - absorbing materials - noise Unit II THERMAL PROPERTIES Adde of heat transfer- Thermal conductivity-Thermal diffusivity- Heat transfer through fenestratio ventilation and its benefits - heat gain and heat loss estimation – factors affecting the therm berformance of buildings, thermal measurements, climate and design of solar radiation, shading device antral heating. Principles of natural ventilation vensurements, design for natural ventilation vensurements, design for natural ventilation vensurements, design for natural ventilation fundow types and packaged air conditioners -Air conditioning systems for different types of buildings. Principles of natural ventilation - reasurements, climate and design of solar radiation, shading device antra on what is in catalytic activity. Industrial wast treatment-metal removal from effluent Unit II NANOMATERIALS	-	CIVIL ENGINEERS			0	3	45	100	
Classification of sound- Weber-Fechner law – Sabine's formula- derivation using growth and dec method – Absorption Coefficient and its determination –factors affecting acoustics of buildings and th remedies. Methods of sound absorptions - absorbing materials - noise Unit II THERMAL PROPERTIES Mode of heat transfer- Thermal conductivity-Thermal diffusivity- Heat transfer through fenestratio thermal insulation and its benefits - heat gain and heat loss estimation – factors affecting the therr berformance of buildings, thermal measurements, climate and design of solar radiation, shading device central heating. Principles of natural ventilation - ventilation measurements, design for natural ventilatio Window types and packaged air conditioners -Air conditioning systems for different types of buildings: Protection against fire to be caused by A.C.Systems. Unit II NANOMATERIALS 9 rotoduction – synthesis-top down approach- bottom up approach- precipitation technique-hydrotherr method-Properties of nanomaterials-Applications of nanomaterials-Photocatalytic activity-role of met and non metals in catalytic activity. Industrial waste treatment-metal removal from effluent Unit V NeW ENGINEERING MATERIALS 2 Composites - definition and classification - Fibre reinforced plastics (FRP) and fiber reinforced metals (FRM) - Metallic glasses - Shape memory alloys - Ceramics - Classification - Crystalline - N Crystalline - Bonded ceramics, Manufacturing methods - Slip casting - Isostatic pressing -Gas pressu sonding - Properties - thermal, mechanical, electrical and chemical ceramic fibres - ferroelectric a erromagnetic ceramics Unit V HAZARDS 2 Ext BOOK(S): 1 Alexander, D. "Natural disaster", Springer (1993) 2 Budinski, K.G. & Budinski, M.K. "Engineering Materials Properties and Selection", Prentice Hall, 2009. Chairman - BoS	engineer Course Outco To acqui To have To get ki To gain To unde	ring applications. mes: At the end of this course, learners ire knowledge on the acoustic properties knowledge on the thermal performance of nowledge on basic concepts of nonmater knowledge on the properties and perform rstand the hazards of buildings.	will I of b of bu rial's	be a uildii uildir and	ble: ngs, igs, its u	ses,	, ¹		
method – Absorption Coefficient and its determination –factors affecting acoustics of buildings and the remedies. Methods of sound absorptions - absorbing materials - noise Imit II THERMAL PROPERTIES Imit Noise Wode of heat transfer. Thermal conductivity-Thermal diffusivity- Heat transfer through fenestration thermal insulation and its benefits - heat gain and heat loss estimation - factors affecting the therm berformance of buildings, thermal measurements, climate and design of solar radiation, shading device sentral heating. Principles of natural ventilation – ventilation measurements, design for natural ventilation 2. Ventilation against fire to be caused by A.C.Systems. Imit II Imit III NANOMATERIALS Imit III Imit NANOMATERIALS Imit III Imit III Imit III NANOMATERIALS Imit IIII Imit IIII Imit IIIIII Imit IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	0.000 - 0.000 - 0.000 - 0.000 - 0.000 - 0.000								9
Mode of heat transfer- Thermal conductivity-Thermal diffusivity- Heat transfer through fenestratio thermal insulation and its benefits - heat gain and heat loss estimation - factors affecting the therr berformance of buildings, thermal measurements, climate and design of solar radiation, shading device central heating. Principles of natural ventilation - ventilation measurements, design for natural ventilatio Window types and packaged air conditioners -Air conditioning systems for different types of buildings. Protection against fire to be caused by A.C.Systems. Unit III NANOMATERIALS ntroduction - synthesis-top down approach- bottom up approach- precipitation technique-hydrotherm method-Properties of nanomaterials-Applications of nanomaterials-Photocatalytic activity-role of metals in catalytic activity. Industrial waste treatment-metal removal from effluent Unit IV NEW ENGINEERING MATERIALS 9 Composites - definition and classification - Fibre reinforced plastics (FRP) and fiber reinforced 9 Chairman - Bonded ceramics, Manufacturing methods - Slip casting - Isostatic pressing -Gas pressing -Gas pressing - Properties - thermal, mechanical, electrical and chemical ceramic fibres - ferroelectric a erromagnetic ceramics 9 Unit V HAZARDS 9 Seismology and Seismic waves - Earth quake ground motion - Basic concepts and estimation technique site effects - Probabilistic and deterministic Seismic hazard analysis - Cyclone and flood hazards - F	method – Absor	rption Coefficient and its determination -	-fact	ors	affec	ting acou	n using gi istics of b	rowth and uildings and	decay 1 thei
Introduction – synthesis-top down approach- bottom up approach- precipitation technique-hydrotherm method-Properties of nanomaterials-Applications of nanomaterials-Photocatalytic activity-role of met and non metals in catalytic activity. Industrial waste treatment-metal removal from effluent Unit IV NEW ENGINEERING MATERIALS Composites - definition and classification - Fibre reinforced plastics (FRP) and fiber reinforced metals (FRM) - Metallic glasses - Shape memory alloys - Ceramics - Classification - Crystalline - N Crystalline - Bonded ceramics, Manufacturing methods - Slip casting - Isostatic pressing -Gas press bonding - Properties - thermal, mechanical, electrical and chemical ceramic fibres - ferroelectric a erromagnetic ceramics Unit V HAZARDS Seismology and Seismic waves - Earth quake ground motion - Basic concepts and estimation techniqu site effects - Probabilistic and deterministic Seismic hazard analysis - Cyclone and flood hazards - F hazards and fire protection, fire-proofing of materials, fire safety regulations and firefighting equipmer Prevention and safety measures. TEXT BOOK(S): 1. Alexander, D. "Natural disaster", Springer (1993) 2. Budinski, K.G. & Budinski, M.K. "Engineering Materials Properties and Selection", Prentice Hall, 2009. Chairman - BoS Dent of Physics - ESEC	Unit II T	HERMAL PROPERTIES							9
Composites - definition and classification - Fibre reinforced plastics (FRP) and fiber reinforced netals (FRM) - Metallic glasses - Shape memory alloys - Ceramics - Classification - Crystalline - N Crystalline - Bonded ceramics, Manufacturing methods - Slip casting - Isostatic pressing -Gas pression conding - Properties - thermal, mechanical, electrical and chemical ceramic fibres - ferroelectric a erromagnetic ceramics Unit V HAZARDS Seismology and Seismic waves - Earth quake ground motion - Basic concepts and estimation technique site effects - Probabilistic and deterministic Seismic hazard analysis - Cyclone and flood hazards - F azards and fire protection, fire-proofing of materials, fire safety regulations and firefighting equipmer Prevention and safety measures. EXT BOOK(S): 1 Alexander, D. "Natural disaster", Springer (1993) 2. Budinski, K.G. & Budinski, M.K. "Engineering Materials Properties and Selection", Prentice Hall, 2009. Hall, 2009.	ntroduction – s nethod-Properti	ynthesis-top down approach- bottom up es of nanomaterials-Applications of nar	nom	ateri	als-È	hotocata	lytic activi	ity-role of n	
netals (FRM) - Metallic glasses - Shape memory alloys - Ceramics - Classification - Crystalline - N Crystalline - Bonded ceramics, Manufacturing methods - Slip casting - Isostatic pressing -Gas pressu- bonding - Properties - thermal, mechanical, electrical and chemical ceramic fibres - ferroelectric a erromagnetic ceramics Unit V HAZARDS 9 Seismology and Seismic waves - Earth quake ground motion - Basic concepts and estimation techniqu site effects - Probabilistic and deterministic Seismic hazard analysis - Cyclone and flood hazards - F azards and fire protection, fire-proofing of materials, fire safety regulations and firefighting equipmer Prevention and safety measures. TEXT BOOK(S): 1. Alexander, D. "Natural disaster", Springer (1993) 2. Budinski, K.G. & Budinski, M.K. "Engineering Materials Properties and Selection", Prentice Hall, 2009. Chairman - BoS Dept. of Physics - ESEC									9
Prevention and safety measures. TEXT BOOK(S): 1. Alexander, D. "Natural disaster", Springer (1993) 2. Budinski, K.G. & Budinski, M.K. "Engineering Materials Properties and Selection", Prentice Hall, 2009. Image: Chairman - Bos Dept. of Physics - ESEC	netals (FRM) - Crystalline - Bor bonding - Prope erromagnetic ce Unit V HAZA Seismology and site effects - P	Metallic glasses - Shape memory alloy nded ceramics, Manufacturing methods erties - thermal, mechanical, electrical eramics ARDS Seismic waves - Earth quake ground me robabilistic and deterministic Seismic ha	s - (- Sli and otion zard	Cera p ca che i - Ba	mics sting mica asic alysis	- Classi - Isosta I ceramic concepts - Cyclor	fication - tic pressir c fibres - and estim and floo	Crystalline - ng -Gas pre ferroelectric nation techn od hazards	ssure and 9 iques - Fire
 Alexander, D. "Natural disaster", Springer (1993) Budinski, K.G. & Budinski, M.K. "Engineering Materials Properties and Selection", Prentice Hall, 2009. Chairman - BoS Dept. of Physics - ESEC 	Prevention and s	safety measures.	e sa	fety	regu	lations a	nd firefigh	nting equipm	nent -
2. Budinski, K.G. & Budinski, M.K. "Engineering Materials Properties and Selection", Prentice Hall, 2009. Chairman - BoS Dept. of Physics - ESEC					. 10 -				14
Hall, 2009. Chairman - BoS Dept. of Physics - ESEC Chairman - BoS									_
Dept. of Physics - ESEC Chairman - BoS		~ 그는 것 같은 것은 것 같은 것 같은 것 같은 것 같은 것 같은 것 같은	rials	Pro	perti	es and So	election",	Prentice	
Dept. of Physics - ESEC Chairman - BoS		- 4-				η		1	
Dept. of Civil Engg ESEC		Chairman - BoS Dept. of Physics - ESEC				10-			FC

3	Severns, W.H. & Fellows, J.R. "Air conditioning and Refrigeration", John Wiley and Sons, London, 1988.
4	Stevens, W.R., "Building Physics: Lighting: Seeing in the Artificial Environment, Pergaman Press, 2013.
REF	ERENCE(S):
1.	Gaur R.K. and Gupta S.L., Engineering Physics. Dhanpat Rai publishers, 2012.
2.	Reiter, L. "Earthquake hazard analysis - Issues and insights", Columbia University Press, 1991.

Sigg Chairman - BoS Dept. of Physics - ESEC

Km I

Chairman - BoS Dept. of Civil Engg. - ESEC

Equilation and a Bard

Depa	artment	CIVIL ENGINEERIN	G				R 2019	Semester II	МС
	ourse	Course Name		Hour Wee	ek	Credit	Total Hours	Maxim Mar	
-	ouc		Ľ	Т	P	С	Tiours	Wai	NO
	MC201	ENVIRONMENTAL SCIENCE AND ENGINEERING	3	0	0	0	45	100)
		ctive (s): The purpose of learning this cou	irse	is to					
		ne nature and facts about environment. and implementing scientific, technologica	l on	d oco	nor	via colutio	ne to onvir	onmontal	
2.	problem		ii ani	a eco	1011			Unmental	
3.	and the second s	he types of natural resources and the indiv	/idua	al role	in o	conservin	g the resou	irces.	
4.	Apply th	e knowledge to various social issues by u	unde	rstan	ding	the envi	ronmental	legislation la	aws.
5.		ne integrated themes and biodiversity, nat	ural	resou	irce	s, pollutic	on control a	nd waste	
-	manage				1		47.1.0		
		omes: At the end of this course, learners							
1.		their knowledge in maintaining ecologica ation of biodiversity.	al ba	lance	an	d make i	use of their	r knowledge	e in the
2		the role of human being in maintaining a	cle	an en	viro	nment ar	nd useful e	nvironment	for the
2.		enerations.			VIIO	innent a	ia asciai c	invironinient.	ior the
3.		the constituents of environment, precious	s res	source	es ir	the env	ironment a	nd conserv	ation o
	natural r	resources.							
4.		e role of government and Non-Governme	ent c	organi	zati	on and e	xplain the	various rail	n water
_		ng techniques.							
5.	Develop	their awareness about population grow	th, F	amily	pla	anning pr	ogramme	and HIV/All	JS and
Unit I	and the second se	heir knowledge in role of information tech SYSTEMS AND BIODIVERSITY	noio	gy in	env	Ironment	& numan r	ieaith.	10
biodive Threats	rsity - co s to bioc	ructure and functions of forest ecosystens nsumptive use-productive use - social - e diversity - Habitat loss - poaching of w situ and Ex-situ conservation.	ethic	al-a	est	netic valu	es - Hotsp	ots of biodiv	ersity -
Unit II	EN	/IRONMENTAL POLLUTION			_				8
omen	0000	AND TO TOOL							
ollution	n - Solid	es - effects and control measures of Air p waste management - Causes - effects idual in prevention of pollution - Disaster r	-con	trol m	leas	sures of u	urban and	industrial w	astes -
Unit II	I NA	TURAL RESOURCES				1	1.7		9
Forest r	resource	- Use-over exploitation -deforestation - V	Nate	er reso	ourc	e - use-c	ver utilizat	ion of surfa	ce and
		conflicts over water - Mineral resource -							
		al resource - Food resources - world food ulture - fertilizer- pesticide problems - En							
energy	- wind	energy. Land resources - land degra- natural resources.							
Unit IV		CIAL ISSUES AND THE ENVIRONMENT					1. (00	9
			/	2			K.M.C	4	
		٢	n. (r	1	6	De		an - BoS Engg ES	FC
		Dept. of Ch	nan Iemi	stry -	ES			Engy. • Eo	

Sustainable & Unsustainable development-Water conservation - rain water harvesting (roof top method)climate change-global warming - acid rain - ozone layer depletion - Environment protection act - Air (Prevention and control of pollution) Act - Water (prevention and control of pollution) Act - Green Chemistry – 12 Principles of Green chemistry – Application of Green chemistry.

Unit V HUMAN POPULATION AND THE ENVIRONMENT

Population growth - variation among nations - Population explosion & its consequences – Family,child, women welfare programmes - Human rights - HIV/AIDS – Human health and environment - Role of information technology in environment and human health.

TEXT BOOK(S):

1.	Anubha Kaushik and C.P. Kaushik, Environmental Science and Engineering, New Age International Publishers, New Delhi (2015)
2.	Dr. A.Ravikrishan, Envrionmental Science and Engineering., Sri Krishna Hitech Publishing co. Pvt. Ltd., Chennai,12th Edition (2016)

REFERENCE(S):

1.	Masters, Gilbert M, —Introduction to Environmental Engineering and Sciencell, Second Edition, Pearson Education, New Delhi (2012).
2.	Santosh Kumar Garg, Rajeshwari garg, smf Ranjni Garg —Ecological and Environmental Studiesl Khanna Publishers, Nai Sarak, Delhi (2014).
3.	R.K. Trivedi, "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standard", Vol. I and II, Enviro Media.
4.	Dharmendra S. Sengar, "Environmental law", Prentice Hall of India PVT LTD, New Delhi, 2007. 4. Rajagopalan, R, "Environmental Studies-From Crisis to Cure", Oxford University Press 2005
5.	Cunningham, W.P. Cooper, T.H. Gorhani, "Environmental Encyclopedia", Jaico Publ., House, Mumbai, 2015.

9

Chairman - BoS Dept. of Chemistry - ESEG

Chairman - 865 Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEERI	NG			9 E 1.	R 2019	Semester II	ES
Course	Course Name		ours Wee		Credit	Total	Maxim	
Code	oourse nume	L	Т	Р	С	Hours	Mark	(S
19ES201	PROBLEM SOLVING AND PYTHON PROGRAMMING	3	0	0	3	45	10	0
 To under simple F To dever To use F To do in Course Outco At the end of Apply pr Recogning input/ou Be able Able to the other simple of the second simple of	of learning this course is erstand problem solving techniques erstand why Python is a useful scrip Python programs. Iop Python programs with condition Python data structures – lists, tuples put/output with files in Python omes: this course, learners will be able to roblems solving techniques to real w ze and construct common prog	oting als ai s, dict vorld gram ogram	nd lo iona prob ming ns us	ops ries. Iems I idi sing	oms: va List, Tup	ariables,	loop, bra	
processor, op systems, Intro of Algorithm, Unit II INT History- Insta	to components of a computer s berating system, compilers, creating oduction to Algorithms: steps to solv Flowchart/Pseudo code with examp RODUCTION TO PYTHON allation and Working with Python- Declaring and using Numeric data ty	y, con ve log bles, f	npilir gical Prog ersta	ng ar and ram ndin	nd execu numeric design a g Pythor	ting a proble al proble nd struct n variabl	ogram etc., ems. Repres ured progra es - Pytho	Number sentation amming 6 on basic
string operation Unit III FLC Conditional b while loops in using Python	ons- Methods DW CONTROL, LIST AND TUPLES locks using if, else and elif - Simple n python - Loop manipulation usir conditional and loops block Crea lists - Function and Methods – Cr	for long parting	oops iss, i List	in py conti - Ac	/thon - F nue, bre ccessing	or loop u ak and e list - C	ising ranges else- Prog Operations o	12 s- Use of ramming on List -
Unit IV DIC Creating Dicti Functions - D Anonymous f Random mod	TIONARIES ,FUNCTIONS AND M onaries - Accessing values in dictio Defining a function - Calling a funct unctions - Global and local variable ule - Packages - Composition. ES AND EXCEPTION HANDLING	narie ion	s - \ - Typ	Nork	of function	ons - Fui	nction Argu	ments -
Files - Open	ing and closing file- File Opening ndling - Exception - Exception Ha ptions	Moc Indlin	des - g - I	- Re Exce	ading ai pt claus	e - Try ,	finally clau	unctions.
- Ch	airman - BoS t. of CSE - ESEC					Ch Dept. of	airman - Bo Civil Engg.	S - ESEC

1,	David Riley and Kenny Hunt, "Computational Thinking for the Modern Problem Solver", Chapman & Hall/CRC, 2014.
2.	M. Sprankle, "Problem Solving and Programming Concepts", 9th Edition, Pearson Education, New Delhi, 2011.
REFER	ENCE(S)
1.	Brian Heinold, "Introduction to Programming Using Python", Mount St. Mary's University, 2013.
2.	Michael Dawson, "Python Programming for the Absolute Beginner", 3rd Edition, 2010.
3.	Allen Downey, Green Tea Press Needham, "Think Python, How to Think Like a Computer Scientist", Massachusetts.
4.	Cunningham, sams teach yourself python in 24 hours, Second edition Pearson, 2014

Chairman - BoS Dept. of CSE - ESEC

king

Chairman - BoS Dept. of Civil Engg. - ESEČ

r

Department	CIVIL ENGINEER	RINC	3			R 2019	Semester II	HS
Course	Course Name		Hou We	urs/ eek	Credit	Total	Maximu	
Code		L	Т	Ρ	С	Hours	Mark	S
19HX201	ENGLISH FOR ENGINEERS	3	0	0	3	45	100	
 To develop of texts. To enhance To improve To develop Course Outcome 	the usage of grammar in English lang listening skills which will enable to list the reading skill to comprehend tec writing skills to express thoughts free speaking skills to speak fluently in re- se. At the end of this course, learners	sten hnica ely. eal c	lectu al wr onte	iting xts.	S.	prehend o	different typ	bes
 Develop list Acquire the Enhance the 	ir language usage in LSRW skills. ening skills to understand sentence a ability to understand different writter e writing skills to express the ideas o ate fluently in pair / team.	tex	ts.					
	JAGE FOCUS							9
	sive) - Reported speech - Condition	als -	Coll	ocati	ions - Dis	course m	harkers - Or	ne
Unit II LISTEN	Phrasal verbs - Error identification							9
	ic information – Identifying sentence	stre	ss -	Rhvt	hm - Into	nation		
Unit III READI	143 122							9
	d charts - Skimming and scanning te	exts -	– Ide	entify	ina topic	sentence	es -	
Jnderstanding the					ing topic	contonio		
Unit IV WRITIN		n'i î î					1.1.5.3.7	9
lob Application, Le	tter and Resume - Recommendation	s - F	Repo	rt wr	iting (acc	ident and	d survey) -	
	ok and movie) - Transcoding (interp							
Unit V SPEAK							a di sul su	9
	Turn taking (initiating and respondir s: suggesting - comparing and contr ons							ng -
1. Communica	ative English by KN Shoba ,Lourdes evised Edition 2018	Joa	vani	Ray	en Publis	shed by (Cambridge	
REFERENCE(S):					gaza Sos			
1. Developing S 2002.	fort, Pamela Rogerson, Trish Stott, a Speaking Skills for Business English,	Car	nbric	lge:	Cambridg	ge Üniver	sity Press,	
² . Academic Pu	linning and Beverly Holmstrom, Stud irposes. United Kingdom: Cambridge	Un	ivers	ity P	ress, 200)4.	1.1.1.1.1.1.1.1	
^{3.} learners Of E	mond. English Grammar in Use – A inglish .Ived. United Kingdom: Camb	ridg	e Un	ivers	sity Press	. 2012.	D. Seatt	
4. Seely, John. University Pressity Pressity	Oxford Guide to Effective Writing an ess. 2005.	d Sp	eaki	ng. I	ndian ed	New De	hi: Oxford	
Print 1	ext				5.	MU	F	

no 0 Chairman - BoS Dept. of English - ESEC

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEERIN					R 2019	Semester II	P
Course Code	Course Name	1.22.22	ours Wee	k	Credit	Total Hours	Maximum Marks	
19ES209	MECHANICS FOR ENGINEERS	L 3	Т 0	Р 0	C 3	45	100	-
	tives: The purpose of learning this co					40	100	_
 Provide kr Study the Determine work, ene Learn the Course Outco Illustrate th Analyze th Evaluate t 	e basic concepts and force systems in nowledge on statics of particles in spa moment of inertia of surfaces and sol e the solution for the problems related rgy, impulse and momentum. concepts of static friction & geometric omes: At the end of this course, learn ne vectorial and scalar representation e rigid body in equilibrium. he properties of surfaces and solids.	ce w ids. to ki <u>mot</u> ers w	ith n nem <u>ion c</u> rill be	nome atics of rig e abl	of partic of partic d bodies e to:	uilibrium c cles and f s.		ed w
	dynamic forces exerted in rigid body.							
	the friction and the effects by the law	s of f	frictio	on.	_			1 -
	TICS OF PARTICLES Units and Dimensions – Laws of							9
Principle of tra		rticle	in :	spac	e – Equ	ivalent s	ystems of forc	
Principle of tra Jnit II EQU Free body diag and Couples moments and	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r	nd re and nome	eactio abo	on fo	orces – s n axis -	table equ - Vectoria	uilibrium – Mom al representatio	9 nent
Principle of tra Unit II EQU Free body diag and Couples moments and force - Equilibr Unit III PRO	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions PERTIES OF SURFACES AND SOL	nd re and nome s. IDS	eactie abc ent -	on fo out a - Va	orces – s n axis - rignon's	table equ - Vectoria theorem	uilibrium – Mom al representatio – Single equiv	9 nenta on co alen 9
Principle of tra Jnit II EQU Free body diag and Couples moments and orce - Equilibr Jnit III PRO Centroids and ntegration – T of Pappus - A ntegration – T axis theorem a axes of inertia-	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions	nd re and nome s. IDS reas Ilow reas ollow reas	eaction abore ent - - R sect - F sect sect not	on fo but a - Va lecta ion b Recta	n axis - rignon's ngular, ngular, by using by using s of iner	table equ - Vectoria theorem circular, f standard circular, standard tia of pla	uilibrium – Mom al representatio – Single equiv triangular area formula –Theor triangular area d formula – Pa ne areas – Prin	9 nent aler 9 s b rem s b ralle cipa
Principle of traJnit IIEQUFree body diagonalFree body diagonaland Couplesmoments andorce - EquilibrityJnit IIIPROCentroids andntegration - Tof Pappus - Antegration - Taxis theorem aaxes of inertia-Relation to areJnit IVDYN	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions PERTIES OF SURFACES AND SOL centre of mass – Centroids of a - section, I-section, Angle section, Ho Area moments of inertia of plane a 'section, I section, Angle section, Ho and perpendicular axis theorem – Prin Mass moment of inertia of prismatic, a moments of inertia. AMICS OF PARTICLES	nd re and nome s. IDS reas illow reas ollow acipal cyline	eaction abc ent - sect sect sec I moo drica	on fo but a - Va lecta ion b Recta tion mental and	nrces – s n axis – rignon's ngular, by using by using s of iner d spheric	table equ - Vectoria theorem circular, f standard circular, standard tia of plan tia of plan tia solids	uilibrium – Mom al representatio – Single equiv triangular area formula –Theor triangular area d formula – Pa ne areas – Prin from first princi	9 nent aler 9 s b rem s b ralle cipa ple
Principle of tra Jnit II EQU Free body diagonal Free body diago	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions PERTIES OF SURFACES AND SOL centre of mass – Centroids of a - section, I-section, Angle section, Ho Area moments of inertia of plane a section, I section, Angle section, Ho and perpendicular axis theorem – Print Mass moment of inertia of prismatic, a moments of inertia. AMICS OF PARTICLES , Velocity and acceleration, their rela- of motion – Work-Energy Equation–	nd re and nome s. IDS reas illow reas ollow icipal cyline ations mpu	eaction abco ent - - R sect sect I mon drica	on fo but a - Va ecta ion b Recta tion mental and - R	n axis - rignon's ngular, ngular, by using s of iner d spheric elative n	table equ - Vectoria theorem circular, f standard circular, standard tia of plan al solids	uilibrium – Mom al representatio – Single equiv triangular area formula –Theor triangular area d formula – Pa ne areas – Prin from first princi	9 nent aler 9 s b rem s b ralle cipa ple 9 ion dies
Principle of tra Jnit II EQU Free body diagonal and Couples moments and orce - Equilibrity Jnit III PRO Ontegration - To of Pappus - Antegration - To axis theorem a axis theorem a axis theorem a Displacements Jewton's laws Jnit V FRIC	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions PERTIES OF SURFACES AND SOL centre of mass – Centroids of a - section, I-section, Angle section, Ho Area moments of inertia of plane a section, I section, Angle section, Ho and perpendicular axis theorem – Prin Mass moment of inertia of prismatic, a moments of inertia. AMICS OF PARTICLES , Velocity and acceleration, their relation of motion – Work-Energy Equation– TION AND RIGID BODY DYNAMICS	nd re and nome s. IDS reas illow reas ollow reas ollow acipal cyline ations	eactin abc ent - sect - F sec I moo drica ship Ise a	on fo but a - Va lecta ion b Recta tion ment al and - R and M	nrces – s n axis – rignon's ngular, by using by using s of iner d spheric elative n Aomentu	table equ - Vectoria theorem circular, t standard circular, standard tia of plan al solids	uilibrium – Mom al representatio – Single equiv triangular area formula –Theor triangular area d formula – Pa ne areas – Prin from first princi Curvilinear mot act of elastic bo	9 nent aler 9 s b rem s b ralle cipa ple 9 ion dies 9
Principle of tra Unit II EQU Free body diag and Couples moments and force - Equilibr Unit III PRO Centroids and ntegration – T of Pappus - A ntegration – T axis theorem a axes of inertia- Relation to are Unit IV DYNA Displacements Newton's laws Unit V FRIC Friction force - vedge friction acceleration –	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions PERTIES OF SURFACES AND SOL centre of mass – Centroids of a - section, I-section, Angle section, Ho Area moments of inertia of plane a section, I section, Angle section, Ho and perpendicular axis theorem – Print Mass moment of inertia of prismatic, a moments of inertia. AMICS OF PARTICLES , Velocity and acceleration, their relation of motion – Work-Energy Equation– TION AND RIGID BODY DYNAMICS - Laws of sliding friction – equilibrium Rolling resistance -Translation General Plane motion of simple rigid	nd re and nome s. IDS reas ollow reas ollow cipal cyline ations mpu s n ana and	eaction abcomment ent - sect sect sect l mon drica ship lse a alysis Rot	on fo but a - Va ecta ion k Recta tion ment al and - R and M s of ration	erces – s n axis – rignon's ngular, by using by using s of iner d spheric elative n <u>Aomentu</u> simple s	table equ - Vectoria theorem circular, f standard circular, standard tia of plan al solids notion – 0 m – Impa ystems w	uilibrium – Mom al representatio – Single equiv triangular area formula –Theor triangular area d formula – Pa ne areas – Prin from first princi Curvilinear mot act of elastic boo vith sliding fricti es – Velocity	9 aler 9 s b rem s b rem s b rem () 9 ion dies 9 on ·
Principle of tra Unit II EQU Free body diagonal and Couples moments and force - Equilibrity Unit III PRO Ontegration - T of Pappus - A ntegration - T axis theorem a axes of inertia- Relation to are Jnit IV DYN Displacements Newton's laws Jnit V FRIC Friction force - vedge friction acceleration - TEXT BOOK(S)	ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions PERTIES OF SURFACES AND SOL centre of mass – Centroids of a - section, I-section, Angle section, Ho rea moments of inertia of plane a 'section, I section, Angle section, Ho area moments of inertia of prismatic, a moments of inertia. AMICS OF PARTICLES , Velocity and acceleration, their relation of motion – Work-Energy Equation– TION AND RIGID BODY DYNAMICS - Laws of sliding friction – equilibrium Rolling resistance -Translation General Plane motion of simple rigid s)	nd re and nome s. IDS reas ollow reas ollow reas ollow cyline ations mpu ations mpu bodie	eaction abc ent - sect - F sect I mol drica ship Ise a alysis Rot es su	on fo but a - Va ecta ion b Recta tion ment al and and M s of atior uch a	elative n Aomentu simple s of Rig s cylinde	table equ - Vectoria theorem circular, f standard circular, standard tia of plan al solids notion – 0 m – Impa ystems w gid Bodie er, disc/w	uilibrium – Mom al representatio – Single equiv triangular area formula –Theor triangular area d formula – Pa ne areas – Prin from first princi Curvilinear mot act of elastic boo vith sliding fricti es – Velocity heel and sphere	9 9 9 9 s b rem s b s b rem s b s b rem s b s b s b s b s b s b s b s b
Principle of tra Unit II EQU Free body diagonal Free body diagonal Top Fapus - A Antegration – T axis theorem a free body diagonal Free body diagonal Provide State The State St	nsmissibility. ILIBRIUM OF RIGID BODIES gram – Types of supports – Action a – Moment of a force about a point couples – Scalar components of a r ium of Rigid bodies in two dimensions PERTIES OF SURFACES AND SOL centre of mass – Centroids of a - section, I-section, Angle section, Ho Area moments of inertia of plane a section, I section, Angle section, Ho and perpendicular axis theorem – Print Mass moment of inertia of prismatic, a moments of inertia. AMICS OF PARTICLES , Velocity and acceleration, their relation of motion – Work-Energy Equation– TION AND RIGID BODY DYNAMICS - Laws of sliding friction – equilibrium Rolling resistance -Translation General Plane motion of simple rigid	nd re and nome s. IDS reas illow reas ollow cipal cyline ations mpu ations mpu bodie	eaction abo ent - - R sect - R sect I mon drica ship Ise a alysis Rot es su	on fo but a - Va ecta ion k Recta tion ment al and - R and M s of atior uch a	rignon's n axis - rignon's ngular, by using so of iner d spheric elative n Aomentu simple s o of Rig s cylinde	table equ - Vectoria theorem circular, f standard circular, standard tia of plan al solids notion – 0 m – Impa ystems w gid Bodie er, disc/w	uilibrium – Mom al representatio – Single equiv triangular area formula –Theor triangular area d formula – Pa ne areas – Prin from first princi Curvilinear mot act of elastic boo vith sliding fricti es – Velocity heel and sphere	9 nent aler 9 s b rem s b rem s b rem s b rem s b rem s b rem s b rem s on and dies 9 on - and e.

14

REFE	RENCE(S)
1.	Bhavikatti, S.S and Rajashekarappa, K.G., "Engineering Mechanics", New Age International (P Limited Publishers, 1998.
2.	Hibbeller, R.C and Ashok Gupta, "Engineering Mechanics: Statics and Dynamics", 11 th Edition Pearson Education 2010.
3.	Irving H. Shames and Krishna Mohana Rao. G., "Engineering Mechanics – Statics and Dynamics", 4 th Edition, Pearson Education 2006.
4.	Meriam J.L. and Kraige L.G., "Engineering Mechanics- Statics - Volume 1, Dynamics- Volume 2", Third Edition, John Wiley & Sons, 1993.
5.	Rajasekaran S and Sankarasubramanian G., "Engineering Mechanics Statics and Dynamics", 3rd Edition, Vikas Publishing House Pvt. Ltd., 2005.

K.M. Sel.

Chairman - BoS Dept. of Civil Engg. - ESEC

Chymrain + 100 Dans or Cruil Enige - E^sE

Departr	nent	CIVIL ENGINEERING	G				R 2019	Semester II	PC
Course	Code	Course Name		ours Nee		Credit	Total	Maximum	
			L	Т	Ρ	С	Hours	Marks	
19ES2	212	COMPUTER AIDED DRAWING PRACTICE	0	0	4	2	60	100	1
• Ma • Im pla	ake the part fu an, elev	ve (s): The purpose of learning this co e students learn the various elements ndamental knowledge on AutoCAD a vation and sectional view of a building	of R nd to J.	esid o ma	lentia ake t	he stude			
		mes: At the end of this course, learne							
		e various components of different type							
		nowledge of minimum size of the var	ious	con	npon	ents of a	building	as per National	
		Code of India.							
		uilding plan for a given area. an elevation and sectional views of th		on b	bline	ina codo	of India		
•	epare a	List of Exp				ing code	or mula.		-
1. Sim	ple dra	awing using basic draw commands ar	the second second second second			system		1	
		model of a Brick wall using basic dra					nds		-
		single storied residential building				,			
and the second se		and cross section of a single storied r	esid	entia	al bu	ilding			
5. Plai	n, eleva	ation and cross section of an industria	al bu	ildin	g	1	10 M 10		
6. Ste	el truss	and its connection details						÷	
REFERE	INCE(S	S):							
	Donnie 2013	Gladfelter, Autocadd 2013 and Autoc	add	LT	2013	3, Autode	esk officia	I training guides	5,
2. E	Ellen Fi	nkelstein, Autocadd 2012 and Autoca	add I	_T 2	012	Bible, 20	12.	-	

kn I

Departmo	ent	CIVIL ENGINEERING	i				R 2019	Semester II	ES
Course		Course Name		ours Nee		Credit	Total	Maximu	
Code			L	Т	Ρ	С	Hours Marks 30 100 es.	,	
19ES21	3 F	PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	0	0	2	1	30	100	
The purp • To • To • To • Us • Re	oose o app o wri o imp se fu se fu	ective (s): of learning this course is oly problem solving techniques te, test, and debug simple Python pro plement Python programs with conditi unctions for structuring Python program sent compound data using Python list and write data from/to files in Python.	ona ms.	als a	nd lo		es.		
 To Wi Im De Us 	o writ rite, iplen evelo se P	this course, learners will be able to te algorithm, pseudo code and draw fi test, and debug simple Python progra nent Python programs with conditiona op Python programs step-wise by defi ython lists, tuples, dictionaries for repl and write data from/to files in Python.	ams als a nin	s. and g fui	loop nctic	ons and		em.	
 W Dr. Wa Sir Pra Pra	/rite orkir mple ogra ogra ogra ogra ogra	eriments algorithms and pseudo code to solve flow Chart ing in Python Interpreter e python programming using looping a sums to handle strings sums using list, tuples and dictionaries sums using functions sums using modules and packages sum to handle files and exception hand sum to draw various charts eded : Python 3 interpreter for Win	and	con	ditio	nal state	ements		
TEXT BO	_								
1.	Davi Solv	d Riley and Kenny Hunt, "Computer", Chapman & Hall/CRC, 2014.	1	1		in the		- Martin France	
2	Μ.	Sprankle, "Problem Solving and Proceeding and Proceeding New Delhi, 2011.	ogra	amn	ning	Concep	ots", 9th	Edition, Pe	earsor
REFERE	ENC	E(S)							÷.,
		n Heinold, "Introduction to Progra ersity, 2013.	am	ming	g U	sing Py	/thon",M	ount St. I	Mary'
		ael Dawson ,"Python Programming fo							2010
			har	- "	Thin	k Pytho	n, How	to Think I	
3. (n Downey, Green Tea Press Need nputer Scientist", Massachusetts. ningham, sams teach yourself python	10		81				

Chairman - BoS Dept. of CSE - ESEC

Department	CIVIL ENGI	NEERIN	IG			R 2019	Semester II	BS
Course Code	Course Name	Hours	s / We	ek	Credit	Total	Maximum	1
1000000	ENGINEERING CHEMISTRY	L	T	Р	С	Hours	Marks	
19BS208	LAB	0	0	4	2	60	100	

Course Objective (s): The purpose of learning this course is to

- 1. Determination of total, temporary & permanent hardness of water by EDTA method.
- 2. Determination of chloride content of water sample by Argentometric method.
- 3. Estimation of iron content of the given solution using potentiometer.
- 4. Determination of strength of given hydrochloric acid using pH meter
- 5. Conductometric titration of strong acid vs strong base.

Course Outcomes: At the end of this course, learners will be able to

- 1. Make the student to acquire practical skills in the determination of water quality parameters through volumetric analysis.
- 2. Acquire the knowledge about chloride content in water sample.
- 3. Make the student to acquire practical skills about strength of iron using potentiometric titrations.
- 4. Understand the how to estimate hydrochloric acid in water sample using pH meter.
- 5. Gain the knowledge about conductance of ions.

Exp No.	Name of Experiments (Any Ten)
1 .	Determination of Total, Temporary & Permanent hardness of water by EDTA method.
2	Determination of chloride content of water sample by Argentometric method.
3	Determination of Dissolved oxygen content in water sample using Winklers Method
4	Determination of Alkalinity in Water Sample
5	Determination of strength of given hydrochloric acid using pH meter.
6	Determination of strength of acids in a mixture of acids using conductivity meter.
7	Conductometric titration of Weak acid vs Weak base.
8	Estimation of iron content of the given solution using potentiometer.
9	Conductometric titration of strong acid vs strong base.
10	Determination of Molecular weight of polyvinyl alcohol using Ostwald viscometer
11	Estimation of iron content of the water sample using spectrophotometer
12	Estimation of Copper in Brass

fores

Chairman - BoS Dept. of Chemistry - ESEC

Chairman - BoS Dept. of Civil Engg. - ESEC

Chairman - 803 Dank of Civil Engg. - 2580

Department	CIVIL ENGINEE	RING				R 2019	Semester I
Course Code	Course Name	675	lour Wee		Credit	Total	Maximum
		L	Т	Ρ	С	Hours	Marks
19TPS02	SOFT SKILLS -II	1	0	0	1	30	100
 To train To coact To deve To deve To teach Course Outcon Participa Attend th 	tive (s): The purpose of learning th the Students on Group Discussion h the students on Interview Skills. Iop Presentation Skills. Iop Business Etiquette. In importance of Ethics and Values. Interview with confident the Group Discussion with Confident the interview with positive attitude by them very well by enhancing their F	Do's and ners will ice by kn / having	be a owir Moc	able t ng the	e tips an erviews.	d Tricks.	
Behave	very well in official gathering and M	leeting by	y kno	owing	g Etiquet	te.	
	od ethics and values in their Persor UP DISCUSSION	hal and P	rote	ssior	hal Lite.		
		ille teste	d in				
D SKIIS - UN	derstanding the objective and sk	ills teste	u II	1 a	GD - C	Seneral type	pes of GDs
oles in a GD – I	derstanding the objective and sk Do's & Don'ts – Mock GD & Feedba	ack.	u ii	I a	GD – G	Seneral typ	pes of GDs
oles in a GD – I	Do's & Don'ts – Mock GD & Feedba	ack.		ıa	GD – G	Seneral typ	
oles in a GD – IUNIT 2 INTE	Do's & Don'ts – Mock GD & Feedba	ack.					
oles in a GD – I UNIT 2 INTE iterview handlin	Do's & Don'ts – Mock GD & Feedba	ack.					
oles in a GD – I UNIT 2 INTE aterview handlin	Do's & Don'ts – Mock GD & Feedba	ack.					
oles in a GD – I UNIT 2 INTE nterview handlin eedback.	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist	ack.					
oles in a GD – I UNIT 2 INTE Interview handlin Bedback. UNIT 3 PRES	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS	ack. : – Groon	ning	tips:	do's & c	lon'ts – mo	ock interview
Loles in a GD – I UNIT 2 INTE Interview handlin wedback. UNIT 3 PRES Interview handlin	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist	ack. – Groon presenta	ning	tips:	do's & c	lon'ts – mo	ock interview
oles in a GD – I UNIT 2 INTE Interview handlin eedback. UNIT 3 PRES resentation Skil ngaging the aud	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock	ack. – Groon presenta	ning	tips:	do's & c	lon'ts – mo	ock interview
Coles in a GD – IUNIT 2INTEInterview handlinDeedback.UNIT 3PRESPresentation SkillIngaging the audUNIT 4Busil	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette	ack. – Groon presenta < Presen	ning ation tatio	tips: – se ns &	do's & c election c Feedbac	lon'ts – mo of topic, cou ck.	ock interview a
Image: Coles in a GD – IUNIT 2INTEInterview handlingInterview handlingInterview handlingInterview handlingImage: ColeImage: Co	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette tte – Telephone & E-mail etiquet	ack. – Groon presenta < Presen	ning ation tatio	tips: – se ns &	do's & c election c Feedbac	lon'ts – mo of topic, cou ck.	ock interview a
Coles in a GD –UNIT 2INTEInterview handlineDecideack.UNIT 3PRESPresentation SkilIngaging the audUNIT 4BusinBrooming etiqueetting – how to i	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette ette – Telephone & E-mail etiquett mpress.	ack. – Groon presenta < Presen	ning ation tatio	tips: – se ns &	do's & c election c Feedbac	lon'ts – mo of topic, cou ck.	ock interview a
Coles in a GD – IUNIT 2INTEInterview handlineinterview handlinein	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette ette – Telephone & E-mail etiquett mpress.	ack. – Groon presenta « Presen te – Din	ning ation tation	tips: n – se ns & etiqu	do's & c election c Feedbac ette – d	lon'ts – mo of topic, con ck. o's & Don	ntent, aids –
Roles in a GD – IUNIT 2INTEInterview handlininterview handlin <td>Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette ette – Telephone & E-mail etiquett mpress.</td> <td>ack. – Groon presenta « Presen te – Din</td> <td>ning ation tation ing</td> <td>tips: ns & etiqu mas</td> <td>do's & c election c Feedbac ette – d</td> <td>lon'ts – mo of topic, con ck. o's & Don - Discussio</td> <td>ock interview of the second se</td>	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette ette – Telephone & E-mail etiquett mpress.	ack. – Groon presenta « Presen te – Din	ning ation tation ing	tips: ns & etiqu mas	do's & c election c Feedbac ette – d	lon'ts – mo of topic, con ck. o's & Don - Discussio	ock interview of the second se
Coles in a GD –UNIT 2INTEInterview handlineDecideack.UNIT 3PRESPresentation SkilIngaging the audUNIT 4BusinBrooming etiqueetting – how to iUNIT 5Ethic	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette ette – Telephone & E-mail etiquett mpress.	ack. – Groon presenta (Present te – Din es and D	ning ation tation ing	tips: ns & etiqu mas	do's & c election c Feedbac ette – d	lon'ts – mo of topic, con ck. o's & Don - Discussio	ntent, aids –
Roles in a GD – IUNIT 2INTEInterview handlininterview handlin <td>Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette ette – Telephone & E-mail etiquett mpress. S nce of Ethics and Values – Choice</td> <td>ack. – Groon presenta (Present te – Din es and D</td> <td>ning ation tation ing</td> <td>tips: ns & etiqu mas</td> <td>do's & c election c Feedbac ette – d</td> <td>lon'ts – mo of topic, con ck. o's & Don - Discussio</td> <td>ock interview of the second se</td>	Do's & Don'ts – Mock GD & Feedba RVIEW SKILLS g Skills – Self preparation checklist SENTATION SKILLS Is – Stages involved in an effective dience – Time management – Mock ness Etiquette ette – Telephone & E-mail etiquett mpress. S nce of Ethics and Values – Choice	ack. – Groon presenta (Present te – Din es and D	ning ation tation ing	tips: ns & etiqu mas	do's & c election c Feedbac ette – d	lon'ts – mo of topic, con ck. o's & Don - Discussio	ock interview of the second se

REFERENCES:

- 1. The Seven Habits of Highly Effective People Stephen R. Covey.
- 2. All the books in the "Chicken Soup for the Soul" series.
- 3. Man's search for meaning Viktor Frankl
- 4. The greatest miracle in the world Og Mandino
- 5. Goal Eliyahu Goldratt.

· # "ch.14

18 June Constant

- 6. Working with Emotional Intelligence David Goleman.
- 7. Excel in English Sundra Samuel, Samuel Publications
- Developing Communication Skills by Krishna Mohan and Meera Banerji; MacMillan India Ltd., Delhi
- 9. Essentials of Effective Communication, Ludlow and Panthon; Prentice Hall of India.
- 10. Effective Presentation Skills (A Fifty-Minute Series Book) by Steve Mandel
- 11. "Strategic interviewing" by Richaurd Camp, Mary E. Vielhaber and Jack L. Simonetti Published by Wiley India Pvt. Ltd

12. "Effective Group Discussion: Theory and Practice" by Gloria J. Galanes, Katherine Adams , John, K. Brilhart

Department	CIVIL ENGINEER	ING	;			R 2019	Semester III	BS
Course Code	Course Name	1 1/2	Hour Wee T		Credit C	Total Hours	Maximu Mark	
19BS303	TRANSFORM TECHNIQUES AND PARTIAL DIFFERENTIAL EQUATIONS	3	1	0	4	60	100	0 10 ,
 Underst them to Underst Implemented electron Summan wave expenses Develop appropring Course Outco Recogn using Formula Apply the frequented Classify 	ctive (s): The purpose of learning this coult tand the concepts of Fourier series, Trans model and analyze the physical phenome tand the concepts of laplace transforms in ent the Fourier analysis, an elegant methor nagnetic fields. rize and apply the mathematical aspects to quation be enough confidence to identify and mode iate solutions, using the skills learned in the omes: At the end of this course, learners ize the periodicity of a function and formu- ourier series. ate a function in frequency domain whenev- ne Fourier transform, which converts the ti- cies, each of which represents a frequency a partial differential equation and able to nd solve the engineering problems in the a	form ena volv od in that I ma heir will late ver f me cy cc solv	red ir red ir the cont then the al the al the funct ompo- ve the	nd Bo n tim stud ribut natic activ ble to same uncti tion i onen em.	e and spa y of heat e to the s al pattern <u>ve and su</u> o: e as a cor on is defi nto a sun t.	ace domai flow, fluid olution of s in real v pporting e mbination ned in tim n of sine v	n. mechanics a one dimensi vorld and offe nvironment. of sine and o e domain.	and onal er cosine
	URIER SERIES	arce		ical,	wave eq	aationio.		12
	itions - General Fourier series - Odd and	evei	n fun	ctior	ns - Half r	ange cosi	ne and sine	series
- Root mean so	•			1.0	in wet all			12
Laplace Transf mpulse functio	LACE TRANSFORM orm- Existence Condition -Transforms of S n- Properties- Transforms of Derivatives a orm of Periodic Functions - Inverse Laplac	and	Integ	rals	- Initial a	Jnit step f nd Final V	unction, Unit	
Unit III FOU	IRIER TRANSFORM		56.2	bij Die	1.1			12
Fourier Integra	I Theorem- Fourier Transform and Inverse	Fo	urier	Tra	nsform- S	ine and C	osine Transf	forms
	ransforms of Simple Functions - Convolut	lion	Theo	brem	- Parsev	ars identi	LY I	12
Formation of pa	artial differential equations – Singular integrial equations – Lagrange's linear equation er with constant coefficients of homogene	1 – L	inea	r pai	ons of sta tial differe	andard typ ential equ	es of first or	der
Unit V APP	LICATIONS OF PARTIAL DIFFERENTIA	AL E	QU/	ATIC	NS			12
One Dimensio	of Second Order Quasi Linear Partial Diffe nal Wave Equation - One Dimensional He leat Equation - Fourier Series Solutions ir	eat E	Equa	tion	- Steady	State Solu	es Solutions ution of Two-	of
REFERENCE								-
Publishin	/ylie and C. Louis Barrett, Advanced Engir g Company Ltd, 2003.					and the		
Singapore	eyszig, Advanced Engineering Mathemati e, 2008.				Call and share	the second second		,
3. Peter V. C Private Lt	D. Neil, Advanced Engineering Mathemati d,.	CS,	Seve	enth		$-\epsilon$		
Hose						K.m.	Y.	
Chairma	an - BoS						1	

Dept. of Maths - ESEC

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEE	RING				R 2019	Semester III	PC
Course Code	Course Name	1	ours / /eel		Credit	Total Hours	Maxim Mari	
ooue		LI	г	Р	С	nours	Mair	13
19CE301	MECHANICS OF SOLIDS	3 0	0	0	3	45	100	
 Develop the result of diff Provide the loads, bend Course Outcome Determine to Determine to Dete	tive (s): The purpose of learning this co e understanding on the state of stress ferent loading conditions principles and equations, and necessa- ling, shear, and torsion. mes: At the end of this course, learners the stresses and strains in the members the principal stresses and strains in stru- the stresses and strains in the members the bending stress and strain energy du the stresses in shaft due to torsion load ESSES AND STRAINS	sses and ary tools s will be s subjec uctural n s subjec ue to ben s.	d s s to ab cted nen cted ndir	ana le to to to ng n	alyze stru o: axial load rs loads in v noment.	ictural me ds various typ	embers unde	er axi s
lodulus of elast atio Rigidity mo	nt - Types of stress - Strain at a poin ticity - Stress-Strain diagram - Stresses odulus - Bulk modulus - Relation betwo	s in com een ela	npo	site co	bars - T nstants -	hermal str	resses - Poi	sson
								J UNI
Unit II TWO wo dimensiona	and strain energy due to suddenly appl DIMENSIONAL STATE OF STRESS I state of stress at a point -Normal and s -Maximum shear stress -Analytical mo	shear s ethods a	stres and	sse: Mc	s on any hr's circl	plane -Pri e method	incipal plane -Two dimen	8 es an
Unit II TWO wo dimensiona rincipal stresses tate of strains a nin walled cylinc Unit III BEAN ypes of beams nd bending mod	and strain energy due to suddenly appl DIMENSIONAL STATE OF STRESS I state of stress at a point -Normal and s -Maximum shear stress -Analytical me t a point-Principal strains and their direct ders and spherical shells due to internal MS AND BENDING -Types of supports -Shear force and be ment diagrams for cantilever, simply s	shear s ethods a ctions. 1 I pressu ending r upporte	and Thir re mor	sse: I Mo n Cy men	s on any hr's circl linder: S t in bean over han	plane -Pri e method tresses ar ns -Sketch ging bear	incipal plane -Two dimen nd deformati ning of shear	8 es an siona ons i 9 r forc
Unit IITWOwo dimensionalwo dimensionalorincipal stressestate of strains ahin walled cylincUnit IIIBEANypes of beamsnd bending molebading - Relation	and strain energy due to suddenly appl DIMENSIONAL STATE OF STRESS I state of stress at a point -Normal and s -Maximum shear stress -Analytical me t a point-Principal strains and their direct ders and spherical shells due to internal MS AND BENDING -Types of supports -Shear force and be ment diagrams for cantilever, simply s nship between rate of loading, shear for	shear s ethods a ctions. 1 I pressu ending r upporte	and Thir re mor	sse: I Mo n Cy men	s on any hr's circl linder: S t in bean over han	plane -Pri e method tresses ar ns -Sketch ging bear	incipal plane -Two dimen nd deformati ning of shear	8 es an sions ons i 9 forc ype o
Unit IITWOwo dimensionarincipal stressestate of strains anin walled cylincUnit IIIBEANypes of beamsnd bending modebading - RelationUnit IVSTREheory of simpleroportioning se	and strain energy due to suddenly appl DIMENSIONAL STATE OF STRESS I state of stress at a point -Normal and s -Maximum shear stress -Analytical me t a point-Principal strains and their direct ders and spherical shells due to internal MS AND BENDING -Types of supports -Shear force and be ment diagrams for cantilever, simply s	shear s ethods a ctions. T I pressu ending r upporte rce and	stres and Thir ire mor ed a bei	sse Mc n Cy men ind ndir	s on any ohr's circl linder: S t in bean over han over han g mome s -Load c	plane -Pri e method tresses ar ns -Sketch ging bear nt arrying ca	incipal plane -Two dimen nd deformati ning of shear ns for any t	8 es an sions ons i 9 forc ype o 10 eams
Unit IITWOwo dimensionalwo dimensionalorincipal stressesstate of strains ahin walled cylindUnit IIIBEANopes of beamsond bending modebading - RelationUnit IVSTRETheory of simpleProportioning setress distributionUnit VTORS	and strain energy due to suddenly appl DIMENSIONAL STATE OF STRESS I state of stress at a point -Normal and s -Maximum shear stress -Analytical me t a point-Principal strains and their direct ders and spherical shells due to internal MS AND BENDING -Types of supports -Shear force and be ment diagrams for cantilever, simply s inship between rate of loading, shear for SSES IN BEAMS bending -Assumptions Analysis for be actions -Flitched beams - Leaf springs n - Strain energy due to pure shear HON OF CIRCULAR SHAFTS AND SP	shear s ethods a ctions. T I pressu ending r upporte rce and ending s s -Strain	stres and Thir ire mor ed a ber ber tress	sses I Mc n Cy men nd ndir sses nerg	s on any ohr's circl linder: S t in bean over han og mome s -Load c ly due to	plane -Pri e method tresses ar ns -Sketch ging bear nt arrying ca bending	incipal plane -Two dimen nd deformati ning of shear ns for any t apacity of be moment -	8 es an sions ons i 9 forc ype o 10 eams Shea 8
Unit IITWOwo dimensionalwo dimens	and strain energy due to suddenly appl DIMENSIONAL STATE OF STRESS I state of stress at a point -Normal and s -Maximum shear stress -Analytical me t a point-Principal strains and their direct ders and spherical shells due to internal IS AND BENDING -Types of supports -Shear force and be ment diagrams for cantilever, simply s nship between rate of loading, shear for SSES IN BEAMS a bending -Assumptions Analysis for be actions -Flitched beams - Leaf springs n - Strain energy due to pure shear ION OF CIRCULAR SHAFTS AND SP sion equation -Assumptions -Theory of the ted by the shaft -Stepped shafts - O d stresses in closed and open coiled READING principal stresses at any point in a beau trength of Materials, S. Chand & Co., 2 I, A Textbook of Strength of Materials, I timi, Solid Mechanics, Tata McGraw Hill	shear s ethods a ctions. T pressu ending r upporte rce and rce and rce and s -Strain PRINGS torsion - Compos helical s m - Stra 014. Laxmi P	stres and Thir re mon d a ber tres tres spri	ssee I Mc n Cy men ind ndir sses sha ings rose	s on any ohr's circl dinder: S t in beam over han g mome s -Load c y due to es in soli afts- Strass ettes	plane -Pri e method tresses ar ns -Sketch ging bear nt arrying ca bending d and holl in energy due to c	incipal plane -Two dimen nd deformati ning of shear ns for any tr apacity of be moment -	8 es an sion ons 9 forc ype o 10 ams Shea 8 shaft orsion

 B. S. Basavarajaiah and P. Mahadevappa, Strength of Materials, CBS Publishers & Distributors Pvt. Ltd., 2014.

K.m. (

Chairman - BoS Dept. of Civil Engg. - ESEC

Chaiman - 8oS Dept. of Civil Engg. - 8560

Course Course Name Image: Amage: Ama	Course Course Name Image: Amage: Ama	Department	CIVIL ENGINEER	RING	3			R 2019	Semeste r III	ES
19ES309 FLUID MECHANICS AND MACHINERIES 3 0 0 3 45 100 Course Objective (s): The purpose of learning this course is to Enhance the students' knowledge on fluid statics, kinematics and dynamics Impart knowledge on the analysis and design of water turbines and purpos Course Outcomes: At the end of this course, learners will be able to: Identify the fluid- classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of purpos Unit I FLUID PROPERTIES AND FLUID STATICS 9 Oimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosit ompressibility, vapour pressure, capillarity and surface tension Fluid statics - Hydrostatic law-Pascal's lat Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types anaometers - Buoyancy and meta-centre. 9 Unit II FLUID KINEMARICS AND DYNAMICS 9 Unit II FLUID KINEMARICS AND DYNAMICS 9 Viati kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc coeleration - Chuid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion etheroulli's flowarbrouk dynamics : Pressure, kinetic and datum energy - Euler's equa	19ES309 FLUID MECHANICS AND MACHINERIES 3 0 0 3 45 100 Course Objective (s): The purpose of learning this course is to • Enhance the students' knowledge on fluid statics, kinematics and dynamics Impart knowledge on the analysis and design of water turbines and purpos • Course Outcomes: At the end of this course, learners will be able to: • Identify the fluid- classifications, properties and their units of measurement • Analyze the various types of flows and pressure • Analyze the end and their units of measurement • Analyze the performance of turbines under different operating conditions • Design and analyzes the efficiency of purpos 9 Unit I FLUID PROPERTIES AND FLUID STATICS 9 Ompressibility, vapour pressure, capillarity and surface tension Fluid statics. Hydrostatic law- Pasca's 1 9 Init II FLUID KINEMATICS AND PNAMICS 9 Iuit II FLUID KINEMATICS AND DYNAMICS 9 Iuit II IFLOW THROUGH PIPES 9 Iuit II FLUD KINEMATICS AND Pressure, kinetic and datum energy - Euler's equations of motio ental function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio ental functon - Fluid dynamics : Press	And the second	Course Name		/ Wee	ek			Maxim	
19ES309 MACHINERIES 3 0 0 3 45 100 Course Objective (s): The purpose of learning this course is to Enhance the students' knowledge on fluid statics, kinematics and dynamics Impart knowledge on the analysis and design of water turbines and purpos Course Outcomes: At the end of this course, learners will be able to: Identify the fluid - classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the enformance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosit ompressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types anometers - Buoyancy and meta-centre. 9 Unit II FLUD KINEMATICS AND DYNAMICS 9 Viid kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and loc caceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci otential function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion bernoulli's theorem and turbulent flows in circular pipes- Laminar flow through circular tubes	19ES309 MACHINERIES 3 0 0 3 45 100 Course Objective (s): The purpose of learning this course is to Enhance the students' knowledge on fluid statics, kinematics and dynamics Impart knowledge on the analysis and design of water turbines and purpos Course Outcomes: At the end of this course, learners will be able to: Identify the fluid-classifications, properties and their units of measurement Analyze the various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of purpos Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics - Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. 9 Unit II FLUD KINEMATICS AND DYNAMICS 9 Piluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and veloc otential function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio ternoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit III FLOW THROUGH PIPES 9			L	Т	Ρ	С			
Enhance the students' knowledge on fluid statics, kinematics and dynamics Impart knowledge on the analysis and design of water turbines and pumps Course Outcomes: At the end of this course, learners will be able to: Identify the fluid- classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the toricular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit FLUID PROPERTIES AND FLUID STATICS 9 Jomensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosif atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Juid kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and loc cceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci otential function . Fluid dynamics: Pressure, kinetic and datum energy - Euler's equations of motion remoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Jevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes +agen Poiseulle's Equation) - Darcy-Weisbach equation for div through circular pipe - Major and min pses of flow in pipes- Pipes in series - Equivalent pipe - Pipes in parallel Unit IV PUMPS 9 entrifugal pumps - Multistage pumps - Meant pipe - Indicator diagram - Functions of air vessels OR FURTHER READING Image A size of models. EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajaut, A Text	Enhance the students' knowledge on fluid statics, kinematics and dynamics Impart knowledge on the analysis and design of water turbines and pumps Course Outcomes: At the end of this course, learners will be able to: Identify the fluid- classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the flows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Jimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos ompressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's I unit I FLUID KINEMATICS AND DYNAMICS 10 11	1929 192	MACHINERIES	0200			3	45	100	1
Impart knowledge on the analysis and design of water turbines and pumps Course Outcomes: At the end of this course, learners will be able to: Identify the fluid-classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the various types of flows and pressure Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit 1 FLUID PROPERTIES AND FLUID STATICS 9 imensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosit ompressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types anometers - Buoyancy and meta-centre. Unit 1 FLUID KINEMATICS AND DYNAMICS 9 iluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc celeration - Continuity equation for one, two and three dimensional flows - Stream function and veloci otential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion enroulli's theorem and proof - Application of Bernoulli's equation or Pitot tube - Orifice meter, Venturimeter Unit 11 FLOW THROUGH PIPES 9 pelevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and min sees of flow in pipes - Pipes in series - Equivalent pipe - Pipes in paralle 1 9 piplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial we turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve: 1 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Bo	Impart knowledge on the analysis and design of water turbines and pumps Course Outcomes: At the end of this course, learners will be able to: Identify the fluid-classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the various types of flows and pressure Analyze the various types of flows and pressure Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit 1 FLUID PROPERTIES AND FLUID STATICS 9 Primensions and units - Fluid properties - density, specific weight, specific volume, specific gravity, viscos ompressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types anometers - Buoyancy and meta-centre. Unit 1 FLUID KINEMATICS AND DYNAMICS 10 Unit kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and lo celeration - Continuity equation for one, two and three dimensional flows - Stream function and velor dennolli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit 11 FLOW THROUGH PIPES 9 pelevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes -lagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular tubes -lagen Poiseuillo's Equation on zeries - Equivalent pipe - Pipes in parallel Unit 11 / TURBINES pipication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial weturbines - Akial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve Unit 0 / PUMPS 9 entrifugal pumps - Multistage pumps - Measurement - Specific speed and characteristic curve Intres - Akial flow turbines - Impulse and reaction turbines - Speci									
Course Outcomes: At the end of this course, learners will be able to: Identify the fluid- classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the flows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosit compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc cacleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci toential function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion ternoulli's theorem and proof - Application of Bernoulli's equation for flow through circular pipe - Major and minnesses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit IV FLOW KINEMEN 9 Spelication of momentum principle - Impact of jets on plane and curved plates - Turbi	Course Outcomes: At the end of this course, learners will be able to: Identify the fluid- classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the flows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure - density, specific weight, specific volume, specific gravity, viscos nometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Piluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and lo cceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc detendil dynamics : Pressure, kinetic and datum energy - Euler's equations of motio ternoulli's theorem and proof - Application of Bernoulli's equation for flow through circular pipe - Major and mir sses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit II FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and mir sses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel <td< td=""><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		-							
 Identify the fluid- classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the flows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosif compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Uidi kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and loc icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci footential function - Fluid dynamics: Pressure, kinetic and datum energy - Euler's equations of motion semoulli's theorem and proof - Application of Berroulli's equation - Pitot tube - Orifice meter, Venturimeter Unit II FLOW THROUGH PIPES 9 Pevelopment of laminar and turbulent flows in circular pipe-Laminar flow through circular pipe - Major and min bases of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit IV TURBINES 9 Pentrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed and characteristic curve: Unit V PUMPS 9 Pentrifugal pumps - Multistage pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publi	Identify the fluid- classifications, properties and their units of measurement Analyze the various types of flows and pressure Analyze the flows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pasca's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types anameters - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Pituid kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and lo icceleration - Continuity equation for one, two and three dimensional flows - Stream function and velou tootential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio idernoull's theorem and proof - Application of Bernoull's equation - Pitot tube - Orifice meter, Venturimete Init II FLOW THROUGH PIPES 9 Pevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and mi posses of flow in pipes - Pipes in series - Equivalent pipe - Pipes in parallel Unit IV TURBINES 9 Perelopment of laminar and turbulent of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve 10 mit V PUMPS 9 Pertifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed an haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functi							S		
Analyze the various types of flows and pressure Analyze the rolows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Jimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosifi compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit I FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and loc icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci oicotential function . Fluid dynamics: Pressure, kinetic and datum energy - Euler's equations of motion gervelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and min sees of flow in pipes - Pipes in series - Equivalent pipe- Pipes in parallel Unit V [TURBINES 9 poplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Akial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curvee Unit V [PUMPS	Analyze the various types of flows and pressure Analyze the lows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Tiud kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and lo icceleration - Continuity equation for one, two and three dimensional flows - Stream function and velou otoetntial function - Fluid dynamics: Pressure, kinetic and datum energy - Euler's equations of motio Bervelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and mit psees of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit IV TURBINES 9 spilication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve Unit V PUMPS FUTHER READING R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. R. K. Rajput, A Text Book of Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In							t.		
Analyze the flows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosit compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 "Did kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and loc iccceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci icotelatia function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion sernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit II FLOW THROUGH PIPES 9 Yevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and min sesse of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit V TURBINES 9 yeplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed an haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels COR FURTHER READING 1 R. K. Bapatl, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi a	Analyze the flows in circular pipes and losses in pipes Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 19 Sind kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and lo teceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc otoential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio sernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit II FLOW THROUGH PIPES 9 Pevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and mi poses of flow in pipes - Pipes in series - Equivalent pipe - Pipes in parallel Unit V TURBINES 9 poplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impute and reaction turbines - Specific speed analtarcteristic curve Init V PUMPS 9 Contridual pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels COR FURTHER READING As ansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New De			um	15 01	mea	suremen	it.		- 14 C
Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosit compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit I FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and loc coceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci otential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit II FLOUT HROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and min sesse of flow in pipes - Pipes in series - Equivalent pipe - Pipes in parallel Unit V TURBINES 9 puplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and haracteristic curves Unit V PUMPS 9 Contrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics - Fundamentals and Applications (In S	Handle various pressure measuring instruments in the field Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit I FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and lo teceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc otential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit II FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and mit poses of flow in pipes - Pipes in series - Equivalent pipe - Pipes in parallel Unit V TURBINES 9 Puplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve Unit V PUMPS 9 Portrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed and characteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels COR FURTHER READING 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2005. 3 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFFERNCE(S): 1 N. L. Streeter and B. E. Wylie, Fluid									
 Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Joimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosit compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit I FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and loc icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci otential function , Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit II FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and minoses of flow in pipes - Pipes in series - Equivalent pipe - Pipes in parallel 9 Dunit V TURBINES 9 Opplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve Unit V PUMPS 9 PotrtHER READING 19 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. R. K. Raiput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. LEFERNCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Z. Yu	Analyze the performance of turbines under different operating conditions Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS 9 Joimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types manometers - Buoyancy and meta-centre. Unit I FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and lo icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloo idential function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit II FLOW THROUGH PIPES 9 Pevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and mit bases of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit V TURBINES 9 Puplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve Unit V PUMPS 9 Potentifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels COR FURTHER READING 1, R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2, R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3, P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1, V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2,				ield					
Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS Impressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types manometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and loc icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci otential function . Fluid dynamics: Pressure, kinetic and datum energy - Euler's equations of motion Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and min sees of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit IV TURBINES 9 Septication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial low turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves Unit V PUMPS 9 Septification of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial low turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves Unit V PUMPS 9 Septification of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EEFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2 Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and A	Design and analyzes the efficiency of pumps Unit I FLUID PROPERTIES AND FLUID STATICS Jenessions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics - Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types manometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS Jenession - Continuity equation for one, two and three dimensional flows - Stream function and veloc otential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio Bernoulli's theorem and proof - Application of Bernoulli's equation - Priot tube - Orifice meter, Venturimete Unit II FLOW THROUGH PIPES Jevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and mit sesse of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit V TUBINES Jevelopment of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial tow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve Unit V PUMPS Jeverific analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitud Model analysis - Types of models. EXT BOOK(S): R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. X. K. Rajput, A Text Book of Fluid Mechanics, McGraw Hill International Book Co., 2006. X. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In		바람이 방법하는 것 같아요. 그는 것 같아요. 이 가지 않는 것 같아요. 이 가지 않는 것은 것 같아요. 이 이 이 가지 않는 것 같아요. 이 이 이 것 같아요. 가지 않는 것 같아. 것 같아요. 나는 것			a co	nditions			
Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscosif compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. 9 Unit I FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and loc cocceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci toctential function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Polypeloation of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial 9 ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 Unit V PUMPS 9 centrifugal pumps - Multistage pumps - Megative slip - Indicator diagram - Functions of air vessels 0 OR FURTHER READING 9 Kett Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. R. K. Bansal, F	Unit I FLUID PROPERTIES AND FLUID STATICS 9 Dimensions and units -Fluid properties - density, specific weight, specific volume, specific gravity, viscos compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law-Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. 9 Unit I FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and locceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc totential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio demoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit III 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Poevelopment of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Poevelopment of laminar and turbulent flows in circular pipe - Pipes in parallel 9 Unit V TURBINES 9 Poplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING 9 Renareteristic curves - Receiprocating pumps - Ne			ope	, actin	.g 00	inditionio			
compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc 9 Receleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci 0 octeleration - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion 8 Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minusses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 unit V PUMPS 9 explication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial 9 entrifugal	compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and lo locceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloce otential function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio geneoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit II FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minoses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 unit IV TURBINES 9 opplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves understore curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING 9 Rethods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude todel analysi							1		9
compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's la Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc 9 Receleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci 0 octeleration - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion 8 Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minusses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 unit V PUMPS 9 explication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial 9 entrifugal	compressibility, vapour pressure, capillarity and surface tension Fluid statics- Hydrostatic law- Pascal's I Atmospheric, absolute, gauge and vacuum pressures - Measurement of pressure by various types nanometers - Buoyancy and meta-centre. Unit II FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics: Classification of fluid flow - Stream line, streak line and path line - Convective and lo locceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloce otential function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio geneoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit II FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minoses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 unit IV TURBINES 9 opplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves understore curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING 9 Rethods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude todel analysi	Dimensions and	units -Fluid properties - density, specific	we	ight,	spe	cific volu	me, specific	c gravity, vi	scosit
Unit II FLUID KINEMATICS AND DYNAMICS 9 Fluid kinematics : Classification of fluid flow - Stream line, streak line and path line - Convective and loc cceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci otential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion erroulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and minoses of flow in pipes- Pipes in series - Equivalent pipe - Pipes in parallel 9 Unit IV TURBINES 9 opplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves: 9 OR FURTHER READING 9 Nethods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude lodel analysis - Types of models. 9 EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERNCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill Int	Unit II FLUID KINEMATICS AND DYNAMICS 9 Puidi kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and lo cceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc otential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio otennoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimete Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and mir pases of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit IV TURBINES 9 p.pplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed an haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 Cor RFURTHER READING 1 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi	Atmospheric,	absolute, gauge and vacuum pressures							
Iuid kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and loc icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci icternation - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion Remoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minupses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit IV TURBINES 9 opplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial 9 ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 entrifugal pumps - Multistage pumps - Negative slip - Indicator diagram - Functions of air vessels 0 OR FURTHER READING 9 Iethods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Iodel analysis - Types of models. EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text	Iuid kinematics :Classification of fluid flow - Stream line, streak line and path line - Convective and lo Icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc Icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc Icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc Icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc Icceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloc Icceleration - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio Imit II FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and mir Dave of flow in pipes - Pipes in series - Equivalent pipe - Pipes in parallel 9 Unit IV TURBINES 9 opplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial 9 ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 pentrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed an anarcteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air ves								-	9
acceleration - Continuity equation for one, two and three dimensional flows - Stream function and veloci optential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and min- bases of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit IV TURBINES 9 Application of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial low turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves Unit V PUMPS 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels FOR FURTHER READING Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. FEXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EEFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In S	Acceleration - Continuity equation for one, two and three dimensional flows - Stream function and velocity optimized function - Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio 3ernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and minoses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit IV TURBINES 9 Development of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial low turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curve Unit V PUMPS 9 Developments - Reciprocating pumps - Mention speed to start the pump - Specific speed an characteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels iCR FURTHER READING Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. TEXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In			0 0	troal	line	and nat	h line - Co	nvective ar	
Detential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motion Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes 9 Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and mino 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and mino 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and mino 9 Dist IV TURBINES 9 unit IV FURBINES 9 Supplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial 9 ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar 9 Anacteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 0 OR FURTHER READING 1 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 2 R. K. Bansal, Fluid Mechani	Detential function . Fluid dynamics : Pressure, kinetic and datum energy - Euler's equations of motio Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and minoses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit IV TURBINES 9 puplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 OR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Standard Book House, Delhi, 2010. 2 EFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2 2. Yunus A. C									
Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minuses of flow in pipes - Pipes in series - Equivalent pipe - Pipes in parallel 9 Unit IV TURBINES 9 Application of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 OR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude fodel analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006.	Bernoulli's theorem and proof - Application of Bernoulli's equation - Pitot tube - Orifice meter, Venturimeter 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular pipe - Major and minoses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit IV TURBINES 9 Application of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curved unit V 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 Correct analysis - Types of models. 9 EXT BOOK(S): 1 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In									
Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minuses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit IV TURBINES 9 upplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 OR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude fodel analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 9 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2 4. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics	Unit III FLOW THROUGH PIPES 9 Development of laminar and turbulent flows in circular pipes-Laminar flow through circular tubes Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minoses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit IV TURBINES 9 upplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial 9 cw turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 COR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude fodel analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 9 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. 1 EFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2 1.									
Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minutesses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel 9 Unit IV TURBINES 9 Application of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 Contributive PUMPS 9 Contributive PUMPS 9 Contributives - Reciprocating pumps - Megative slip - Indicator diagram - Functions of air vessels 0 OR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude fodel analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 9 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. 1 EFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 1 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Streeter Streeter) 1	Hagen Poiseuille's Equation) - Darcy-Weisbach equation for flow through circular pipe - Major and minosses of flow in pipes- Pipes in series - Equivalent pipe- Pipes in parallel Unit IV TURBINES 9 Application of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curved 9 Contributive PUMPS 9 Contributive PUMPS 9 Contributional pumps - Multistage pumps - Minimum speed to start the pump - Specific speed and haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 Contributive PUMPS 9 Control of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude (adel analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3 9 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. 3 EFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 3 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanic	Unit III FLOV	W THROUGH PIPES						×	
Unit IV TURBINES 9 spplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves Unit V PUMPS 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed and haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 OR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Start Sciences)	Unit IV TURBINES 9 pplication of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curved Unit V PUMPS 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 OR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. 9 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3 9 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. 3 EFERENCE(S): 1 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 3 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 3 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In	Hagen Poiseuil	le's Equation) - Darcy-Weisbach equation	on fo	or flo	w th	rough cir			d mind
Application of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves Unit V PUMPS 9 Dentrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. 1 EXT BOOK(S): 1 R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2 R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In State)	Application of momentum principle - Impact of jets on plane and curved plates - Turbines - Radial ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves Unit V PUMPS 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 Centrifugal pumps - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 Centrol of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude 10 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude 10 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude 10 Model analysis - Types of models. 10 EXT BOOK(S): 11 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 11 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid			Pipe	es in	para				0
ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves Unit V PUMPS Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed and characteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. "EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. CEFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Streeter)	ow turbines - Axial flow turbines - Impulse and reaction turbines - Specific speed and characteristic curves 9 Unit V PUMPS 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels 9 OR FURTHER READING Pumps - Negative slip - Indicator diagram - Functions of air vessels 9 OR FURTHER READING Pumps - Negative slip - Indicator diagram - Functions of air vessels 9 Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude 9 Model analysis - Types of models. 7 7 EXT BOOK(S): 7 7 7 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 7 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 7 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. 7 EFERENCE(S): 7 7 7 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 7 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In			no 1	and c		d platos	Turbinos	Padial	9
Unit V PUMPS 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING OR FURTHER READING Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1. 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In State)	Unit V PUMPS 9 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING 9 Vethods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude fodel analysis - Types of models. 9 EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1. 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In									curves
 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed ar haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels COR FURTHER READING Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Science) 	 Centrifugal pumps - Multistage pumps - Minimum speed to start the pump - Specific speed a haracteristic curves - Reciprocating pumps - Negative slip - Indicator diagram - Functions of air vessels OR FURTHER READING Methods of dimensional analysis - Rayleigh's method - Buckingham's - theorem - Hydraulic similitude Model analysis - Types of models. TEXT BOOK(S): R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In 			uib	inco	Op	como ope			
 EXT BOOK(S): R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Science) 	 EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In 	Centrifugal pum haracteristic cu	nps - Multistage pumps - Minimum s rves - Reciprocating pumps - Negative sl READING	lip -	Indic	ator	diagram	- Functions	s of air vess	sels
 EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. REFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Science) 	 EXT BOOK(S): 1. R. K. Bansal, Fluid Mechanics and Hydraulic Machines, Laxmi Publications, New Delhi, 2005. 2. R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. 3. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. REFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In 									
 R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Science) 	 R. K. Rajput, A Text Book of Fluid Mechanics, S. Chand & Co., New Delhi, 2006. P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In 	EXT BOOK(S)	:							
 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Science) 	 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In 	1. R. K. Bansa	al, Fluid Mechanics and Hydraulic Machir	nes,	Laxr	ni Pu	ublication	s, New Del	hi, 2005.	
 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Science) 	 P. N. Modi and S. M. Seth, Hydraulics and Fluid Mechanics, Standard Book House, Delhi, 2010. EFERENCE(S): V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In 	3							5 S 1 1 1 1	
EFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In S	EFERENCE(S): 1. V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. 2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In								Delhi, 2010.	
 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In Science) 	 V. L. Streeter and B. E. Wylie, Fluid Mechanics, McGraw Hill International Book Co., 2006. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In 								10.00	
2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In S	2. Yunus A. Cengal and John M. Cimbala, Fluid Mechanics - Fundamentals and Applications (In			Grav	v Hill	Inte	rnational	Book Co.,	2006.	
Units), McGraw Hill International Book Co., 2004.	Units), McGraw Hill International Book Co., 2004.	2. Yunus A. C	Cengal and John M. Cimbala, Fluid Me					and the second sec	WERE ARREST OF ALL MALE MALE AND A	(In S
	EMSE	Units), McG	raw Hill International Book Co., 2004.					1 (00	

Department	CIVIL ENGINEE	RING					R 2019	Semeste III	PC
Course Code	Course Name		Hour / Wee		Cre	edit	Total Hours	Maxim Mar	
Automan - B Th		L	Т	Р	0	C			
19CE302	SURVEYING	3	0	0	3	3	45	100	
 Impart know Impart a cle Course Outcor Demonstrate Acquire know Determine t Perform a h 	ive (s): The purpose of learning this co vledge on the basic principles of field so ar understanding on the working princi mes: At the end of this course, learners the the various functional aspects of surviveledge in surveying by compass and p he leveling, contouring, longitudinal an ighway road alignment project.	urveyi ples a s will b veying plane	ng p and u be a j inst table	broce use c ble t trum e in t	of the o: ents he fie	eodoli	te		
	e area and volume of earthwork DDUCTION AND CHAIN SURVEYING					+			9
Definition - Princ and chaining - F Plotting - Enlargi	iples - Classification - Scales - Survey Reciprocal ranging - Setting perpending ng and reducing figures. PASS SURVEYING AND PLANE TAB	instru culars	5 - V	well	cond				
Prismatic compa	ss - Bearing - Systems and conversior	ns - Lo	ocal	attra	actior	n - Tr	ue and m	agnetic me	ridians
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - ee and two point problems.	ns - Lo Adjus	ocal stme	attra ent o	action of err	ors b	y graphi	cal and ana	alytical on and
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE Level line - Horiz Booking - Redu sections -Plotting - Plotting - Earthy	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - ee and two point problems. LLING contal line - Spirit level - Temporary an ction - Effect of curvature and refract of calculation of areas and volumes - work volume - Capacity of reservoirs -	ns - Lo Adjus Meth d perr on - I Conto	nods mane nane Reci	attra ent o : Ra ent a iproc g - N	action of erro adjation adjus al len Aetho	ors b on, Ir stmen	by graphi ntersectio ts - Fly a g - Longi	cal and and n, Resection nd check le itudinal and	alytical on and 9 velling cross ntours
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE Level line - Horiz Booking - Redu sections -Plotting Plotting - Earthy Unit IV THEO Theodolite - Verrangles and their Traversing - Clos	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - e and two point problems. LLING contal line - Spirit level - Temporary an ction - Effect of curvature and refracti g - Calculation of areas and volumes - work volume - Capacity of reservoirs - DOLITE SURVEYING nier and microptic - Temporary and pe measurement - Vertical angles and sing error and distribution - Gales table	Adjus Adjus Meth d perr on - I Conto Block rmane d thei	nods mane Reci ourin cont	attra ent o :: Ra ent a iproc g - N touri	action of erro adjus adjus al le Aetho ng	ors b on, Ir stmen vellin ods -	by graphion tersection ts - Fly a g - Longi Characte vernier t	cal and and n, Resection nd check le itudinal and ristics of co ransit - Hor	alytical on and yelling cross ntours 9 izontal nces -
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE evel line - Horiz Booking - Redu sections -Plotting Plotting - Earthy Unit IV THEO Theodolite - Verr angles and their Traversing - Clos Unit V TACH	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - e and two point problems. LLING contal line - Spirit level - Temporary an ction - Effect of curvature and refraction - Calculation of areas and volumes - work volume - Capacity of reservoirs - DOLITE SURVEYING nier and microptic - Temporary and per measurement - Vertical angles and sing error and distribution - Gales table EOMETRIC SURVEYING	Adjus Meth d perr on - I Conto Block rmane d thei s.	ocal stme nods mano Reci ourin cont ent a	attra ent o : Ra ent a iproc g - M touri adjus	action of err adjus adjus adjus adjus adjus adjus atjus atjus adjus	ors b on, Ir otmen vellin ods - nts of ent -	ts - Fly a g - Longi Characte vernier t Heights	cal and and n, Resection nd check le tudinal and ristics of co ransit - Hor and distan	alytical on and yelling cross ntours 9 izontal nces - 9
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE Level line - Horiz Booking - Redu sections -Plotting Plotting - Earthy Unit IV THEO Theodolite - Verr angles and their Traversing - Clos Unit V TACH Tacheometric system Construction office Surveying Levels and uses of theo	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - e and two point problems. LLING ontal line - Spirit level - Temporary an ction - Effect of curvature and refraction - Calculation of areas and volumes - work volume - Capacity of reservoirs - I DOLITE SURVEYING nier and microptic - Temporary and per measurement - Vertical angles and sing error and distribution - Gales table EOMETRIC SURVEYING stems - Tangential, stadia and subtens inclined sights - Determination of Stadi m -Subtense measurements - Subtense READING work - Conventional signs Surveyor' and Staves - Sensitiveness - Bench bodolite - Omitted measurements - Ra	Adjus Meth d perr on - I Conto Block rmane d thei s. se me a con e bar s com mark	ocal stme nods man Reci ourin cont cont cont cont cont cont cont con	attra ent o : Ra ent a iproc g - N touri adjus easu ls - S nts of rect r ss - Uses	action of erro adjus adjus adjus adjus adjus adjus adjus file Metho file file file file file file file file	ors b on, Ir otmen vellin ods - nts of ent - a sys tach ng ta ts an conto	y graphion tersection ts - Fly a g - Longi Characte Vernier t Heights tems - Fi eometer chometry d demeri urs - Mic	cal and ana n, Resection nd check le itudinal and ristics of co ransit - Hor and distant xed hair me - Anallactic its of plane roptic Desc	alytical on and 9 velling cross ntours izontal nces - izontal nces - 9 ethod - lens - ietable ription
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE Level line - Horiz Booking - Redu sections -Plotting Plotting - Earthy Unit IV THEO Theodolite - Verr angles and their Traversing - Clos Unit V TACH Tacheometric sys Horizontal and in Tangential system OR FURTHER Field and office surveying Levels and uses of theo /ertical and norm	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - e and two point problems. LLING ontal line - Spirit level - Temporary an ction - Effect of curvature and refract of - Calculation of areas and volumes - work volume - Capacity of reservoirs - DOLITE SURVEYING nier and microptic - Temporary and per measurement - Vertical angles and sing error and distribution - Gales table EOMETRIC SURVEYING stems - Tangential, stadia and subtens inclined sights - Determination of Stadi m -Subtense measurements - Subtens READING work - Conventional signs Surveyor' and Staves - Sensitiveness - Bench	Adjus Meth d perr on - I Conto Block rmane d thei s. se me a con e bar s com mark	ocal stme nods man Reci ourin cont cont cont cont cont cont cont con	attra ent o : Ra ent a iproc g - N touri adjus easu ls - S nts of rect r ss - Uses	action of erro adjus adjus adjus adjus adjus adjus adjus file Metho file file file file file file file file	ors b on, Ir otmen vellin ods - nts of ent - a sys tach ng ta ts an conto	y graphion tersection ts - Fly a g - Longi Characte Vernier t Heights tems - Fi eometer chometry d demeri urs - Mic	cal and ana n, Resection nd check le itudinal and ristics of co ransit - Hor and distant xed hair me - Anallactic its of plane roptic Desc	9 velling cross ntours 9 izontal nces - 9 ethod - lens - table ription
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE Level line - Horiz Booking - Redu sections -Plotting Plotting - Earthy Unit IV THEO Theodolite - Verr angles and their Traversing - Clos Unit V TACH Tacheometric system - OR FURTHER Field and office surveying Levels and uses of theo /ertical and norm TEXT BOOK(S):	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - e and two point problems. LLING ontal line - Spirit level - Temporary an ction - Effect of curvature and refraction - Calculation of areas and volumes - work volume - Capacity of reservoirs - DOLITE SURVEYING nier and microptic - Temporary and per measurement - Vertical angles and sing error and distribution - Gales table EOMETRIC SURVEYING stems - Tangential, stadia and subtens inclined sights - Determination of Stadi m -Subtense measurements - Subtens READING work - Conventional signs Surveyor' and Staves - Sensitiveness - Bench bodolite - Omitted measurements - Ra nal staffing - Fixed and movable hairs	Adjus Meth d perr on - I Conto Block rmane d thei s. se me a con e bar s com mark dial c	ocal stme nods mane Reci ourin cont cont ent a stan - Dir npas s - I cont cont	attra ent o : Ra ent a iproc g - N touri adjus easu ls - S nts of rect r uses ourin	action of erro adjus adjus adjus adjus adjus adjus adjus ferro adjus adj	ors b on, Ir otmen vellin ods - nts of ent - a sys tach ing ta ts an conto incipl	y graphion tersection ts - Fly a g - Longi Characte Vernier t Heights tems - Fi eometer chometry d demeri urs - Mic	cal and ana n, Resection nd check le itudinal and ristics of co ransit - Hor and distant xed hair me - Anallactic its of plane roptic Desc	9 velling cross ntours 9 izontal nces - 9 ethod - lens - table ription
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE Level line - Horiz Booking - Redu sections -Plotting Plotting - Earthy Unit IV THEO Theodolite - Verr angles and their Traversing - Clos Unit V TACH Tacheometric sys Horizontal and in Tangential system OR FURTHER Field and office surveying Levels and uses of theo Vertical and norm TEXT BOOK(S): 1. K. R. Arora,	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - e and two point problems. LLING ontal line - Spirit level - Temporary an ction - Effect of curvature and refract of - Calculation of areas and volumes - work volume - Capacity of reservoirs - DOLITE SURVEYING hier and microptic - Temporary and per measurement - Vertical angles and sing error and distribution - Gales table EOMETRIC SURVEYING stems - Tangential, stadia and subtens inclined sights - Determination of Stadi m -Subtense measurements - Subtens READING work - Conventional signs Surveyor' and Staves - Sensitiveness - Bench bodolite - Omitted measurements - Ra hal staffing - Fixed and movable hairs Surveying, Vol. I, Standard Book House	Adjus Meth d perr on - I Conto Block rmane d thei s. se me a con e bar s com mark dial c	ocal stme nods mane Reci ourin cont cont ent a stan - Dir npas s - I cont cont	attra ent o : Ra ent a iproc g - N touri adjus easu ls - S nts of rect r uses ourin	action of erro adjus adjus adjus adjus adjus adjus adjus ferro adjus adj	ors b on, Ir otmen vellin ods - nts of ent - a sys tach ing ta ts an conto incipl	y graphion tersection ts - Fly a g - Longi Characte Vernier t Heights tems - Fi eometer chometry d demeri urs - Mic	cal and ana n, Resection nd check le itudinal and ristics of co ransit - Hor and distant xed hair me - Anallactic its of plane roptic Desc	alytical on and 9 velling cross ntours izontal nces - izontal nces - 9 ethod - lens - ietable ription
Prismatic compa - Magnetic decli methods - Plane Traversing - Thre Unit III LEVE Level line - Horiz Booking - Redu sections -Plotting Plotting - Earthy Unit IV THEO Theodolite - Verr angles and their Traversing - Clos Unit V TACH Tacheometric sys Horizontal and in Tangential system OR FURTHER Field and office surveying Levels and uses of theo Vertical and norm TEXT BOOK(S): 1. K. R. Arora,	ss - Bearing - Systems and conversion nation - Dip - Traversing - Plotting - e table instruments and accessories - e and two point problems. LLING ontal line - Spirit level - Temporary an ction - Effect of curvature and refraction - Calculation of areas and volumes - work volume - Capacity of reservoirs - I DOLITE SURVEYING nier and microptic - Temporary and per measurement - Vertical angles and sing error and distribution - Gales table EOMETRIC SURVEYING stems - Tangential, stadia and subtens inclined sights - Determination of Stadi m -Subtense measurements - Subtense READING work - Conventional signs Surveyor' and Staves - Sensitiveness - Bench bodolite - Omitted measurements - Ra nal staffing - Fixed and movable hairs Surveying, Vol. I, Standard Book Hous Surveying, Tata McGraw Hill, 2007.	Adjus Meth d perr on - I Conto Block rmane d thei s. se me a con e bar s com mark dial c	ocal stme nods mane Reci ourin cont cont ent a stan - Dir npas s - I cont cont	attra ent o : Ra ent a iproc g - N touri adjus easu ls - S nts of rect r uses ourin	action of erro adjus adjus adjus adjus adjus adjus adjus ferro adjus adj	ors b on, Ir otmen vellin ods - nts of ent - a sys tach ing ta ts an conto incipl	y graphion tersection ts - Fly a g - Longi Characte Vernier t Heights tems - Fi eometer chometry d demeri urs - Mic	cal and ana n, Resection nd check le itudinal and ristics of co ransit - Hor and distant xed hair me - Anallactic its of plane roptic Desc	alytical on and 9 velling cross ntours izontal nces - izontal nces - 9 ethod - lens - ietable ription

1.	T. P. Kanetkar, Surveying and Levelling, Vol. I & II, United Book Corporation, 2002.
2.	B. C. Punmia, Er. Ashok Kr. Jain, Dr.Arun Kumar Jain Surveying, Vol. I & II, Laxmi Publications, New
	Delhi, Seventeenth Edition, 2016.

km I

Department	CIVIL ENGINEER	ING	í			R 2019	Semester III	E S
Course Code	Course Name		Houi / Wee		Credit	Total Hours	Maximu Mark	
		L	Т	Ρ	С			
19ES301	APPLIED GEOLOGY	3	0	0	3	45	100	
Course Objec	tive (s): The purpose of learning this cou	irse	is to					
	sic knowledge on earth sciences and the ssential knowledge on classification on ns.							ering
Course Outco	mes: At the end of this course, learners	will	be a	ble to):			
 Acquire know 	owledge in structure and weathering of e	arth						
 Understand 	the structure and mineral properties							
 Understand 	the formation of rocks and its properties	S.						
 Understand 	d the failure of rocks							
 Analyze the 	e rocks for the construction of tunnels, da	ms	and	road	cuttings.	e 6 -	- 10 A	
	ERAL GEOLOGY						4	9
Introduction to g	eological time scale and stratigraphy, La	aws	of st	ratig	aphy. G	eology in o	civil enginee	ring -
	ology - Earth Structures and composition							
	es. Weathering - Work of rivers - Wind							uake
	roundwater: Mode of occurrence- Prospe	ectin	g - Ir	npor	tance in	civil engin	eering.	•
Contraction and the second s	RALOGY							8
Elementary know	wledge on symmetry elements of import	ant	crysta	allog	raphic sy	stems -Pl	hysical prope	erties
	udy of the rock forming minerals - Qua							
	te, Calcite, Garnet - properties, behaviou	ir ar	ia er	igine	ering sig	nincance	or clay mine	rais -
	f process of formation of ore. ROLOGY AND ROCK MECHANICS				And the second second			10
	ction - Rock cycle - Physical description	ofre	ok t	mos	Ianooi	ie rocke	Granite Sv	
	dimentary rocks - Conglomerate - Sands							
	s - Quartzite and marble -Rock mecha							
	eability - Moisture content-Swelling - Dura			1000	uotion	otady of	room propon	
	JCTURAL GEOLOGY AND GEOPHYSI			EST	IGATION	IS		9
	primary and secondary geological struct						al maps -Fo	1995
	s -Their bearing on engineering constru							
engineering inve	•							
	OGICAL INVESTIGATIONS IN CIVIL E	NG	INE	RIN	G			9
	g techniques - Study of aerial photos					s - Interp	retation for	Civil
Engineering pro	jects - Geological conditions necessary	/ foi	cor	stru	ction of	Dams, Tu	innels, Build	lings,
Road cuttings, L	andslides - Causes and preventions - Se	ea ei	osio	n an	d coasta	l protectio	n	
FOR FURTHER								
	in in rocks. Evaluation for suitability of	site	e, Ge	eo E	ngineerin	ng classifi	cation, Dune	can's
classification.				11		Second Second	1	
TEXT BOOK(S)						0011		
the second se	h, Engineering and General Geology, Ka							-
	dhav and Raviraj Sorate, Engineering ge							
3. A.Parthasar 2013.	rathy, V.Panchapakesan and R. Nagara	ijan,	Eng	linee	ring geo	logy, Wille	ey India Pvt.	. Ltd,
REFERENCE(S):			ET.	1.	(0)	1	
					6	M. 9	et .	

Bell .F.G.. "Fundamentals of Engineering Geology", B.S. Publications. Hyderabad 2011.
 Dobrin, M.B "An introduction to geophysical prospecting", McGraw Hill, New Delhi, 1988

Km (

Chairman - BoS Dept. of Civil Engg. - ESEC

2.1.4

Chaintian - Bos Dept of Civil Crigo, - ESEC

and the second sec	CIVIL ENGINEERI	NG				R 2019	Semester III	P C
Course	Course Name		lou Wee		Credit	Total	Maxim m	u
Code	Course NameWeekCredit HoursTotal HoursLTPCHoursONSTRUCTION MATERIALS AND PRACTICES202360e (s): The purpose of learning this course is to ge about the properties and uses of various materials for constructions e necessity for composite materials like concrete, RCC e need for Construction equipments in site60es: At the end of this course, learners will be able to: e composition and manufacturing of building materials peration and uses of various construction equipments in types of bonding in masonry ication of various types of metals, plastics, rubber and other building material - BRICKS - LIMEmaterial – Criteria for selection – Tests on stones – Deterioration and I cs – Classification – Manufacturing of clay bricks – Tests on bricks – Absorption – Efflorescence – Bricks for special use – Refractory b	Mark	s					
19CE304	PRACTICES	846			3	60	100	
 Gain knowledge about to Recognize the necessity Understand the need for Course Outcomes: At the Understand the compose Illustrate the operation at Identify different types of Know the application of Unit I STONE - BRICKS Stone as building material – tone work – Bricks – Class Strength – Water Absorption Preparation of lime mortar Unit II CEMENT – AGGE 	the properties and uses of var y for composite materials like in Construction equipments in end of this course, learners w sition and manufacturing of bu and uses of various construction of bonding in masonry various types of metals, plast 5 - LIME Criteria for selection – Tests sification – Manufacturing of on – Efflorescence – Bricks REGATES – WATER nufacturing process – Types a	rious con site vill buildin ion e tics, tics, s on f cla for	s ma ncre e al ng n equi sto sto spe	aterii te, R ble te nate pme ber nes ricks ecial	CC rials ents and othe – Deterio s – Tests use – I	r building pration an on brick Refractory	materials. d Preservati s – Compre bricks - Li	ssiv me 6

I. I	EST ON FINE AGGREGATES	10
	1. Grading of fine aggregates	
	2. Test for specific gravity and test for bulk density	
	3. Compacted and loose bulk density of fine aggregate	
I. T	TEST ON COARSE AGGREGATE 1	10
	1. Determination of impact value of coarse aggregate	
	2. Determination of elongation index	
	3. Determination of flakiness index	
	Determination of aggregate crushing value of coarse aggregate	
II. ⁻		10
	1. Test for Slump	
	2. Test for Compaction factor	
	3. Test for Compressive strength	
TE	XT BOOK(S):	
1.	Dr.S.Christian Johnson, Construction Materials, Chese Publication, 2017	1
2.	P. C. Varghese, Building Materials, PHI Learning Private Limited, New Delhi, 2010.	
3.	S. P. Arora and S. P. Bindra, Textbook of Building Construction, Dhanpat Rai Publications (P) Lt	td.
	2003.	
REF	ERENCE(S):	
1.	Shetty .M.S., "Concrete Technology, Theory and Practice", Revised Edition, S. Chand & compa	in
	Ltd., New Delhi, 2006.	
2.	Neville. A.M., "Properties of Concrete", 4th Edition Longman,1995.	
3.	Construction Materials Laboratory Manual, Anna University, Chennai-600 025.	
	IS 4031 (Part 1) – 1996 – Indian Standard Method for determination of fineness by dry sieving	
4.		_

12.24

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEERI	ING			R 2019	Semester III	MC
Course	Course Name	Но	urs /V	Veek	Credit	Total Hours	Maximum Mar
Code		L	T _.	P	C		
19MC301	INDIAN CONSTITUTION	2	0	0	0	30	100
and entitle years of Ir • To addres 1917 and Course Outc • Discuss th Gandhi in • Discuss th social refo	ement to civil and economic r adian nationalism. Is the role of socialism in Indi its impact on the initial drafting omes: At the end of this cours he growth of the demand for ci Indian politics. he intellectual origins of the fra rms leading to revolution in Indian	ights a ia afte of the e, lear vil righ mewo dia.	r the India ners v nts in rk of a	II as t comm n Cor will be India f argum	he emer nenceme astitution able to: for the b ent that	gence of natio ent of the Bolsh ulk of Indians k informed the c	nhood in the earl nevik Revolution i pefore the arrival o onceptualization o
 Discuss the the leader through ac Discuss the discuss the discus the discuss the discuss the discuss the discus the discuss	e circumstances surrounding ship of Jawaharlal Nehru an dult suffrage in the Indian Cons e passage of the Hindu Code	the found the stitution Bill of	even n. 1956.	tual f	ailure of	gress Socialist the proposal	of direct election
	ORY OF MAKING OF INDIAN		2011/10/10/10/10				5
and the second se	n Constitution - Drafting Comn	Contraction of the second second second	and the second	Contraction of the second	on & Wo	rking)	
	OSOPHY OF THE INDIAN CO	ONSTI	TUTIO	NC		~	5
Preamble - Sali							5
Fundamental R of Religion - Cu	NTOURS OF CONSTITUTION lights - Right to Equality - Righ litural and Educational Rights - undamental Duties.	t to Fre	eedon	n - Rig	ght again	est Exploitation emedies - Direc	-Right to Freedom
	ANS OF GOVERNANCE	17.7		-			5
President - Gov Qualifications - Jnit V LOC	mposition - Qualifications and ernor - Council of Ministers - J Powers and Functions. AL ADMINISTRATION	udicia	ry, Ap	pointr	nent and	I Transfer of Ju	dges, 5
Elected Repres Elected officials Hierarchy (Diffe grass root demo		orporat Pacha	tion - yat: F	Pacha Positic	ayati raj: on and i	Introduction, F role- Block lev	PRI: ZilaPachayat vel: Organizationa als - Importance c
	CTION COMMISSION				2		5
Commissioners	ssion: Role and Functioning, C , State Election Commission: F	Chief E Role ar	lectio nd Fu	n Con nction	nmission ing, Insti	er and Electior tute and Bodie	n s for the
welfare of SC/S	T/OBC and women			121			line in the second s
XT BOOK(S):	ution of India", 1950 (Bare Act)	0.000		nt Du	blication		

2. Dr. S. N. Busi, "Dr. B. R. Ambedkar Framing of Indian Constitution", 1st Edition, 2016. Ava Publishers

3. M. P. Jain, "Indian Constitution Law", 7th Edn., Lexis Nexis, 2014.

REFERENCE (s)

1. D.D. Basu , Introduction to the Constitution of India, Lexis Nexis, 2015.

Knle

Chairman - BoS Dept. of Civil Engg. - ESEC

Chairman - 809 Dopt. of Galf Engg. - E9EC

Depa	rtment	CIVIL ENGINEE	RING	6			R 2019	Semester III	P C
	urse ode	Course Name		1	urs / eek	Credi t	Total Hours	Maximum Marks	6
400	25004		L	т	P	С	lineare	marko	
190	CE304	SURVEYING PRACTICAL	0	0	4	2	60	100	
-> Imp	oart knowle	(e (s): The purpose of learning this councedge on the basic principles of field surror understanding on the working principle	veyin	gp	proce		ite		
Der Pre	monstrate	es: At the end of this course, learners we the various functional aspects of surve graphic map including contours of any s	ying i						
		hway road alignment project.							
• Cal	culate the	area and volume of earthwork							
No.		Name of Ex	peri	ne	nts				
1	Chain sur	veying: Aligning, Ranging and Chaining	g						-
2		le surveying: Radiation, Intersection, Tr		sin	g			÷	
3	Plane tab	le surveying: Resection. Two and Thre	e poi	nt p	oroble	ems			
4		ng using Dumpy and Tilting level							÷
5		elling using dumpy level							
6		nal and cross section levelling							_
7		and Reiteration		_					
8		nd distances - Single plane method.							
9		etric Constants		-			-	- Aller	
10	Subtense	bar system to calculate distance							

	Equipments	No of Equipments
15	Total Station	02
2	Theodolites	05
3	Dumpy level / Filling level	10
4	Pocket stereoscope	01
5	Ranging rods	10
6	Levelling staff	10
7	Chain	05
8	Таре	05
9	Cross staff	10
10	Arrow	10
11	Prismatic compass	05
12		05
13	Survey grade or Hand held GPS	02

TE)	KT BOOK(S):
17	B. C. Punmia, Surveying, Vol. I & II, Laxmi Publications, New Delhi, 2005.
2.	K. R. Arora, Surveying, Vol. I, Standard Book House, 2008.
REF	
	K.M.S.
	(I'll the second s

1.	T. P. Kanetkar, Surveying and Levelling, Vol. I & II, United Book Corporation, 2002.	
2.	T. P. Kanetkar, Surveying and Levelling, Vol. I & II, United Book Corporation, 2002.	
3.	N.N. Basak, Surveying, Tata McGraw Hill, 2007.	

km 9

Content of the Conten

Department	ENGLISH					R 2019	Semester III	HS
Course Code	Course Name		Hou / We		Credit	Total Hours	Maximun Marks	n
ooue		L	Т	Р	С	nouro		
19HS301	COMMUNICATION SKILLS	0	0	4	2	30	100	
 To invo To imp To focu To enh 	ective (s): The purpose of learning this co olve the students in effective listening act rove the oral communication skills in pro- us the effective reading of general and te ance and comprehend the written text. grate LSRW skills.	ivities per m	i. Ianne					۰.
Course Outo 1. Underst 2. Commu 3. Compre 4. Write the 5. Integrate	comes: At the end of this course, learner and the technical talks. nicate to his peer group properly. hend the general and technical text. e reports and job application in clear mar e LSRW skills.		be a	ble t	0:			
	TENING	Listor			acco info	motion	aivo informo	6 tion
Listening a	nd its importance –Listening strategies - simple explanation - Being an active list	ener:	aivi	a pro na ve	erbal and	non-verba	al feedback -	uon,
taking lectu		onion.	9	.g .c				
	EAKING							6
Give perso	nal information - ask for personal informa	ation -	exp	ress	ability - a	sk for cla	rification -	
	on basics - pronunciation practice - con					talk - stres	ssing syllable	es
	ng clearly - summarizing academic readi	ngs a	ndle	ectur	es			6
	ADING for effective reading - Read and recogniz	o diff	oron	ttyp	as of taxts	- Predic	ting content	
	title - Read for details - Use of graphic o							using
Understand	ding pronoun reference and use of conne	ctors	in a	pass	sage- spe	ed readin	g techniques	5
	ITING							6
Plan before	writing - Develop a paragraph: topic ser	tence	e, su	ppor	ting sente	ences, cor	ncluding sen	tence
-Write a de	scriptive paragraph - Write a paragraph	with r	ease	ons a	and examp	oles - Wri	te an opinior	۱.
	 E-mail writing - Types of essays- descri 	ptive-	narr	ative	e- issue-ba	ased-argu	imentative-	
analytical								~
	EGRATION OF LSRW	Cantin				oring on	l oncluzina t	6
	Instruction : watching a video –Listing, eading a newspaper and creating topic ba				ing, comp	baning and	a analyzing t	ne
TEXT BOOK		aseu	viue	55				-
1 Gramer F	. Margot and Colin S. Ward Reading and	Writi	ing (Leve	l 3) Oxfor	d Univers	ity Press:	
Oxford, 20 2 Brooks,M	011 argret. Skills for Success. Listening and 3	Speal	kina	Lev	el 4 Oxfor	d Univers	ity Press.	
Oxford: 20	011		11-11					
	C. Jack. & David Bholke. Speak Now Lev	vel 3.	Oxfo	ord	Iniversity	Press, O	(ford: 2010	
REFERENCE						and Links	maile Danas	
and the second se	ason and Rhonda Llss. Effective Acaden	nic VV	riting	g (Le	vel 3) Oxf		Press:	
Oxford, 2	2000.						01/	-
	E N					D.W. ,	4	
	6							

6 0 Chairman - BoS Dept. of English - ESEC

2.	E. Suresh Kumar and et al. Enriching Speaking and Writing Skills. Second Edition. Orient Black swan:
	Anderson, Kenneth et al. Study Speaking: A Course in Spoken English for Academic Purposes. United Kingdom: Cambridge University Press 1992.

Kn Of

· 1.4.0

Department	CIVIL ENGINEERING R 2019 III COURSE Name Hours/ Week Credit Total Maxim QUANTITATIVE APTITUDE AND LOGICAL REASONING - I 2 0 <th 2"2"2"2"2"2"2"2"2"2"2"2"2"2"2"2"2"2<="" colspa="2" th=""><th>Semester III</th><th>EEC</th></th>	<th>Semester III</th> <th>EEC</th>	Semester III	EEC				
Course Code	Course Name				Credit		Maximu	
		L	Т	P	С	Hours	Warks	
19TPS03		2	0	0	0	30	100	
Course Object	ctive (s):							
 To crack application 	otitude assessment by using speed math	con	cept	S.				
 To solve pr 	oblems using fast track method by learn	ing s	simpl	ificat	tion and i	numbers.		
					ages.			
		will	be a	ble t	to:			
	question with speed and accuracy.							
		simp	lifica	tion	and num	bers syste	em.	
3. Solve mos	t of the aptitude topics by knowing ratio a	and p	orop	ortio	n topics v	vith allega	tion.	
5. Develop th	eir logical thinking.							
UNIT 1 SPE	ED MATHS AND NUMBER SYSTEMS							6
								v
SPEED MATHS	S: Square and square roots – Square for	num	bers	fror	n 31 to 5	0. Finding	squares of	
umbers betwee	en 81 to 100. Cubes and cubes roots.							
umbers betwee	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ·	– Pro	oper	ties	of Numb			
umbers betwee IUMBER SYST alue - Divisibili	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem	– Pro aind	oper er th	ties	of Numb			blace
umbers betwee NUMBER SYST value - Divisibili	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem	– Pro aind	oper er th	ties	of Numb			
NUMBER SYS NUMBER SYS ralue - Divisibili UNIT 2 SIM	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM	– Pro aind /IBE	oper er th RS	ties leore	of Numbern.	ers –Face	value and p	olace 6
umbers betwee IUMBER SYST alue - Divisibili UNIT 2 SIM	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge	– Pro aind /IBEI	oper er th RS c for	ties leore mula	of Numbern.	ers –Face	value and p	olace 6
umbers betwee IUMBER SYST alue - Divisibili UNIT 2 SIM IMPLIFICATIO mixed fraction	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification	– Pro aind MBE	oper er th RS c for Rec	ties eore mula urrin	of Numbern. ae –Simpl g decima	ers –Face ification o	value and p	olace 6
UMBER SYST alue - Divisibili UNIT 2 SIM SIMPLIFICATIO	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification	– Pro aind MBE	oper er th RS c for Rec	ties eore mula urrin	of Numbern. ae –Simpl g decima	ers –Face ification o	value and p	olace 6
UMBER SYST alue - Divisibili UNIT 2 SIM SIMPLIFICATIO Mixed fraction PROBLEMS OF	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume	– Pro aind MBEI braid on – the	oper er th RS c for Rec unki	ties neore mula urrin nowr	of Numbern. ae –Simpl g decima	ers –Face ification o	value and p	olace 6
UMBER SYST alue - Divisibili UNIT 2 SIM IMPLIFICATIO Mixed fraction ROBLEMS OF UNIT 3 RAT	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume FIO & PROPORTION ,ALLIGATIONS &	- Pro aind MBE	oper er th RS c for Rec unki	ties neore mula urrin nowr	of Numb em. ae –Simpl g decima n number	ers –Face lification o ls. s and forn	value and p f decimal fra n equations	olace 6
UMBER SYST alue - Divisibili UNIT 2 SIM SIMPLIFICATIO Mixed fraction PROBLEMS OF UNIT 3 RAT RATIO AND PI	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor	- Pro aind MBEI braic on - the MIX e pe	oper er th RS c for Rec unki unki	ties neore mula urrin nowr	of Numb em. ae –Simpl g decima n number Miscellan	ers –Face ification o ls. s and form eous prob	f decimal fra n equations olems.	6 6
UMBER SYST alue - Divisibili UNIT 2 SIM IMPLIFICATIO Mixed fraction ROBLEMS OF UNIT 3 RAT RATIO AND PE LLIGATIONS	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation	- Pro aind MBEI braic on - e the MIX re pe	oper er th RS c for Rec unk unk TUR	ties neore mula urrin nowr E E Is – I	of Number ae –Simpl g decima n number Miscellan value (or	ers –Face lification o ls. s and form eous prob	f decimal fra n equations olems. e) of the mix	6 6 6
UMBER SYST alue - Divisibili UNIT 2 SIM SIMPLIFICATIO Mixed fraction PROBLEMS OF UNIT 3 RAT RATIO AND PI SILLIGATIONS Six golden rules	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova	- Pro aind MBEI braic on - e the MIX re pe	oper er th RS c for Rec unk unk TUR	ties neore mula urrin nowr E E Is – I	of Number ae –Simpl g decima n number Miscellan value (or	ers –Face lification o ls. s and form eous prob	f decimal fra n equations olems. e) of the mix	6 6 6 ture -
UMBER SYST alue - Divisibili UNIT 2 SIM SIMPLIFICATIO Mixed fraction PROBLEMS OF UNIT 3 RAT RATIO AND PI ALLIGATIONS Six golden rules UNIT 4 AVE	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova ERAGES & PROBLEM ON AGES	- Pro aind MBEI braid on - the the MIX re pe rule al am	oper er th RS c for Rec unki TUR rson e – M	ties neore mula urrin nowr E s – I lean the	of Numb em. ae –Simpl g decima n number Miscellan value (or quantities	ers –Face lification o ls. s and form eous prob cost price s more tha	f decimal fra n equations olems. e) of the mix	6 6 6
UMBER SYST alue - Divisibili UNIT 2 SIM IMPLIFICATIO ROBLEMS OF UNIT 3 RAT RATIO AND PI LLIGATIONS ix golden rules UNIT 4 AVE AVERAGES: /	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova ERAGES & PROBLEM ON AGES Average from total –Total from the average	– Pro aind MBE braic on – the the MIX re pe al am ge –	oper er th RS c for Recu unki TUR rson - M ong Mise	ties mula urrin nowr E Is – I Iean the cella	of Numb em. ae –Simpl g decima n number Miscellan value (or quantities neous pr	ers –Face lification o ls. s and form eous prob cost price s more tha oblems.	f decimal fra n equations plems. e) of the mix an two.	6 6 6 ture -
UMBER SYST alue - Divisibili UNIT 2 SIM IMPLIFICATIO Mixed fraction ROBLEMS OF UNIT 3 RAT RATIO AND PE LLIGATIONS ix golden rules UNIT 4 AVE AVERAGES: / ROBLEMS OF	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova ERAGES & PROBLEM ON AGES Average from total –Total from the average NAGES: Ages - Persons in Past - Prese	– Pro aind MBE braic on – the the MIX re pe al am ge –	oper er th RS c for Recu unki TUR rson - M ong Mise	ties mula urrin nowr E Is – I Iean the cella	of Numb em. ae –Simpl g decima n number Miscellan value (or quantities neous pr	ers –Face lification o ls. s and form eous prob cost price s more tha oblems.	f decimal fra n equations plems. e) of the mix an two.	olace 6 ction 6 ture -
umbers betwee IUMBER SYST alue - Divisibili UNIT 2 SIM UNIT 2 SIM IMPLIFICATIO mixed fraction ROBLEMS OF UNIT 3 RAT RATIO AND PI LLIGATIONS ix golden rules UNIT 4 AVE AVERAGES: A ROBLEMS OF UNIT 5 ANA	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova ERAGES & PROBLEM ON AGES Average from total –Total from the average NAGES: Ages - Persons in Past - Prese ALOGY & MIRROR & WATER IMAGES	- Pro aind //BE braid on - the the mix re pe a rule al am ge - nt - f	oper er th RS c for Rec unkr TUR rson e – M hong Mise Futu	ties neore mula urrin nowr E s – I lean the cella re. M	of Number an American g decima n number Miscellan value (or quantities neous pr liscellane	ers –Face lification or ls. s and form eous prob cost price s more tha oblems. eous probl	f decimal fra n equations e) of the mix an two.	olace 6 action 6 ture - 6
UMBER SYST alue - Divisibili UNIT 2 SIM UNIT 2 SIM UNIT 2 SIM UNIT 3 RAT ROBLEMS OF UNIT 3 RAT RATIO AND PI LLIGATIONS ix golden rules UNIT 4 AVE AVERAGES: / ROBLEMS OF UNIT 5 ANA NALOGY: Stu	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova ERAGES & PROBLEM ON AGES Average from total –Total from the average NAGES: Ages - Persons in Past - Prese ALOGY & MIRROR & WATER IMAGES dy and topic relationship – Worker and	- Pro aind //BEI braid on - e the the rule a am ge - nt - f	oper er th RS c fori Recc unki TUR rson e – M hong Miss Futu	ties mula urrin nowr E s – I lean the cella re. M	of Number an American g decima n number Miscellan value (or quantities neous pr liscellane	ers –Face lification o ls. s and form eous prob cost price s more tha oblems. eous probl	f decimal fra f decimal fra n equations elems. e) of the mix an two. em.	olace 6 action 6 ture - 6
UMBER SYST alue - Divisibili UNIT 2 SIM UNIT 2 SIM IMPLIFICATIO ROBLEMS OF UNIT 3 RAT RATIO AND PI LLIGATIONS ix golden rules UNIT 4 AVE AVERAGES: / ROBLEMS OF UNIT 5 AN/ NALOGY: Stu	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova ERAGES & PROBLEM ON AGES Average from total –Total from the average NAGES: Ages - Persons in Past - Prese ALOGY & MIRROR & WATER IMAGES dy and topic relationship – Worker and ng place – Worker and product – Produ	- Pro aind /IBEI braid on - e the MIX re pe al am ge - nt - f tool ct ar	oper er th RS c forn Recc unki TUR rson e – M Mise Futu	ties mula urrin nowr the cella re. M ions	of Numbrem. ae –Simpl g decima n number Miscellan value (or quantities neous pr liscellane ship – Too aterials -	ers –Face lification of ls. s and form eous prob cost price s more that oblems. eous probl ol and acti	f decimal fra f decimal fra n equations elems. e) of the mix an two. em.	olace 6 action 6 ture - 6
UMBER SYST ralue - Divisibili UNIT 2 SIM SIMPLIFICATIO Mixed fraction PROBLEMS OF UNIT 3 RAT RATIO AND PI SIX golden rules UNIT 4 AVE AVERAGES: A PROBLEMS OF UNIT 5 ANA NALOGY: Stu Vork and workineasurement –	en 81 to 100. Cubes and cubes roots. FEMS: Numbers and types of Numbers ty rules – Concept on unit digit and rem PLIFICATIONS & PROBLEMS ON NUM ONS: BODMAS rule – Application of alge a – Continued fraction and its simplification NUMBERS: Set of numbers – Assume TIO & PROPORTION ,ALLIGATIONS & ROPORTION: Ratio between two or mor ANS MIXTURES: Definition – Allegation to solve problems on mixture – Remova ERAGES & PROBLEM ON AGES Average from total –Total from the average NAGES: Ages - Persons in Past - Prese ALOGY & MIRROR & WATER IMAGES dy and topic relationship – Worker and	- Pro aind //BEI braid on - e the MIX re pe rule al am ge - nt - I tool ct ar one	oper er th RS c forn Recc unki TUR rrson e – M Mise Futu relat	ties mula urrin nowr s – I lean the cella re. M ions w m Vale	of Numb em. ae –Simpl g decima n number Miscellan value (or quantities neous pr discellane hip – Too aterials - e and fem	ers –Face lification of ls. s and form eous prob cost price s more that oblems. eous probl ol and acti	f decimal fra f decimal fra n equations elems. e) of the mix an two. em.	olace 6 action 6 ture - 6

K.M. Q.

Chairman - BoS Dept. of Civil Engg. - ESEC

REFERENCES:

- 1. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Fourth Edition, Tata McGraw-Hill Publishing Company Ltd, 2012
- 2. Arun Sharma, How to prepare for Data Interpretation for the CAT, First Edition, Tata McGraw-Hill Publishing Company Ltd, 2012.
- 3. R.V.Praveen,"Quantitative Aptitude and Reasoning"Third Edition, PHI Learning ,2016.
- 4. Dr.R S Aggarwal, Quantitative Aptitude, Revised and Enlarged Edition, S.Chand Publishing Company Ltd, 2017.
- 5. Arun Sharma "How to Prepare for Quantitative Aptitude" Eight Edition, McGraw Hill Education, 2018.
- 6. "Reasoning and Aptitude" for GATE and ESE Prelims, Made Easy Publication, 2020.

Km'

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINE	R 2019	Semester IV	BS				
Course Code	Course Name	Course Name Week		Credit	Total Hours	Maximu Mark		
1000 100		2 3	T	P 0	C 4	60	100	
19BS402	NUMERICAL METHODS tive (s): The purpose of learning this of		1 in th	U	4	60	100	
equation function. Able to ir Able to a Able to a Ablity to approxim Develop appropria Course Outco Classify solve the Demonst Apply nu	he knowledge of finding approximate s, differentiation and integration by nu- nterpolate and predict a data nalyse differentiation and integration r find solution of initial and boundary va- nations. enough confidence to identify and mo ate solutions, using the skills learned in mes: At the end of this course, learne the equations into Algebraic, Transcer m numerically. rate and implement an appropriate nu- merical computational techniques to o e solutions of first order ordinary different	merical numeric alue pro del ma n their i n their i rs will b ndental merica btain th	l me cally obler then inter or s l me	thod ms u natic activ ble to imul athoc	s and intensions sing sing al patterrive and subsections of the second s	erpolating le and mu ns in real v pporting e and apply polation. and Integra	the values of Iti-step vorld and off environment. the techniqu	fer ues to
numerica Unit I SOLU ewton Raphso	the partial differential equations and al Il methods. TION OF SYSTEM OF EQUATIONS n method- Method of False Position	S					1	12
	Gauss Seidal method.	51232		5.0				10
	POLATION lewton's forward and backward differe polation formulae	nce for	mula	ae, L	agrange'	s and Ne		12 ded
	RICAL DIFFERENTIATION AND	INTEG	RAT	ION		1,000		12
lumerical differe	ntiation: Newton's forward and backw pson's 1/3 rule – Two point Gaus	ard diff	fere	nce f	ormulae,	Numerica – Three J	al Integration point Gauss	n: ian
	RICAL SOLUTION OF ORDINARY D	IFFER	ENT	IAL	EQUATI	NC		12
nitial value Prob rder Runge - I dams – Bashfo	em: Single step methods: Taylor's ser Kutta method for solving first order ec rth predictor and corrector methods for	ies me quation or solvir	thoc s - I ng fii	l ,Eu Multi rst o	ller's met step me rder equa	hod and F thods: Mil itions.	ne's -	
Unit V EQUA	RICAL TECHNIQUES FOR THE SOL	UTION	OF	PA	RTIAL D	IFFEREN	TIAL	12
inite difference mple harmonic REFERENCE(\$	solution of parabolic equation by Crank motions and its solutions numerically.							of
2. Burden R. Learning, N	L and Douglas Faires J, Numerical Ar Ninth Edition, 2005. and Wheatley P.O, Applied Numerica	nalysis	The	ory a	and Appli	cations, C	engage	1
	New Delhi, 2006.					Kim.	A	

Chairman - BoS Dept. of Maths - ESES

Department	CIVIL ENGINEEI	RING			R Semest		PC	
Course Code	Course Name	Hour	ek	Credit	Total Hours	Maximu Mark		
19CE401			C 4	45	100			
Course Objective (s): The purpose of learning this course is to		U	4	45	100	_		
 Impart know Determine t Analyze the determine tl Course Outcor Analyse stra and bending Identify the Figure out t external load Estimate the Interpret the 	Aledge on deflection of statically determ the stresses due to unsymmetrical bend a deflection in statically determinate be the stresses in curved beams and thick of mes: At the end of this course, learners esses and deflection of beams experies	tinate bear ding and un eams and walled cyli s will be ab encing a d cted to axia ural element ar force. Ing and calo	nder cal nde ole to com al lo nts	stand va culate bu rs bination ads. such as	rious theo uckling loa of interna thick wall ear centre	ries of failur ad in colum Il transverse ed cylinders	ns an shea unde	
	ECTION OF STATICALLY DETERMIN		MC		and the second		9	
	ential equation - Macaulay's method -		Contraction of the	mothod	Coniugo	to boom mo		
Strain energy me		woment a	liea	method	- Conjuga	ite beam me	ethod	
	MNS AND STRUTS		2				9	
	erness ratio - Calculation of stresses in	a short col	umr	e due to	avial load	and uni-avi	-	
Unit III THICK hick walled cyl ylinders - shrinl	Rankine's formula - Straight line formula WALLED CYLINDERS AND CURVE inders - Lame's equations - Hoop s fit. Curved beams - Stresses due to lar solid sections - Crane Hook Problen	D BEAMS stress and bending	rad					
apezoidai, circu	R CENTRE AND UNSYMMETRICAL E		_		and the second			
Unit IV SHEA							9	
A service of the second s			no/s	vmmetria	open sec	ctions - Hollo	9 wythi	
hear flow in thin alled torsion me	walled beam cross section - Shear cer embers - Single and multi connected se in beams subjected to unsymmetrical I	ntre of mor ections - S					w thi	
Chear flow in thin valled torsion me cending stresses Unit V THEO	walled beam cross section - Shear cerembers - Single and multi connected section beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE	ntre of mo ections - S bending	ymn	netrical a	and unsym	nmetrical ber	ow thin nding 9	
Chear flow in thin valled torsion me cending stresses Unit V THEO Types of Failure: Maximum strain e OR FURTHER I tresses in Chair	walled beam cross section - Shear cer embers - Single and multi connected se in beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE Brittle and ductile - Maximum principa energy theory - Maximum shear stress to READING In Links and Proving Ring, Octahedral S problems in unsymmetrical bending	ntre of more ections - S bending Il stress th theory - M Shear Stres	ymn eory ohr's ss T	netrical a / - Maxin s theory - heory, C	num Princ - simple p hange in o	imetrical ber ipal strain th roblems direction of r	w thin nding 9 neory neutra	
Chear flow in thin valled torsion me ending stresses Unit V THEO ypes of Failure: Maximum strain e OR FURTHER I tresses in Chair xis and simple indeterminate bea	walled beam cross section - Shear cer embers - Single and multi connected se in beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE Brittle and ductile - Maximum principa energy theory - Maximum shear stress to READING In Links and Proving Ring, Octahedral S problems in unsymmetrical bending	ntre of more ections - S bending Il stress th theory - M Shear Stres	ymn eory ohr's ss T	netrical a / - Maxin s theory - heory, C	num Princ - simple p hange in o	imetrical ber ipal strain th roblems direction of r	w thin nding 9 neory neutra	
Chear flow in thin valled torsion me ending stresses Unit V THEO ypes of Failure: Maximum strain e OR FURTHER I tresses in Chair xis and simple indeterminate bea EXT BOOK(S):	walled beam cross section - Shear cer embers - Single and multi connected se in beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE Brittle and ductile - Maximum principa energy theory - Maximum shear stress t READING In Links and Proving Ring, Octahedral S problems in unsymmetrical bendin	ntre of mor ections - S bending al stress th theory - M Shear Stres ig- Newm	ymn eory ohr's ss T	netrical a / - Maxin s theory - heory, C	num Princ - simple p hange in o	imetrical ber ipal strain th roblems direction of r	w thin nding 9 neory neutra	
hear flow in thin valled torsion me ending stresses Unit V THEO ypes of Failure: faximum strain e OR FURTHER I tresses in Chair xis and simple determinate bea EXT BOOK(S): 1. S. Rajput, St	walled beam cross section - Shear cer embers - Single and multi connected se in beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE Brittle and ductile - Maximum principa energy theory - Maximum shear stress t READING In Links and Proving Ring, Octahedral S problems in unsymmetrical bendin	ntre of more ections - S bending al stress th theory - Ma Shear Stres ag- Newm	ymn eory ohr's ss T ark's	netrical a - Maxin s theory - heory, C s metho	num Princ - simple p hange in o d of ana	imetrical ber ipal strain th roblems direction of r	w thin nding 9 neory neutra	
Chear flow in thin valled torsion me ending stresses Unit V THEO ypes of Failure: Maximum strain e OR FURTHER I tresses in Chair xis and simple determinate bea EXT BOOK(S): 1. S. Rajput, St 2. R. K. Bansal EFERENCE(S):	walled beam cross section - Shear cer embers - Single and multi connected se in beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE Brittle and ductile - Maximum principa energy theory - Maximum shear stress t READING In Links and Proving Ring, Octahedral S problems in unsymmetrical bendin ams rength of Materials, S. Chand & Co., 20 , A Textbook of Strength of Materials, L	ntre of mor ections - S bending al stress th theory - M Shear Stres og- Newm 006. _axmi Publ	ymn eory ohr's ss T ark's	netrical a - Maxin s theory - heory, C s metho	num Princ - simple p hange in o d of ana	imetrical ber ipal strain th roblems direction of r	w thin nding 9 neory neutra	
Chear flow in thin valled torsion me ending stresses Unit V THEO ypes of Failure: Aximum strain e OR FURTHER I tresses in Chair xis and simple determinate bea EXT BOOK(S): 1. S. Rajput, St 2. R. K. Bansal EFERENCE(S): 1. D. S. Bedi, S	walled beam cross section - Shear cerembers - Single and multi connected section beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE Brittle and ductile - Maximum principal energy theory - Maximum shear stress to READING In Links and Proving Ring, Octahedral S problems in unsymmetrical bending ams rength of Materials, S. Chand & Co., 20 , A Textbook of Strength of Materials, L trength of Materials, S. Chand & Co. Lt	ntre of more ections - S bending al stress th theory - M Shear Stres og- Newm 006. axmi Publ td., 2012.	ymn eory ohr's ss T ark's	netrical a - Maxin s theory - heory, C s metho	num Princ - simple p hange in o d of ana	imetrical ber ipal strain th roblems direction of r	w thin nding 9 neory neutra	
Chear flow in thin valled torsion me conding stresses Unit V THEO Types of Failure: Maximum strain e OR FURTHER I Stresses in Chair xis and simple determinate bea EXT BOOK(S): 1. S. Rajput, St 2. R. K. Bansal EFERENCE(S): 1. D. S. Bedi, S 2. C. Punmia, St	walled beam cross section - Shear cer embers - Single and multi connected se in beams subjected to unsymmetrical I RIES OF ELASTIC FAILURE Brittle and ductile - Maximum principa energy theory - Maximum shear stress t READING In Links and Proving Ring, Octahedral S problems in unsymmetrical bendin ams rength of Materials, S. Chand & Co., 20 , A Textbook of Strength of Materials, L	ntre of more ections - S bending al stress th theory - Ma Shear Stres og- Newm 006. _axmi Publ td., 2012. is, 2002.	eory ohr's ss T ark's	netrical a y - Maxin s theory - heory, C s metho ions, 201	num Princ - simple pr hange in o d of ana	imetrical ber ipal strain th roblems direction of r	w thin nding 9 neory	

Differing and a sub-to-to-of-

Exp No.	Name of Experiments
1.	Tension test on mild steel rod
2.	Torsion test on mild steel rod
3.	Compression test on brick and wood
4.	Tests on open coiled helical springs
5.	Tests on closed coiled helical springs
6.	Izod and Charpy impact tests
7.	Determination of Rockwell and Brinell Hardness Number
8.	Shear test on mild steel rod
9.	Static bending test on metal beam
10.	Demonstration on the variation of shear force in a beam
11.	Demonstration on thin cylinders
EXT BOOK	S):
1.	S. Rajput, Strength of Materials, S. Chand & Co., 2006.
2.	. Bansal, A Textbook of Strength of Materials, Laxmi Publications, 2010.
EFERENCE	(S):
1.	D. S. Bedi, Strength of Materials, S. Chand & Co. Ltd., 2012.

KIM 9

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEER	RING	;		2.575.65	R 2019	Semester IV	PC
Course Code	Course Name		Hours / Week		Credit	Total	Maximu	
Coue		L	Т	Ρ	С	Hours	Mark	5
19CE402	SOIL MECHANICS	3	0	0	3	45	100	
	ctive (s): The purpose of learning this co				às the s	- 12 K (2		
	students gain adequate knowledge on the	e ind	ex a	nd e	ngineerin	g propertie	es of soils	
the second s	d the significance of the soil properties		haa	bla t			- a la come	
	omes: At the end of this course, learners the index properties of soil and classify t							
	the permeability and seepage characteri	C			Aller George			
	the compressibility characteristics and s				naramete	ers of soil		
	the failure analysis of different soil paran			igui	paramet	010 01 001		
	e stability of slopes and provide slope pro			neth	ods			
	EX PROPERTIES AND CLASSIFICATIO							9
lature of soils	- Phase diagrams - Basic definitions and	d inte	er-rel	atior	ships - Ir	ndex prop	erties of soil	s ar
	tions: Specific gravity - Water content							
	stribution - Sedimentation analysis - Co						nits and ind	ices
	f soils: Need - Classification based on BI	S - F	ield	dent	tification of	of Soils		
Autority and a strength and the fille of the strength of	WATER AND WATER FLOW	1.0	241		1		12	9
	rious forms - Static pressure in water - C							
	and effective stress distribution in soi							
	nd validity - Permeability - Coefficient of							
	g permeability: Permeability of stratified	dep	osits	of s	oils - See	epage - Li	aplace equa	ition
ntroduction to F								
and the second	IPRESSIBILITY OF SOILS						di sang	9
	Factors affecting compaction - Effect of							
	or tests - Zero air void lines - Field							
	efinitions - Spring analogy - Terzaghi ressure and its determination - Normally							
onsolidation	essure and its determination - Normany	, un	uera	anu	over cons	solidated	sons-rime ra	ale
	TICAL STRESS AND SHEAR STRENG	тн						10
	Is: Boussinesq's and Wester Guard's th		ies c	f str	esses di	le to con	centrated lo	
	ngular load - Strip load - New Mark's cl							
	strength of soils- Mohr - Coulomb theo							
	ned compression - Triaxial - Drained and							
	BILITY OF SLOPES							8
ypes of slopes	s - Failure mechanism of slopes - Tota	al an	d ef	fectiv	ve stress	analysis	- Finite slo	pes
	s for purely cohesive and c-phi soils - M							
	- Slope protection methods							
OR FURTHER								
	untered in different types of soils - C						oil - Quick	san
	ase studies on failure of structures due to	o set	tleme	ents	- Case st	udies		_
EXT BOOK(S)	:							
1. B. N. D. N. Delhi, 2015	arasinga Rao, Soil Mechanics and Fou 5.	ndat	ion E	Engir	neering, \	Niley Indi	a Pvt. Ltd.,	Nev
	ia, Soil Mechanics and Foundations, Lax	cmi F	ublic	catio	ns Pvt. Lt	d., New D	elhi, 2005.	
	n, Soil Engineering in Theory and Practic							itior
						Con		
						Ohalan	nan - BoS	
						Chairn	il Engg ES	EC
					De	ept. of Civ	in Lingg Le	

	2009.
REF	ERENCE(S):
1.	Karl Terzaghi, Soil Mechanics in Engineering Practice, 3rd edition, John Wiley & Sons, Inc, 1995.
2	IS Codes: IS 1498: 1970. IS 2810: 1979. IS 2809: 1972. IS 2720 : Part 1 to Part 41

Kim. J.

Department	CIVIL ENGINEER	RING	;			R 2019	Semester IV	PC
Course Code	Course Name		Hou We	ek	Credit	Total Hours	Maximu Mark	
		L	Т	Ρ	C			
19CE403	CONCRETE TECHNOLOGY	3	0	0	3	45	100	8
	tive (s): The purpose of learning this co							
admixturesImpart basi	ound Technical knowledge on the ingre ic knowledge on the properties of fresh ing on the usage of admixtures used in o	n an	d ha					
	mes: At the end of this course, learners				D:			
	owledge on cost effective admixtures and		x des	sign				
	te the properties of concrete in plastic st							
	te the properties of concrete in hardened							
The second se	owledge about the application of special		crete	s				
	vledge about advance concreting metho	ds			0.75	والأستشار		
	IXTURES AND MIX DESIGN tures: Accelerators -Retarders- Workabi							9
Factors influenci Unit II FRES Properties of free Slump test and	structural properties and their effects ng mix proportion Mix design by ACI me H CONCRETE sh concrete: Workability -Factors affecti compacting factor test- Segregation at	ng w	l and /orka leedi	IS o	ode meti / - Tests	hod-Mix de for workab	esign examp eility of cond	oles 9 crete
	ds of compaction - Types of curing conc DENED CONCRETE	rete.	0					9
Properties of har	dened concrete -Determination of comp	ress	ive, t	tensi	le and fle	exural stren	ngth of cond	crete -
	creep- Factors affecting shrinkage modulus of elasticity-In situ strength de							crete
	IAL CONCRETE							9
Self compacting	concrete- Fibre reinforced concrete-High concrete- Polymer concrete - Short concrete Ready mix concrete-properties	crete	e-G	uniti	ng - Aei			
Unit V CON	CRETING METHODS			14	1.1.1.1	10.00		9
Pumping and its echniques- coffe decks-shells- in-s articulated struct	type- Conveyors - Under water concreti erdam- groutingShoring -Underpinning situ pre-stressing in high rise structures ures, braced domes and space decks	- Of	f sho	re pl	atforms -	Launchin	g girders, bi	ridge
OR FURTHER			1					
	: reactive and inert- Setting time of cor							
	ortance of permeability study- Cellular of							
•	rete-Soundness of aggregate, Grading	or fir	ie &	coar	se Aggre	gates, rec	ycled mater	iai as
ggregates			-					
EXT BOOK(S):	Construction of the second	14				2		
	Concrete Technology, S.Chand and Co						lb: 0007	
	r, Concrete Technology, Tata Mc Graw							
	an Johnson, Concrete Technology, Dilip	Pre	SS (F	-v(.)	Ltd, 2017		and .	
REFERENCE(S)						(cm)	SP -	
						Chairman	- BoS	

 P.Kumar Mehta and Paulo J.M. Monteiro, Concrete - Micro structure, Properties and Materials, Indian Concrete Institute, Chennai, 1997
 A.R.Santhakumar, Concrete Technology, Oxford University Press, New Delhi, 2007

K.m .

Chairman - BoS Dept. of Civil Engg. - ESEC

Chaiman 1808

Chaiman - 805 Dapt. et Civil Enga. - ESEC

Department	CIVIL ENGINEER	ING				R Sem 2019		PC	
Course	Course Name		Hours / Week		Credit	Total	Maximu		
Code	and the second	L	Т	P	С	Hours	Mark	arks	
19CE404	WATER RESOURCE AND IRRIGATION ENGINEERING	3	0	0	3	45	100		
 The stude Policy. Fu economic Course Outco acquire know learn oper gain know gain know understand 	ctive (s): The purpose of learning this count is exposed to different phases in War rther they will be imparted required know analysis including Irrigation and Irrigation omes: At the end of this course, learners owledge on source of water resources in ation and management of reservoir system ledge on different methods of irrigation particle ledge on application of canal irrigation d different methods of Irrigation systems TER RESOURCES	ter I vled mar will I India n.	Reso ge o nage pe a a	ource on Re men ble to	eservoir t practice	planning,		nt and	
	es survey – Water resources of India a			امحط				9	
- Multi objectiv and flood walls Unit II WAT Economics of v	mation of water requirements for irrigation e - Fixation of Storage capacity -Strateg ER RESOURCE MANAGEMENT vater resources planning; – National Wat ter quality – Scope and aims of master pla	ies ter F	for r Polic	eser	voir oper	ation - De	esign flood-le	evee: 9 nptive	
Nater budget-	Conjunctive use of surface and ground wa								
Seconder 2000 Aug	GATION ENGINEERING						100	9	
	and Demerits – Duty, Delta and Base perio				n efficiend	cies – Cro	ps and Seas	sons	
	uirement – Estimation of Consumptive us AL IRRIGATION	eoi	wat	er.				9	
Types of Impor	unding structures: Gravity dam – Diversi egulations – Canal outlets – Canal lining -							0.50	
	GATION METHODS AND MANAGEMEN							9	
	Tank irrigation – Well irrigation – Irrigatio								
nanagement w	its and demerits – Irrigation scheduling th a case study.	2	-	<i>a</i>					
nanagement w EXT BOOK(S	ith a case study. :	-	-						
nanagement w EXT BOOK(S	th a case study.	-	ering	g", M	cGraw-H	ill Inc, 200	00.		
nanagement w EXT BOOK(S 1. Linsley R.k	ith a case study. : K. and Franzini J.B, "Water Resources Eng C., et. al; Irrigation and water power Eng	gine						New	
nanagement w EXT BOOK(S 1. Linsley R.k 2. Punmia B. Delhi, 2009 3. 3. Garg S. K	ith a case study. : K. and Franzini J.B, "Water Resources Eng C., et. al; Irrigation and water power Eng	gine	ering	, Lax	kmi Publi	cations, 1	6th Edition,		
nanagement w EXT BOOK(S 1. Linsley R.k 2. Punmia B. Delhi, 2009 3. 3. Garg S. K	ith a case study. : K. and Franzini J.B, "Water Resources Eng C., et. al; Irrigation and water power Eng , "Irrigation Engineering and Hydraulic w Delhi, 2009	gine	ering	, Lax	kmi Publi	cations, 1	6th Edition,		
Ananagement w EXT BOOK(S 1. Linsley R.k 2. Punmia B. Delhi, 2009 3. Garg S. K Edition, Ne REFERENCE(S	ith a case study. : X. and Franzini J.B, "Water Resources Eng C., et. al; Irrigation and water power Eng , "Irrigation Engineering and Hydraulic w Delhi, 2009): N. and Soni, J.P., "Elements of Water F	gine inee stru	ering	, Lax es",	kmi Publi Khanna	cations, 1 Publisher	6th Edition, s, 23rd Rev	vised	

Department	CIVIL ENGINEE	RING	3			R 2019	Semester IV
Course	Course Name		Hours / Week		Credit	Total	Maximum
Code		L	Т	Ρ	С	Hours	Marks
19HS402	UNIVERSAL HUMAN VALUES 2 : UNDERSTANDING HARMONY	2	1	0	3	45	100
 Help the ensure sensure sensensure sensure sensure sensure sensure sensure sensure sensur	s would become more responsible in s. s become sensitive to their commitme numan relationship and human society) s would be able to apply what they have in real life, at least a beginning would be s would have better critical ability. CODUCTION TO VALUE EDUCATION Value Education - Self-exploration as d Prosperity – the Basic Human Aspi	mpler ch are ctive a ed on pective natura ic und natura ic und s will are of n life, ave le e mad s the iration	ment te the imon a ccc e for al wa lersta itual be a ther and owar earnt de in Proo	arily core og stu prrectors t andir ly en ble to msel l in ds v to t this cess Rig	e aspiratio udents tov t understa he basis ng in term riching info ves, and handling what they heir own direction.	ons of all hu wards life a anding of the of Universa is of ethical teraction w their surro problems have und self in diff e Educatio standing, F	Iman beings. Ind profession a ne Human realit al Human Value I human conduc ith Nature bundings (family with sustainabl derstood (huma rerent day-to-da g n - Continuous Relationship and
Aspirations	ty - Happiness and Prosperity – Curr	ent S	cena	irio -	Method	to Fuifili tr	he Basic Human
TR DA	MONY IN THE HUMAN BEING				<u>.</u>		9
the Needs of	Human being as the Co-existence of the Self and the Body – The Body e Self - Harmony of the Self with the	as a	n In	strur	nent of tl	he Self -	Understanding
	MONY IN THE FAMILY AND SOCIETY	1			10.00		9
Harmony in the Trust' – the Fo	Family – the Basic Unit of Human Inte oundational Value in Relationship - 'Re Society - Vision for the Universal Huma	eractio espec	ť –	Valu as tl	es in Hun ne Right	nan-to-Hun Evaluation	nan Relationshi - Understand
Unit IV HAR	MONY IN THE NATURE/EXISTENCE						9
Understanding ne Four Orders larmony in Exis	Harmony in the Nature - Interconnecte of Nature – Realizing Existence as C stence	dness o-exis	s, sel stend	f-reg ce at	ulation ar All Level	nd Mutual I s - The Ho	Fulfillments amo listic Perception
	ICATIONS OF THE HOLISTIC UND					<u> </u>	9
	tance of Human Values - Definitive	eness	of (Ethic	cal) Huma	an Conduc	ct – A Basis
	ucation, Humanistic Constitution ar	1 1					Competence

RE	FERENCE(S):
1	Jeevan Vidya: EkParichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999
2	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004
3	The Story of Stuff (Book)
4	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
5	Small is Beautiful - E. F Schumacher
6	Slow is Beautiful - Cecile Andrews
7	Economy of Permanence - J C Kumarappa
8	Bharat Mein Angreji Raj – PanditSunderlal
9	Rediscovering India - by Dharampal
10	Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11	Jeevan Vidya: EkParichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999
TEX	T BOOK(S):
1.	A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978-93-87034-47-1
2.	Teachers' Manual for A Foundation Course in Human Values and Professional Ethics, R R Gaur, R Asthana, G P Bagaria, 2nd Revised Edition, Excel Books, New Delhi, 2019. ISBN 978- 93-87034-53- 2

12-2-+

a main a similar milar

Depa	rtment	CIVIL ENGINEERING			R 2019	Semester IV	PC													
	urse ode	Course Name			rs / eek	Credit	Total Hours	Maxim												
100		HYDRAULIC ENGINEERING	L	Т	Ρ	P	P	P	P	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	Ρ	С	Hours	Mai	KS
190	E405	LABORATORY	0	0	4	2	60	100												
 Imp Car At res 	part knowle rry out perfection the end of idential bui	e (s): The purpose of learning this cou dge on flow measurements in pipes a ormance studies on hydraulic machin f the course the students will be at Idings es: At the end of this course, learners	and op eries ole to	des	sign	pipe lay	outs and o	design pum	ps fo											
		low of water in pipes																		
		characteristics of turbines & pumps																		
• Une	derstand th	e application of Bernoulli's theorem																		
Exp No.	110 - 1	Name of I	Exper	ime	nts															
1.	Determina	tion of Co-efficient of discharge of Or	ifice n	nete	r															
2.	Determina	tion of Co-efficient of discharge of Ve	enturin	nete	r	10 IN V.														
3.	Determina	tion of Co-efficient of discharge of ori	fice																	
4.	Determina	tion of Co-efficient of discharge of V-	notch					hing data												
5.	Determina	tion of Co-efficient of Impact Jet			-		11-12													
6.		tion of friction factor in a pipe	in all			- Second and	A. Delakas													
7.	Study on F	Performance Characteristics of Centri	fugal	pum	р		100	der freihen o												
8.	Study on F	Performance Characteristics of Recip	rocatii	ng p	ump		nu shuisi	In the second second	1.1.											
9.		performance characteristics of Pelton			rbine	Э	1200													
10.		performance characteristics of Francis																		
11.	Study on p	performance characteristics of Kaplan	Turb	ne	_															
S.NO		Name of Equipments		_	1.	NO	of Equipr	nents												
1.	Rotamete		Sugar	-			01	- 2												
2.		eter / Orificemeter		-			01	a line and good												
3.	and the second s	Experiment	-	-		2	01													
4.		s apparatus		-	_		01													
5.	Centrifuga		÷	-	1		01													
6.	Gear pum				*		No. 201	wa												
7.	Submersil			-	-		01													
8.	and the second se	ting pump					01		-											
9.		eel turbine		-		-	01													
10.		rbine/Kaplan turbine			_		01													
and the second se	OOK(S):																			
1.		draulics and hydraulic machinery by					Delle!													
2.	Subramar	ya, K., 1991. Flow in open channels,	lata	VICC	sraw	-HIII New	Deini.	-												

K.m. 0

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGI	IEERING				R 2019	Semester V	PC
Course Code	Course Name		loui Wee		Credit	Total	Maximu	
19CE508	SURVEY CAMP	L	Т	Р	С	Hours	Marl	KS
1902508	SURVET CAMP	0	0	0	1	45	100	

Course Objective (s): The purpose of learning this course is to

- The objective of the survey camp is to enable the students to get practical training in the field work. Groups of not more than six members in a group will carry out each exercise in survey camp. The camp must involve work on a large area of not less than 40 acres outside the campus (Survey camp should not be conducted inside the campus).
- Course Outcomes: At the end of the camp, each student shall have mapped and contoured the area. The camp record shall include all original field observations, calculations and plots.

Course Plan

Two weeks Survey Camp will be conducted during summer vacation in the following activities:

1. Traverse - using Total station

2. Contouring

(i). Radial tachometric contouring - Radial Line at Every 45 Degree and Length not less than 60 Meter on each Radial Line

(ii). Block Level/ By squares of size at least 100 Meter x 100 Meter atleast 20 Meter interval

(III). L.S & C.S - Road and canal alignment for a Length of not less than 1 Kilo Meter atleast L.S at Every 30M and C.S at every 90 M

3. Offset of Buildings and Plotting the Location

4. Sun observation to determine azimuth (guidelines to be given to the students)

- 5. Use of GPS to determine latitude and longitude and locate the survey camp location
- 6. Traversing using GPS
- 7. Curve setting by deflection angle

Apart from above students may be given survey exercises in other area also based on site condition to give good exposure on survey.

Department	CIVIL ENGINEERIN	lG				R 2019	Semester IV	V EE(
Course Code	Course Name		Hour Wee	k	Credit	Total Hours	Maximu Marks	m
19TPS04	QUANTITATIVE APTITUDE AND LOGICAL REASONING - II	2	Т 0	P 0	C 0	30	100	
Course Objec								5
 To solve To teac To know To know Course Outco 1. Solve pro 2. Know the 	the basic of partnership and chain rule problems using fast track method by lead the angle of elevation and depression. we the relationship, direction concepts in a about coding and decoding through log mes: At the end of this course, learners oblems by using shortcut in partnership a tips and tricks of profit and loss with per	arning easy v ical w will b and ch	vay. ay. e ab	fit an le to rule.	d loss wit			
 Evaluate issues ar 	nd the concepts of angles. critically the real life situations by resort nd factors.							
	the logical way of thinking by solving pr	obiem	IS CO	aes	and ranki	ngs conce	epis.	6
UNIT 1 PAR	TNERSHIP & CHAIN RULE : Ratio of division of gains: Simple Part	norch	in _ (Com	nound Pa	artnershin	- Working an	- 1. A. T. D.
sleeping partner		nersn	ip – ,	Com	pound r	annersnip	working an	a
CHAIN RULE:	Definition – Direct proportion and Indirec	t prop	ortio	n.				
	FIT & LOSS, PERCENTAGE							6
PROFIT AND LO	OSS: Basic definition and types of profi	t and	loss	- Co	oncept of	discount a	and marked p	rice -
Concept of true	v/s false value - Application in data inte	erpret	ation	pro	blems.		•	
	Percentage - Percentage using shortc			1.0				
UNIT 3 HEIG	HT AND DISTANCE							6
IEIGHT AND D	ISTANCES: Line of sight – Angle of ele	vation	– Ar	ngle	of depres	sion.		
UNIT 4 BLOO	OD RELATIONSHIP & DIRECTION SE	NSE 1	EST					6
DIRECTION SE	IONSHIP: Analysis the gender relations NSE TEST: Distance between the starti	ng an	d end	ding	points - S	Sense the	direction corre	ectly.
UNIT 5 TIME	CAL SEQUENCE OF WORD, CODING SEQUENCE TEST							6
LOGICAL SEQU group – Sequent CODING AND D coding & decoding	JENCE OF WORDS: Sequence of occur ce of increasing/decreasing size, value, DECODING: Introduction – Description of ng – Problems involving coding & decoor KINGS & TIME SEQUENCE TEST: Num	intens of codi ling m	sity, e ng m etho	etc. nethc d.	od, Coding	g patterns	– Concepts o	
						то	0TAL : 30 HO	URS
	: a, Quantitative Aptitude for Competitive Company Ltd, 2012 na, How to prepare for Data Interpretation	Exam	inati	ons,			a McGraw-Hil	I

- 3. R.V.Praveen,"Quantitative Aptitude and Reasoning"Third Edition, PHI Learning ,2016.
- 4. Dr.R S Aggarwal, Quantitative Aptitude, Revised and Enlarged Edition, S.Chand Publishing Company Ltd, 2017.
- 5. Arun Sharma "How to Prepare for Quantitative Aptitude" Eight Edition, McGraw Hill Education, 2018
- 6. "Reasoning and Aptitude" for GATE and ESE Prelims, Made Easy Publication, 2020.

Km

Chairman - BoS • Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEER	RING		1		R 2019	Semest er V	PC
Course Code	Course Name	100.00	our: Veel		Credit	Total Hours	Maxir	nun rks
		L	Т	P	С	Tiours	INIC	INS
19CE501	ANALYSIS OF INDETERMINATE STRUCTURES	3	0	0	3	45	100	
Course Objec	tive (s): The purpose of learning this co	urse	is					
analysis						thods of s	tructural	
	mes: At the end of this course, learners							
	continuous beams, pin-jointed indeterm	inate	plar	ne fra	ames an	d rigid plar	ne frames k	ру
	ergy method	hu al		dofo	otion mo	thad		
 Analyse 	the continuous beams and rigid frames and the concept of moment distribution a	by sid	ppe		f continu	linuu. Ious beam	s and rigid	
	vith and without sway.	anu a	laly	515 0	Contine	ious beam	s and rigid	
	the indeterminate pin jointed plane fram	es co	ontin	uous	beams	and rigid f	rames usin	g
	exibility method.					•		-
	and the concept of matrix stiffness method	od an	d ar	nalys	is of con	tinuous be	eams, pin jo	ointe
	and rigid plane frames.							-
Unit I STR	AIN ENERGY METHOD							9
							the second statement of the se	
Determination o	f Static and Kinematic Indeterminacies -	- Ana	lysis	s of c	continuo	us beams,	plane fram	ies
Determination o and indetermina	f Static and Kinematic Indeterminacies - ate plane trusses by strain energy metho	- Ana d (up	lysis to t	s of c wo d	continuou legree of	us beams, redundan	plane fram cy).	ies
and indetermina	f Static and Kinematic Indeterminacies - ate plane trusses by strain energy metho PE DEFLECTION METHOD	- Ana d (up	lysis to t	s of c wo d	continuou legree of	us beams, ⁻ redundan	plane fram cy).	9
and indetermina Unit II SLOF Slope deflection	ate plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy	d (up	f cor	wo d	legree of	redundan	cy). I frames – I	9 Rigid
and indetermina Unit II SLOF Glope deflection rames with inclir	te plane trusses by strain energy metho	d (up	f cor	wo d	legree of	redundan	cy). I frames – I	9 Rigid
and indetermina Unit II SLOF Slope deflection rames with inclir padings	ate plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry	d (up	f cor	wo d	legree of	redundan	cy). I frames – I	9 Rigid netri
and indetermina Unit II SLOF Slope deflection rames with inclir padings Unit III MOM	ate plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD	d (up /sis o metric	f cor f cor	wo d ntinuo nes v	legree of ous bean with sym	redundan ns and rigio metric and	cy). d frames – I skew-symr	9 Rigid netrio 9
and indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and ca	The plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow	d (up /sis o metric	f cor f cor frar mor	wo d ntinuo mes v ment	bus bean with sym	redundan ns and rigio metric and rsis of cont	cy). d frames – I skew-symr inuous Bea	9 Rigid netrio 9 ams-
And indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and ca Plane rigid frame	te plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle	d (up /sis o metric	f cor f cor frar mor	wo d ntinuo mes v ment	bus bean with sym	redundan ns and rigio metric and rsis of cont	cy). d frames – I skew-symr inuous Bea	9 Rigid netrio 9 ams-
and indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric	te plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryov es with and without sway – Support settle loadings.	d (up /sis o metric	f cor f cor frar mor	wo d ntinuo mes v ment	bus bean with sym	redundan ns and rigio metric and rsis of cont	cy). d frames – I skew-symr inuous Bea	9 Rigid netrio 9 ams-
and indetermina Unit II SLOF Slope deflection rames with inclir padings Unit III MOM Stiffness and ca Plane rigid frame kew-symmetric Unit IV FLEX Primary structure	te plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryov es with and without sway – Support settle loadings. KIBLITY METHOD es - Compatibility conditions – Formation	d (up ysis o metric ver of ement	f cor f cor frar mor t - sy	ment	legree of ous bean with sym s - Analy etric fram	redundan ns and rigio metric and rsis of cont nes with sy alysis of in	cy). d frames – I skew-symr inuous Bea mmetric ar determinate	9 Rigid metric 9 ams- ad 9
and indetermina Unit II SLOF Slope deflection rames with inclir padings Unit III MOM Stiffness and ca Plane rigid frame kew-symmetric Unit IV FLEX Primary structure	te plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryov es with and without sway – Support settle loadings. KIBLITY METHOD es - Compatibility conditions – Formation	d (up ysis o metric ver of ement	f cor f cor frar mor t - sy	ment	legree of ous bean with sym s - Analy etric fram	redundan ns and rigio metric and rsis of cont nes with sy alysis of in	cy). d frames – I skew-symr inuous Bea mmetric ar determinate	9 Rigid metric 9 ams- id 9 e pin-
and indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI	te plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. (IBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD	d (up vsis o metric ver of ement flexib plane	f cor f cor frar mor t - sy illity i	ment ment ment matri	bus bean with sym s - Analy etric fram ices - An by direct	redundan metric and rsis of cont nes with sy alysis of in flexibility a	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach.	9 Rigid metric 9 ams- ad 9
and indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struc	te plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. KIBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq	d (up vsis o metric ver of ement flexib plane uilibri	to to t f corr f f corr f fran t - sy	ment mest ment matrines I	legree of ous bean with sym s - Analy etric fram ces - An by direct	redundan metric and rsis of cont nes with sy alysis of in flexibility a	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach.	9 Rigid metric 9 ams- id 9 e pin-
and indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struc Beams, Pin-joint	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. (IBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct	d (up vsis o metric ver of ement flexib plane uilibri	to to t f corr f f corr f fran t - sy	ment mest ment matrines I	legree of ous bean with sym s - Analy etric fram ces - An by direct	redundan metric and rsis of cont nes with sy alysis of in flexibility a	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach.	9 Rigid metric 9 ams- id 9 e pin-
And indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struc Beams, Pin-joint TEXT BOOK(S)	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. KIBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct :	d (up ysis o metric ver of ement flexib plane uilibri ct stiff	f cor f cor frar mor t - sy illity i fran um o íness	ment mest ment matrines cond s me	legree of ous bean with sym s - Analy etric fram ces - An oy direct ition - An thod.	redundan ns and rigio metric and rsis of cont nes with sy alysis of in flexibility a nalysis of C	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous	9 Rigid 9 ams- id 9 e pin- 9
And indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struct Beams, Pin-joint EXT BOOK(S) 1. Bhavikatti,	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. CIBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S,Structural Analysis,Vol.1,& 2, Vikas F	d (up ysis o metric ver of ement flexib plane uilibri zt stiff Publis	i to t f cor f frar mor t - sy ility r fran um c frass	wo d ntinuo mes n ment matri nes l cond s me	legree of ous bean with sym s - Analy etric fram icces - An oy direct ition - An thod.	redundan ns and rigio metric and rsis of cont nes with sy alysis of in flexibility a nalysis of C	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous	9 Rigid 9 ams- d 9 e pin- 9
And indetermina Unit II SLOF Slope deflection rames with inclir badings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struct Beams, Pin-joint EXT BOOK(S) 1. Bhavikatti, 2. Bhavikatti,	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. (IBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S,Structural Analysis,Vol.1,& 2, Vikas F S.S, Matrix Method of Structural Analysis	d (up ysis o metric ver of ement flexib plane uilibri zt stiff Publis	i to t f cor f frar mor t - sy ility r fran um c frass	wo d ntinuo mes n ment matri nes l cond s me	legree of ous bean with sym s - Analy etric fram icces - An oy direct ition - An thod.	redundan ns and rigio metric and rsis of cont nes with sy alysis of in flexibility a nalysis of C	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous	9 Rigid 9 ams- d 9 e pin- 9
and indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frai Unit V STIFI Restrained struc Beams, Pin-joint EXT BOOK(S) 1. Bhavikatti, Delhi-4, 20	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symm IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. (IBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S,Structural Analysis,Vol.1,& 2, Vikas F S.S, Matrix Method of Structural Analysis 14	d (up ysis o metric ver of ement flexib plane uilibri ct stiff Publis s, I. K.	ito to to f correst fran mor t - sy illity i fran um o iness hing	ment ment matrines I cond s me	legree of ous bean with sym s - Analy etric fram ces - An oy direct ition - An thod. use Pvt.L ional Put	redundan ms and rigio metric and rsis of cont nes with sy alysis of in flexibility a nalysis of C td.,NewDe	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous	9 Rigid 9 ams- d 9 e pin- 9
and indetermina Unit II SLOF Slope deflection rames with inclir Dadings Unit III MOM Stiffness and car Plane rigid frame kew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struct Baovikatti, 1. Bhavikatti, Delhi-4, 20 3. Vazrani.V.I	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. KIBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S, Structural Analysis, Vol.1,& 2, Vikas F S.S, Matrix Method of Structural Analysis 14 N And Ratwani, M.M, Analysis of Structural	d (up ysis o metric ver of ement plane uilibri ct stiff Publis s, I. K.	ito to t f cor f frar mor t - sy illity r fran um o frass shing ol.II,	ment ment mes l matrines l cond s me g Hou ernat	legree of ous bean with sym s - Analy etric fram ces - An oy direct ition - An thod. use Pvt.L ional Pub	redundan ms and rigio metric and rsis of cont hes with sy alysis of in flexibility a halysis of C td.,NewDe blishing Ho	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous elhi-4, 2014 use Pvt.Lto 15.	9 Rigid netri 9 ams- d 9 e pin 9
And indetermina Unit II SLOF Slope deflection rames with inclir padings Unit III MOM Stiffness and car Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struc Beams, Pin-joint EXT BOOK(S) 1. Bhavikatti, 2. Bhavikatti, Delhi-4, 20 3. Vazrani.V.I	Ate plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. CIBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S, Structural Analysis, Vol. 1,& 2, Vikas F S.S, Matrix Method of Structural Analysis 14 N And Ratwani, M.M, Analysis of Structural andGupta S.P., Structural Analysis–AMat	d (up ysis o metric ver of ement plane uilibri ct stiff Publis s, I. K.	ito to t f cor f frar mor t - sy illity r fran um o frass shing ol.II,	ment ment mes l matrines l cond s me g Hou ernat	legree of ous bean with sym s - Analy etric fram ces - An oy direct ition - An thod. use Pvt.L ional Pub	redundan ms and rigio metric and rsis of cont hes with sy alysis of in flexibility a halysis of C td.,NewDe blishing Ho	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous elhi-4, 2014 use Pvt.Lto 15.	9 Rigid netri 9 ams- d 9 e pin 9
And indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and ca Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struct Beams, Pin-joint EXT BOOK(S) 1. Bhavikatti, Delhi-4, 20 3. Vazrani.V.I Andit G.S	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. KIBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S, Structural Analysis, Vol.1,& 2, Vikas F S.S, Matrix Method of Structural Analysis 14 N And Ratwani, M.M, Analysis of Structural andGupta S.P., Structural Analysis–AMat Ltd., 2006	d (up ysis o metric ver of ement plane uilibri ct stiff Publis s, I. K.	ito to t f cor f frar mor t - sy illity r fran um o frass shing ol.II,	ment ment mes l matrines l cond s me g Hou ernat	legree of ous bean with sym s - Analy etric fram ces - An oy direct ition - An thod. use Pvt.L ional Pub	redundan ms and rigio metric and rsis of cont hes with sy alysis of in flexibility a halysis of C td.,NewDe blishing Ho	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous elhi-4, 2014 use Pvt.Lto 15.	9 Rigid 9 ams- d 9 e pin- 9
And indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and ca Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struc Beams, Pin-joint EXT BOOK(S) 1. Bhavikatti, Delhi-4, 20 3. Vazrani.V.I 4. Pandit G.S Company I REFERENCE(S)	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. (IBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S, Structural Analysis, Vol. 1, & 2, Vikas F S.S, Matrix Method of Structural Analysis 14 N And Ratwani, M.M, Analysis of Structur andGupta S.P., Structural Analysis–AMat Ltd., 2006):	d (up ysis o metric ver of ement flexib plane uilibri ct stiff Publis s, I. K. res, V trix A	ito to t f cor f frar mor t - sy ility r frar um c iness hing l Inte	ment ment mest matrines I cond s me g Hou ernat	legree of ous bean with sym s - Analy etric fram ition - An thod. use Pvt.L ional Put ional Put Tata Mo	redundan ns and rigio metric and rsis of cont nes with sy alysis of cont flexibility a alysis of C td.,NewDe blishing Ho lishers, 20 Graw Hill F	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous elhi-4, 2014 use Pvt.Ltc 15. Publishing	9 Rigid 9 ams- d 9 e pin- 9
And indetermina Unit II SLOF Slope deflection rames with inclir oadings Unit III MOM Stiffness and ca Plane rigid frame skew-symmetric Unit IV FLEX Primary structure ointed plane frame Unit V STIFI Restrained struc Beams, Pin-joint EXT BOOK(S) 1. Bhavikatti, Delhi-4, 20 3. Vazrani.V.I 4. Pandit G.S Company I REFERENCE(S)	Atte plane trusses by strain energy metho PE DEFLECTION METHOD equations – Equilibrium conditions - Analy ned members - Support settlements- symmetry IENT DISTRIBUTION METHOD rry over factors – Distribution and carryow es with and without sway – Support settle loadings. (IBLITY METHOD es - Compatibility conditions – Formation mes, continuous beams and rigid jointed FNESS METHOD ture –Formation of stiffness matrices - eq ed plane frames and rigid frames by direct S.S,Structural Analysis,Vol.1,& 2, Vikas F S.S, Matrix Method of Structural Analysis 14 N And Ratwani, M.M, Analysis of Structur andGupta S.P.,Structural Analysis,–AMat Ltd.,2006 C, Ashok Kumar Jain & Arun Kumar Ja	d (up ysis o metric ver of ement flexib plane uilibri ct stiff Publis s, I. K. res, V trix A	ito to t f cor f frar mor t - sy ility r frar um c iness hing l Inte	ment ment mest matrines I cond s me g Hou ernat	legree of ous bean with sym s - Analy etric fram ition - An thod. use Pvt.L ional Put ional Put Tata Mo	redundan ns and rigio metric and rsis of cont nes with sy alysis of cont flexibility a alysis of C td.,NewDe blishing Ho lishers, 20 Graw Hill F	cy). d frames – I skew-symr inuous Bea mmetric ar determinate pproach. ontinuous elhi-4, 2014 use Pvt.Ltc 15. Publishing	9 Rigid 9 ams- d 9 e pin- 9

- William Weaver, Jrand James M.Gere, Matrix analysis of framed structures, CBS Publishers & 2. Distributors, Delhi,1995 Hibbeler, R.C.,Structural Analysis, VII Edition, Prentice Hall, 2012
- 3.

Department	CIVIL ENGINEER	RING	;			R 2019			
Course Code	Course Name	Course Name Hours / Week Credi		Credit	Total Hours	Maxim Mar			
19CE502	FOUNDATION ENGINEERING	3	0	0	3	45	100		
		-	-	-	5	40	100		
To impart k design par design of d Course Outco Understance Get knowle Design sha Determine De	tive (s): The purpose of learning this count mowledge to plan and execute a detail sint ameters and type of foundations. Also ifferent type of foundations and retaining mes: At the end of this course, learners at the site investigation, methods and sam adge on bearing capacity and testing met allow footings. The load carrying capacity, settlement of the earth pressure on retaining walls and INVESTIGATION AND SELECTION OF ctives – Methods of exploration – Augur ing of bore holes – Soil samples – Repro- poler, Thin wall sampler, Stationary pisto on - Strength parameters - Bore log repo- LOW FOUNDATION lepth of foundation – Codal provision deposits – Terzaghi's formula and BIS	ite ir val will pplin hod pile f and FC ing eser on sa ort a s - s - for	fami fami ls be al g. s. foun alysis DUNE and lo ntativ ample nd So Bea	igati liariz ble to datic s for DATI borir e an er – elect	on. stability ON og – Wash d undistu Penetrati tion of fou capacity Factors a	h boring a irbed – Sa ion tests (indation. of shall affecting b	and rotary d ampling met (SPT and So low foundat pearing cap	echnica 	
considerations in clay deposits – minimizing total Unit III FOO	y from in-situ tests (SPT, SCPT and pla n bearing capacity evaluation. Determina Total and differential settlement – Allow and differential settlements TINGS AND RAFTS	atior vable	n of S e set	Settle	ement of ents – Co	foundatio odal prov	ns on granu ision – Metł	lar and hods o 9	
- Proportioning	d footing, Combined footing, Mat founda of foundations for conventional rigid bel ompensated foundation – Codal provisio FOUNDATION	navi							
Types of piles a pile in granular Capacity from ir different method groups – Interp compression and Unit V RETA Plastic equilibriu soil – Coulomb's simple configura analysis of retair TEXT BOOK(S)	and their functions – Factors influencing and cohesive soil – Static formula – Dy hsitu tests (SPT and SCPT) – Negative (Feld's rule, Converse – Labarra form pretation of pile load test (routine test d uplift – Cohesive – expansive – non ex NNING WALLS im in soils – Active and passive states is wedge theory – Condition for critical fa- ations – Culmann's Graphical method – hing walls – Codal provisions.	vnan e sk ula pan – R ailur Pre	nic fo in frid and l nly), sive ankir e pla	ormu ction olock Und – Co ne's ne – e or	lae (Engi – Uplift failure c ler reame ohesionles theory – Earth pr the wall	neering r capacity- riterion) - ed piles ss soils - Cohesior ressure of due to li	news and Hi Group capa - Settlement - Capacity Codal provis Codal provis Iless and co n retaining v ine load – S	leys) – icity by of pile under sions 9 ohesive valls o	
	Otairman Dapt. at Civil En				De		nan - BoS il Engg ES	EC	

	Distribution Ltd., New Delhi. 2014
2.	Arora, K.R., "Soil Mechanics and Foundation Engineering", Standard Publishers and Distributors,
	New Delhi, 7th Edition, 2017 (Reprint)
	ERENCE(S):
1.	Braja M Das, "Principles of Foundation Engineering" (Eigth edition), Cengage Learning 2014.
	Kaniraj, S.R. "Design aids in Soil Mechanics and Foundation Engineering", Tata McGraw Hill publishing company Ltd., New Delhi, 2014
	Joseph E bowles, "Foundation Analysis and design", McGraw Hill Education, 5th Edition, 28th August 2015
1	

Kim. Sf.

Chairman - BoS Dept. of Civil Engg. - ESEC

Chairman - BoS Dept. of Civil Engg. - £851 .

Department	CIVIL ENGINEER	RING			R 2019	Semester V	PC
Course	Course Maine		Hours / Week		Total	Maximu	
Code		LT	P	C	Hours	Mark	s
19CE503	DESIGN OF RCC ELEMENTS	3 0	0	3	45	100	
 To introduct slab, beam standard c Course Outco Understand Know the abond and t Design the Design colle Design of f Unit I INTR Objective of strutionad combinationad combinationad pesign are analysis and D 	various types of slabs and staircase by lumns for axial, uniaxial and biaxial eccer ooting by limit state method. CODUCTION uctural design-Steps in RCC Structural I ons- Code of practices and Specification of Limit State Design Methods for RCC resign of Singly reinforced Rectangular	will be will be ne desig y limit sta ntric load Design F ns - Cop –Prope beams	able t able t n of I tate r te me dings.	ural syste o: RC eleme nethod a thod. ss- Type of Work of Conci vorking s	ents. nd sign of of Loads of ng Stress rete and R stress meti	ference to beams for s on Structure Method, Ult einforcing S hod - Limit	India shea 9 es ar tima Stee
esign of singly Jnit II DESI nalysis and de	etailed in IS code - Advantages of Limit and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design Anchorage - Design requirements as	s by Lin gn aids	nit Sta for Fl	ate Metho exure - E	od. Sehaviour o	of RC memb	is an 9 bers
esign of singly Unit II DESI nalysis and de hear, Bond an eams in shear	and doubly reinforced rectangular beam GN OF BEAMS	s by Lin gn aids per cu	nit Sta for Fl rrent	exure - E code - B	od. Sehaviour o ehaviour o	of RC memb	is ar 9 bers ar R
lesign of singly Unit II DESI unalysis and desider, Bond an eams in shear Unit III DESI unit III DESI unalysis and desider	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design d Anchorage - Design requirements as and torsion - Design of RC members for	s by Lin gn aids per cu combin upporte	for Fl rrent ed Be	exure - E code - B ending, S d continu	od. ehaviour c ehaviour c hear and 1 uous slabs	of RC memb of rectangula forsion s and supp	is ar 9 oers ar R 9 oortir
esign of singly Unit II DESI malysis and de hear, Bond an eams in shear Unit III DESI malysis and d eams-Two way f Staircases –	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and Anchorage - Design requirements as and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply so y slab- Design of simply supported and c	s by Lin gn aids per cu combin upporte	for Fl rrent ed Be	exure - E code - B ending, S d continu	od. ehaviour c ehaviour c hear and 1 uous slabs	of RC memb of rectangula forsion s and supp	is ar 9 oers ar R 9 oortir
lesign of singly Unit II DESI unalysis and design of shear, Bond an eams in shear Unit III DESI unalysis and design of shear Unit III DESI unalysis and design of shear Unit III DESI unalysis and design of shear Unit IV DESI	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply so y slab- Design of simply supported and c Design of dog-legged Staircase. GN OF COLUMNS ns –Axially Loaded columns – Design of er columns- Design for Uniaxial and Biax	s by Lir gn aids per cu combin upporte ontinuo	for FI rrent ed Be d an us sla	exure - E code - B ending, S d continu ibs using	od. ehaviour c hear and T uous slabs IS code co lare and C	of RC memb of rectangula forsion s and supp pefficients-	is ar 9 pers ar R 9 ortir Type 9
Lesign of singlyUnit IIDESIUnit IIDESIbear, Bond arbears in shearUnit IIIDESIunalysis and debears-Two wayf Staircases –Unit IVDESIbypes of columnbesign of SlendUnit VDESIDesign of SlendUnit VDESI	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply s y slab- Design of simply supported and c Design of dog-legged Staircase. GN OF COLUMNS ns –Axially Loaded columns – Design of er columns- Design for Uniaxial and Biax GN OF FOOTINGS	s by Lin gn aids per cu combin upporte ontinuo short F kial ben	for Fl rrent ed Be d an us sla Rectar ding u	exure - E code - B ending, S d continu abs using ngle, Squ	od. ehaviour of hear and T uous slabs IS code of lare and C umn Curve	of RC memb f rectangula forsion a and supp pefficients- ircular colur	is ar 9 pers ar R 9 portir Type 9 mns 9
esign of singly Unit II DESI nalysis and de hear, Bond an eams in shear Unit III DESI nalysis and d eams-Two way f Staircases – I Unit IV DESI ypes of column esign of Slend Unit V DESI oncepts of Pro- esign of axiall ombined Recta	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply so y slab- Design of simply supported and c Design of dog-legged Staircase. GN OF COLUMNS ns –Axially Loaded columns – Design of er columns- Design for Uniaxial and Biax GN OF FOOTINGS oportioning footings and foundations back y and eccentrically loaded Square, Re angular footing for two columns only.	s by Lin gn aids per cu combin upporte ontinuo short F kial bene	for Fl rrent ed Be d an us sla Rectar ding u	exure - E code - B ending, S d continu abs using ngle, Squ using Col	od. ehaviour c hear and T uous slabs IS code co uare and C umn Curve	of RC memb of rectangula forsion s and supp pefficients- ircular colur s of wall foot	is ar 9 bers ar R 9 bortir Type 9 mns 9 ting
esign of singly Unit II DESI nalysis and de hear, Bond an eams in shear Unit III DESI nalysis and de eams-Two way f Staircases – I Unit IV DESI ypes of column esign of Slend Unit V DESI oncepts of Pro- esign of axiall ombined Recta EXT BOOK(S) 1. Varghese, Delhi, 2002	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply so y slab- Design of simply supported and c Design of dog-legged Staircase. GN OF COLUMNS ns –Axially Loaded columns – Design of er columns- Design for Uniaxial and Biax GN OF FOOTINGS oportioning footings and foundations back y and eccentrically loaded Square, Re- angular footing for two columns only. : P.C., "Limit State Design of Reinforced	s by Lin gn aids per cu combin upporte ontinuo short F kial bend ased or ectangul Concre	nit Sta for Fl rrent ed Be ed an us sla Rectar ding u ar pa te", F	ate Metho exure - E code - B ending, S d continu- bs using d continu- bs using ngle, Squ using Col propertie d and s	od. ehaviour of hear and T uous slabs IS code co lare and C umn Curve es-Design oped footi	of RC memb of rectangula forsion s and supp pefficients- ircular colur s of wall foot ngs – Desi a, Pvt. Ltd.,	is an 9 pers ar R 9 portin Type 9 mns 9 ting ign Ne
esign of singly Unit II DESI nalysis and de hear, Bond an eams in shear Unit III DESI nalysis and de eams-Two way f Staircases – I Unit IV DESI ypes of colum esign of Slend Unit V DESI oncepts of Pre esign of axiall ombined Recta EXT BOOK(S) 1. Varghese, Delhi, 2002 2. Gambhir. N	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply so y slab- Design of simply supported and c Design of dog-legged Staircase. GN OF COLUMNS ns –Axially Loaded columns – Design of er columns- Design for Uniaxial and Biax GN OF FOOTINGS oportioning footings and foundations ba y and eccentrically loaded Square, Re angular footing for two columns only. : P.C., "Limit State Design of Reinforced	s by Lin gn aids per cu combin upporte ontinuo short F kial bend ased or ectangul Concre	nit Sta for Fl rrent ed Be ed an us sla Rectar ding u ar pa te", F	ate Metho exure - E code - B ending, S d continu- bs using d continu- bs using ngle, Squ using Col propertie d and s	od. ehaviour of hear and T uous slabs IS code co lare and C umn Curve es-Design oped footi	of RC memb of rectangula forsion s and supp pefficients- ircular colur s of wall foot ngs – Desi a, Pvt. Ltd.,	is an 9 pers ar R 9 portin Type 9 mns 9 ting ign Ne
esign of singly Unit II DESI malysis and de hear, Bond an eams in shear Unit III DESI malysis and de eams-Two way f Staircases – I Unit IV DESI oncepts of Column esign of Slend Unit V DESI oncepts of Pri- esign of axiall ombined Recta EXT BOOK(S) 1. Varghese, Delhi, 2002 2. Gambhir. M Limited, Ne	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply so y slab- Design of simply supported and co Design of dog-legged Staircase. GN OF COLUMNS ns –Axially Loaded columns – Design of er columns- Design for Uniaxial and Biax GN OF FOOTINGS oportioning footings and foundations back y and eccentrically loaded Square, Re angular footing for two columns only. : P.C., "Limit State Design of Reinforced Co	s by Lin gn aids per cu combin upporte ontinuo short F kial ben ased or ectangul Concre	nit Sta for Fl rrent ed Be ed an us sla ding u ar pa te", F Desig	ate Metho exure - E code - B ending, S d continu- abs using ngle, Squ sing Col propertie d and s Prentice H gn", Pren	od. ehaviour of hear and T uous slabs IS code co are and C umn Curve es-Design oped footi fall of India ntice Hall	of RC memb f rectangula forsion s and supp pefficients- ircular colur is of wall foot ngs – Desi a, Pvt. Ltd., of India P	is ar 9 pers ar R 9 ortir Type 9 mns 9 ting ign Ne
Lesign of singly Unit II DESI unalysis and desidear, Bond ar eams in shear Unit III DESI unalysis and desidear, Bond ar eams in shear Unit III DESI unalysis and desidear eams-Two way f Staircases – I Unit IV DESI ypes of column besign of Slend Unit V DESI omcepts of Prosesign of axiall ombined Recta EXT BOOK(S) 1. Varghese, Delhi, 2002 2. Gambhir. M Limited, Ne 3. Subramania 2013	and doubly reinforced rectangular beam GN OF BEAMS sign of Flanged beams for – Use of design and torsion - Design of RC members for GN OF SLABS AND STAIRCASE esign of cantilever, one way simply so y slab- Design of simply supported and co Design of dog-legged Staircase. GN OF COLUMNS ns –Axially Loaded columns – Design of er columns- Design for Uniaxial and Biax GN OF FOOTINGS oportioning footings and foundations back y and eccentrically loaded Square, Re- angular footing for two columns only. : P.C., "Limit State Design of Reinforced Co w Delhi, 2006	s by Lin gn aids per cu combin upporte ontinuo short F kial bend ased or ectangul Concre	nit Sta for Fl rrent ed Be ed an us sla Rectar ding u ar pa te", F Desig	ate Metho exure - E code - B ending, S d continu- bs using d continu- bs using ngle, Squ using Col propertie d and s Prentice H gn", Pren	od. ehaviour of hear and T uous slabs IS code co lare and C umn Curve es-Design oped footi fall of India ntice Hall	of RC memb of rectangula forsion s and supp pefficients- ircular colur s of wall foot ngs – Desi a, Pvt. Ltd., of India P ress, New I	is an 9 pers ar R 9 portin Type 9 mns 9 mns 9 mns 9 mns 9 mns 9 cing ign Ne

REF	ERENCE(S):
	Jain, A.K., "Limit State Design of RC Structures", Nemchand Publications, Roorkee, 1998
	Punmia. B.C., Ashok Kumar Jain, Arun Kumar Jain, "Limit State Design of Reinforced Concrete", Laxmi Publication Pvt. Ltd., New Delhi, 2007
	IS456:2000, Code of practice for Plain and Reinforced Concrete, Bureau of Indian Standards, New Delhi, 2000
4.	SP16, IS456:1978 "Design Aids for Reinforced Concrete to Bureau of Indian Standards, New Delhi, 1999

Kim. If.

Chairman - BoS Dept. of Civil Engg. - ESEC

Churren an Hurston - Balls Deale of Cyclif Englist - E See

1 . 11

Department	CIVIL ENGIN	NEERING)			R 2019	Semester V	ES
Course Code	Course Name		Hours / Week		Credit	Total		
Code		L	Т	Ρ	С	Hours	Marks	
19ES501	WATER SUPPLY ENGINEERIN	G 3	0	0	3	45	100	
	tive (s): The purpose of learning thi							
	e students with the principles and d					nits and di	stribution sy	sten
 an insight and distribute 		supply s	syste	ems,	including		ansport, trea	tme
	dge in various unit operations and p					nt		
	design the various functional units						le a a lub	
	anding of water quality criteria and s							
	o design and evaluate water supply RCES OF WATER	project a	nem	auve	is on bas	is of chose	en chiena	9
	pply system – Planning, Objectives,	Design r	perio	d P	opulation	forecastir	ng [.] Water de	
- Sources of v	vater and their characteristics, Sund selection of source – Source Wat	urface an	nd G	Grour	ndwater	– Impoun	ding Reser	/oir
	VEYANCE FROM THE SOURCE					1111		9
Vater supply -	intake structures – Functions; Pipes	s and cor	nduit	s for	water -	Pipe mate	erials – Hydr	aulic
	- Transmission main design - Lay							
	city of pumps – Selection of pumps	and pipe	mat	erial	S		2	
	ER TREATMENT							9
	it operations and processes – Prin							
	of flash mixers, Coagulation and f r - sand filters - Disinfection - R							
Aaintenance as		lesique i	vian	ayen		JISUUCIO	i, Operation	an
	ANCED WATER TREATMENT							9
	- Desalination- R.O. Plant - demin	norolizati	o n	Ads	orntion	Terre manager for		
Systems – RO Operation & Mai	Reject Management - Iron and Ma ntenance aspects – Recent advance	nganese	rem	oval	- Defluo			
Systems – RO Operation & Mai	Reject Management - Iron and Ma	nganese	rem	oval	- Defluo			
Systems – RO Operation & Mai Unit V WAT Requirements of unctions – Net oppurtenances onnection – Fix	Reject Management - Iron and Ma <u>ntenance aspects – Recent advance</u> ER DISTRIBUTION AND SUPPLY f water distribution – Components work design – Economics – Analys – Leak detection. Principles of de- tures and fittings, systems of plumb	nganese es - MBR s - Selec sis of dis esign of	rem pro ction stribu wate	oval cess of j ution er su	- Defluo pipe mat networks upply in	ridation - erial – Se s -Compu buildings	Construction ervice reserviter application	9 9 voirs
Systems – RO Operation & Mai Unit V WAT Requirements of unctions – Net oppurtenances onnection – Fix EXT BOOK(S)	Reject Management - Iron and Mantenance aspects – Recent advance ER DISTRIBUTION AND SUPPLY f water distribution – Components work design – Economics – Analys – Leak detection. Principles of detections tures and fittings, systems of plumb	nganese es - MBR s - Selec rsis of dis esign of bing and t	rem pro ction stribu wate ypes	oval cess of j ution er su s of p	- Defluo pipe mat network: ipply in lumbing.	ridation - erial – Se s -Compu buildings	Construction ervice reserviter application	9 9 voirs
Systems – RO Operation & Mai Unit V WAT Requirements of Functions – Net Sonnection – Fix EXT BOOK(S) 1. Garg, S.K.	Reject Management - Iron and Ma ntenance aspects – Recent advance ER DISTRIBUTION AND SUPPLY f water distribution – Components work design – Economics – Analys – Leak detection. Principles of de- tures and fittings, systems of plumb Environmental Engineering, Vol.I Kh	nganese es - MBR s - Selec rsis of dis esign of bing and ty nanna Pul	rem tion stribu wate ypes	oval cess of j ution er su s of p	- Defluo pipe mat networks upply in lumbing.	ridation - erial – Se s -Compu buildings hi, 2010.	Construction ervice reserviter application – House se	9 9 voirs
Systems – RO Deration & Mai Unit V WAT Requirements of unctions – Net oppurtenances onnection – Fix EXT BOOK(S) 1. Garg, S.K. I 2. Modi, P.N.,	Reject Management - Iron and Ma ntenance aspects – Recent advance ER DISTRIBUTION AND SUPPLY f water distribution – Components work design – Economics – Analys – Leak detection. Principles of de tures and fittings, systems of plumb Environmental Engineering, Vol.I Kh Water Supply Engineering, Vol.I Sta	nganese es - MBR s - Selec rsis of dis esign of bing and tr nanna Pul andard Bo	rem tion stribu wate ypes blish	oval cess of p ution er su of p ers, Hous	- Defluo pipe mat networks upply in lumbing. New Del se, New I	ridation - erial – Se s -Compu buildings hi, 2010. Delhi, 2010	Construction ervice reserviter application – House se	9 9 voirs
Systems – RO Operation & Mai Unit V WAT Requirements of unctions – Net oppurtenances onnection – Fix EXT BOOK(S) 1. Garg, S.K.I 2. Modi, P.N., 3. Punmia, B.O	Reject Management - Iron and Ma Intenance aspects – Recent advance ER DISTRIBUTION AND SUPPLY f water distribution – Components work design – Economics – Analys – Leak detection. Principles of de tures and fittings, systems of plumb Environmental Engineering, Vol.I Kh Water Supply Engineering, Vol.I Sta C.,Ashok Jain and Arun Jain, Water	nganese es - MBR s - Selec rsis of dis esign of bing and tr nanna Pul andard Bo	rem tion stribu wate ypes blish	oval cess of p ution er su of p ers, Hous	- Defluo pipe mat networks upply in lumbing. New Del se, New I	ridation - erial – Se s -Compu buildings hi, 2010. Delhi, 2010	Construction ervice reserviter application – House se	9 9 voirs
Systems – RO Deration & Mai Unit V WAT Requirements of unctions – Net onnection – Fix EXT BOOK(S) 1. Garg, S.K. I 2. Modi, P.N., 3. Punmia, B.0 (P) Ltd., Ne	Reject Management - Iron and Mantenance aspects – Recent advance ER DISTRIBUTION AND SUPPLY f water distribution – Components work design – Economics – Analys – Leak detection. Principles of de- tures and fittings, systems of plumb Environmental Engineering, Vol.I Kh Water Supply Engineering, Vol.I Sta C.,Ashok Jain and Arun Jain, Water w Delhi, 2014	nganese es - MBR s - Selec rsis of dis esign of bing and tr nanna Pul andard Bo	rem tion stribu wate ypes blish	oval cess of p ution er su of p ers, Hous	- Defluo pipe mat networks upply in lumbing. New Del se, New I	ridation - erial – Se s -Compu buildings hi, 2010. Delhi, 2010	Construction ervice reserv ter application – House se	9 9 voirs
Systems – RO Deration & Mai Unit V WAT Requirements of unctions – Net ppurtenances onnection – Fix EXT BOOK(S) 1. Garg, S.K.I 2. Modi, P.N., 3. Punmia, B.O (P) Ltd., Net EFERENCE(S) 1. Manual on India, New	Reject Management - Iron and Ma <u>ntenance aspects – Recent advance</u> ER DISTRIBUTION AND SUPPLY f water distribution – Components work design – Economics – Analys – Leak detection. Principles of de- tures and fittings, systems of plumb Environmental Engineering, Vol.I Kh Water Supply Engineering, Vol.I Sta C.,Ashok Jain and Arun Jain, Water w Delhi, 2014 : Water Supply and Treatment, CPHE	nganese es - MBR s - Selec rsis of dis esign of bing and tr nanna Pul andard Bo Supply E EEO, Min	rem pro trion stribu wate ypes blish ook l Engir	oval cess of jution er su s of p Hous neerin	- Defluo pipe mat networks upply in lumbing. New Del se, New I ng, Laxm	ridation - erial – Se s -Compu buildings hi, 2010. Delhi, 2010 i Publicati	Construction ervice reservice ter application – House second ons t, Governme	9 voirs pns ervic

Depa	rtment	nent CIVIL ENGINEERING			R 2019	Semester V	PC			
	urse ode	Course Name		Hours / Week		Credit	Total	The second s	Maximum	
19CE504				Т	Р	С	Hours	Marks		
150	52304	SOIL ENGINEERING EABORATORY	0 0 4 2 60 100		100					
To bas Cours Stu	develop s sed on the e Outcon idents are	ve (s): The purpose of learning this cours skills to test the soils for their index and en- eir properties nes: At the end of this course, learners with a able to conduct tests to determine both the	ngin ill be	eeri e ab	le to	:	8			
xp No	1	ze the soil based on their properties. Name of Exp	peri	mer	nts					
1 2263	a. Specit b. Grain c. Grain d. Liquid e. Shrink	MINATION OF INDEX PROPERTIES fic gravity of soil solids size distribution – Sieve analysis size distribution - Hydrometer analysis limit and Plastic limit tests cage limit and Differential free swell tests								
2.	a. Field o b. Deterr c. Deterr	MINATION OF INSITU DENSITY AND CO density Test (Sand replacement method mination of moisture – density relationshi mination of relative density (Demonstratio	and o us n or	cor ing nly)	e cut	tter meth	od)			
3.	a. Perme b. One d c. Direct d. Uncor e. Labor	MINATION OF ENGINEERING PROPER eability determination (constant head and limensional consolidation test (Determina shear test in cohesionless soil offined compression test in cohesive soil atory vane shear test in cohesive soil al compression test in cohesionless soil (I	falli tion	ng ł of C	Co-ef	ficient of	s) consolida	tion only)		

SI. No.	Description of Equipment	Quantity
1.	Sieves	2 sets
2.	Hydrometer	2 sets
3.	Liquid and Plastic limit apparatus	2 sets
4.	Shrinkage limit apparatus	3 sets
5.	Proctor Compaction apparatus	2 sets
6.	UTM of minimum of 20kN capacity	. 1
7.	Direct Shear apparatus	1
8.	Thermometer	2
9.	Sand replacement method accessories and core cutter method accessories	2
10.	Tri-axial Shear apparatus	1
11.	Three Gang Consolidation test device	1 1

12.	Relative Density apparatus	1
13.	Van Shear apparatus	1
14.	Weighing machine – 20kg capacity	1 No
15.	Weighing machine – 1kg capacity	3 No

TEXT BOOK(S):

- 1. "Soil Engineering Laboratory Instruction Manual" published by Engineering College Cooperative Society, Anna University, Chennai, 2010.
- 2. Lambe T.W., "Soil Testing for Engineers", John Wiley and Sons, New York, 1951. Digitized2008. REFERENCE(S):

- 1. Saibaba Reddy, E.Ramasastri, K. "Measurement of Engineering Properties of Soils" New age International (P) Limited Publishers, New Delhi, 2002.
- 2. IS Code of Practice (2720) Relevant Parts, as amended from time to time, Bureau of Indian Standards, New Delhi.

Km

Chairman - BoS Dept. of Civil Engg. - ESEC

Chaiman - 508 Dept. of Civil Engla - ESEC

Department	CIVIL ENGINEER	RING	;		- 6-1	R 2019	Semester V	ES
Course Code	Course Name	1 23	loui Wee		Credit	Total	Maximu	
4050500	ENVIRONMENTAL ENGINEERING	L	Т	P	С	Hours	Marl	KS
19ES502	LABORATORY	0	0	4	2	60	100	

Course Objective (s): The purpose of learning this course is to

To analyse the physical, chemical and biological characteristics of water and wastewater

- To quantify the dosage requirement for coagulation process
- To study the growth of micro organism and its quantification
- To quantify the sludge

Course Outcomes: At the end of this course, learners will be able to:

Quantify the pollutant concentration in water and wastewater

- Suggest the type of treatment required and amount of dosage required for the treatment
- Examine the conditions for the growth of micro-organisms

Exp No.	Name of Experiments
1.	Determination of pH, Turbidity and conductivity
2.	Determination of Hardness
3.	Determination of Alkalinity and Acidity
4.	Determination of Chlorides
5.	Determination of Phosphates and Sulphates
6.	Determination of iron and fluoride
7.	Determination of Optimum Coagulant dosage
8.	Determination of residual chlorine and available chlorine in bleaching powder
9.	Determination of Oil, and Grease
10.	Determination of suspended, settleable, volatile and fixed solids
11.	Determination Dissolved Oxygen and BOD for the given sample
12.	Determination of COD for given sample
	Determination of SVI of Biological sludge and microscopic examination
14.	Determination of MPN index of given water sample

TEXT BOOK(S):

1. S. Rajput, Strength of Materials, S. Chand & Co., 2006.

2. R.K.Bansal, A Textbook of Strength of Materials, Laxmi Publications, 2010.

REFERENCE(S):

1. D. S. Bedi, Strength of Materials, S. Chand & Co. Ltd., 2012.

Chairman - BeS Dept. of Civil Engg. - ESEC

Course Code Course Name Week Hours L T P C Hours 19TPS05 QUANTITATIVE APTITUDE AND LOGICAL REASONING - III 2 0 0 0 30 Course Objective (s): • To design to help people make sense of numerical data. • To calculate the calendars and series in simplified way. • To understand the concept of the interest amount in SI and Cl. • To know the procedure to deal with a situation and sufficient to determine the answer. • To teach seating arrangements in rows or in small groups. Course Outcomes: At the end of this course, learners will be able to: 1. Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. 2. Solve the question based on calendar, odd man out and series by using shortcut methods. 3. Calculate the interest by using shortcut methods instead of traditional methods.	
L I P C 19TPS05 QUANTITATIVE APTITUDE AND LOGICAL REASONING - III 2 0 0 0 30 Course Objective (s): • <t< th=""><th>100 lucing the</th></t<>	100 lucing the
19TPS05 LOGICAL REASONING - III 2 0 0 30 Course Objective (s): • To design to help people make sense of numerical data. • To calculate the calendars and series in simplified way. • To understand the concept of the interest amount in SI and CI. • To know the procedure to deal with a situation and sufficient to determine the answer. • To teach seating arrangements in rows or in small groups. Course Outcomes: At the end of this course, learners will be able to: 1. Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. 2. Solve the question based on calendar, odd man out and series by using shortcut methods. 3. Calculate the interest by using shortcut methods instead of traditional methods.	lucing the
 To design to help people make sense of numerical data. To calculate the calendars and series in simplified way. To understand the concept of the interest amount in SI and CI. To know the procedure to deal with a situation and sufficient to determine the answer. To teach seating arrangements in rows or in small groups. Course Outcomes: At the end of this course, learners will be able to: Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. Solve the question based on calendar, odd man out and series by using shortcut methods. 	
 To calculate the calendars and series in simplified way. To understand the concept of the interest amount in SI and CI. To know the procedure to deal with a situation and sufficient to determine the answer. To teach seating arrangements in rows or in small groups. Course Outcomes: At the end of this course, learners will be able to: Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. Solve the question based on calendar, odd man out and series by using shortcut methods. 	
 To understand the concept of the interest amount in SI and CI. To know the procedure to deal with a situation and sufficient to determine the answer. To teach seating arrangements in rows or in small groups. Course Outcomes: At the end of this course, learners will be able to: Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. Solve the question based on calendar, odd man out and series by using shortcut methods. 	
 To know the procedure to deal with a situation and sufficient to determine the answer. To teach seating arrangements in rows or in small groups. Course Outcomes: At the end of this course, learners will be able to: Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. Solve the question based on calendar, odd man out and series by using shortcut methods. Calculate the interest by using shortcut methods instead of traditional methods. 	
 To teach seating arrangements in rows or in small groups. Course Outcomes: At the end of this course, learners will be able to: Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. Solve the question based on calendar, odd man out and series by using shortcut methods. Calculate the interest by using shortcut methods instead of traditional methods. 	
 Course Outcomes: At the end of this course, learners will be able to: Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. Solve the question based on calendar, odd man out and series by using shortcut methods. Calculate the interest by using shortcut methods instead of traditional methods. 	
 Demonstrate various principles involved in solving mathematical problems and thereby red time taken to solve Aptitude Questions. Solve the question based on calendar, odd man out and series by using shortcut methods. Calculate the interest by using shortcut methods instead of traditional methods. 	
time taken to solve Aptitude Questions. 2. Solve the question based on calendar, odd man out and series by using shortcut methods. 3. Calculate the interest by using shortcut methods instead of traditional methods.	
 Solve the question based on calendar, odd man out and series by using shortcut methods. Calculate the interest by using shortcut methods instead of traditional methods. 	
B. Calculate the interest by using shortcut methods instead of traditional methods.	
가 있는 것을 해외에서 해외에서 가지 않는 것을 하는 것을 것 같아요. 이 한 것 같아요. 이 것 같아요. 이 것 같아요. 이 ???????????????????????????????????	
 Induce their critical thinking by solving the syllogism and course of action. Analyze the conditions and do interpretation. 	
JNIT 1 DATA INTERPRETATION & CLOCKS	
ATA INTERPRETATION: Tabulation – Bar graphs – Pie charts – Line graphs.	
LOCKS: Definition – important points – Angular difference between two hands at different timi	ings-
correct clock.	ingo
JNIT 2 CALENDARS, ODDMAN OUT & SERIES	
ALENDARS: Odd days – Leap year – Ordinary year – Counting of odd days – Day of the we DDMAN OUT & SERIES: Odd man out – Power series – Number series-Sequence of real nu	
UNIT 3 SIMPLE & COMPOUND INTEREST	
MPLE INTEREST: Principal – Rate of interest – Number of years – Using formulae and short ethods.	CUIS
OMPOUND INTEREST: Compounded Annually – Compounded Half-Yearly – Compounded	Quarterly -
ompounded annually – Rates are different for different years.	Quarterry
LINIT A STATEMENT & COURSE OF ACTION SYLLOCISM	
UNIT 4 STATEMENT & COURSE OF ACTION, SYLLOGISM TATEMENT AND COURSE OF ACTION: Courses of action - Decision taken - Improvement, I	Eollow up o
rther action in regard to the given statement.	rollow-up o
/LLOGISM/ LOGICAL VENN DIAGRAMS: Relationship between the two things or not - Class	sification of
opositions – Immediate deductive inference – Immediate deductive inference.	Sincation of
UNIT 5 SEATING ARRANGEMENTS & DATA SUFFICIENCY	6
ATA SUFFICIENCY: Reasoning ability using a set of directions.	: 30 HOUR
ATA SUFFICIENCY: Reasoning ability using a set of directions.	: 30 HOUR
REFERENCES	
ATA SUFFICIENCY: Reasoning ability using a set of directions. TOTAL : REFERENCES: 1. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Fourth Edition, Tata McG	: 30 HOUR : Graw-Hill
ATA SUFFICIENCY: Reasoning ability using a set of directions. TOTAL :	Graw-Hill

· Chairman - BoS Dept. or Civil Engg. - ESEČ

- 3. R.V.Praveen,"Quantitative Aptitude and Reasoning"Third Edition, PHI Learning ,2016.
- 4. Dr.R S Aggarwal, Quantitative Aptitude, Revised and Enlarged Edition, S.Chand Publishing Company Ltd, 2017.
- 5. Arun Sharma "How to Prepare for Quantitative Aptitude" Eight Edition, McGraw Hill Education, 2018.
- 6. "Reasoning and Aptitude" for GATE and ESE Prelims, Made Easy Publication, 2020.

K.M.

Chairman 2 343 Dept. St Cipit Finger - 6 5 97

chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit II CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable 9 Inder self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension 9 ordges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated loads 9 under self weight - Anchorage of suspension cables - Bending Moment due to moving single concentrated loads 9 under self fening girders. 9 Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 ntroduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of kinematic indeterminacy. 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING 9 I	Department	CIVIL ENGINEER	ING		-		R 2019	Semester VI	РС
L T P C Intervention 19CE601 ADVANCED STRUCTURAL ANALYSIS 3 0 3 45 100 Course Objective (s): The purpose of learning this course is to Impart knowledge on moving loads and influence line diagrams Impart knowledge on finite element analysis and tension co-efficient method Introduce plastic analysis of structures Course Outcomes: At the end of this course, learners will be able to: Analyze the internal forces in the members of the trusses Analyze the internal forces in the members of the trusses Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS 9 RESULTANTS IN ARCHES 9 Oropronents and their Functions - Analysis of cable under concentrated loads and UDL. 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cablo under stiffening girders. 9 MUDL - Influence lines for Banding Moment and Shear Force - Analysis of suspension bridges with thinged stiffening girders. 9 Unit II MATRIX STEPRESS MD GRIDIN BRIDEES 9 Unit III MATRIX FLEXIBILITY METHOD		Course Name	1.			Credit		and a second sec	
Course Objective (s): The purpose of learning this course is to Impart a thorough knowledge about the matrix methods of structural analysis Impart knowledge on moving loads and influence line diagrams Impart knowledge on finite element analysis and tension co-efficient method Introduce plastic analysis of structures Course Outcomes: At the end of this course, learners will be able to: Analyze the internal forces in the members of the trusses Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES N type truss Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline for S.F, B.M and normal thrust for moving concentrated loads and UDL. Omponents and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio oridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with winged stiffening girders. Unit II MARTIX STERENESS METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frames and russes with maximum	Code		L	Т	Ρ	C	nouis	IVIAIN	.5
Impart a thorough knowledge about the matrix methods of structural analysis Impart knowledge on moving loads and influence line diagrams Impart knowledge on finite element analysis and tension co-efficient method Introduce plastic analysis of structures Course Outcomes: At the end of this course, learners will be able to: Analyze the internal forces in the members of the trusses Analyze the internal forces in the members of the trusses Analyze the siture of y statistical determinacy and indeterminacy IntroLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS PRESULTANTS IN ARCHES INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for B.S.F. B.M and normal thrust for moving concentrated loads and UDL. Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio oridges with three hinged stiffened girders - Max Bending Moment and Shear Force in suspension oridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated loads and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two ingrees of static indeterminacy. Unit II MATRIX FLEXIBILITY METHOD 9 ntroduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frames an russes with maximum two degrees of static indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of fixed and continuous beams and portal frames by mechanism method. CORPUTHER READING Insymmetrical arches - Influence lines for horizontal thrust. Insymmetrical arches - Influence lines for horizontal thr	19CE601	ADVANCED STRUCTURAL ANALYSIS	3	0	0	3	45	100	
Impart knowledge on moving loads and influence line diagrams Impart knowledge on finite element analysis and tension co-efficient method Introduce plastic analysis of structures Course Outcomes: At the end of this course, learners will be able to: Analyze the internal forces in the members of the trusses Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure or statistical determinacy and indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES Nype truss - Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline fords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence line for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit I ICABLES AND SUSPENSION BRIDEES 9 Gomponents and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl ander self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load uDU - Influence lines for Bending Moment and Shear Force in suspension bridges with twein inged stiffening girders. Unit II MATRIX FLEXIBILITY METHOD 9 Analysis of continuous beams, indeterminate frames an trusses with maximum two degrees of static indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kiematic indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames an trusses of the and continuous beams, indeterminate frames an trusses of the continuous beams, indeterminacy to degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechani									
Impart knowledge on finite element analysis and tension co-efficient method Introduce plastic analysis of structures Course Outcomes: At the end of this course, learners will be able to: Analyze the internal forces in the members of the trusses Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS SESULTANTS IN ARCHES Influence lines for horizontal thrust - Influence lines for B.M - Influence line for S.F. B.M and normal thrust for moving concentrated loads and UDL. Unit I CABLES AND SUSPENSION BRIDGES Orgonents and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl inder self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio and UDL - Influence lines for Bending Moment and Shear Force in suspension pride with three hinged stiffened girders - Max Bending Moment due to moving single concentrated loads and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two inged stiffening girders. Unit II MATRIX FLEXIBILITY METHOD 9 ntroduction - Computation of flexibility antrices - Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static indeterminacy. Unit V IMSCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and portal thrust. EXEMPTION 19 Inserventical arches - Influence lines for horizontal thrust. Inservent by analysis of structures - Assumptions - Moment redistribution Analysis of continuous beams, indeterminate, 1011 MATRIX STIFFNESS METHOD 9 Analysis of continuous beams, indeterminate, 1011 MINELELANEOUS TOPICS 10 Analysis of continuous beams and portal frames and trusses with maximum two degrees of k							alysis		
Introduce plastic analysis of structures Course Outcomes: At the end of this course, learners will be able to: Analyze the internal forces in the members of the trusses Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS PRESULTANTS IN ARCHES Vipe truss - Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence line for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit I CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio or idges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with the set symmetrical or flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. Unit II MATRIX FLEXIBLITY METHOD 9 Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of static indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of static indeterminacy. Malysis of continuous beams and portal frames by mechanism method. 706 FURTHER READING 9 Analysis of fixed and continuous beams and portal frames by mechanism method. 708 FURTHER READING 1014 William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 25 S Bhavikatti, Stru	COLORD STREET, 100				5.0				
Course Outcomes: At the end of this course, learners will be able to: Analyze the internal forces in the members of the trusses Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS growth incline for Sr. F. B.M and normal thrust for moving concentrated loads and UDL. Unit I CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two minged stiffening girders. 9 Unit II MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Init II MATRIX FLEXIBILITY METHOD 9 Introduction - computation of flexibility matrices - Analysis of continuous beams, indeterminate frames an trusses with maximum two degrees of static indeterminacy. 9 Init JI		-	tens	ion (co-e	fficient me	ethod		
Analyze the internal forces in the members of the trusses Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit 1 INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES Set truss of the structure for statistical determinacy and indeterminacy Unit 1 INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS 9 RESULTANTS IN ARCHES 9 Set truss of the structure for statistical determinacy and indeterminacy Unit 1 INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS 9 Set truss of the structure for statistical determinacy and indeterminacy Unit 1 IOABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension fordges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with twe inged stiffening girders. Unit 11 IMATRIX FLEXIBILITY METHOD 9 forduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of static indeterminacy. Unit V IMISCELLANEOUS TOPICS Analysis of continuous beams, indeterminate frames an russes with maximum two degrees of kinematic indeterminacy. Unit V IMISCELLANEOUS TOPICS Analysis of fixed and continuous beams and portal frames by mechanism method. COR FURTHER READING Josymmetrical arches - Influence lines for horizontal thrust. FEX BOOK(S): 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. S S Bravikatti , Structural Analysis , Thir									
Analyze a structure by using matrix stiffness and flexibility methods. Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES IN type truss - Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit II CABLES AND SUSPENSION BRIDGES I Grammat fructions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio oridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with tw timed stiffening girders. Unit III MATRIX FLEXIBILITY METHOD I 9 ntroduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. Unit V MATRIX STIFFNESS METHOD I 9 Analysis of continuous beams, indeterminate frames an russes with maximum two degrees of static indeterminacy. Unit V MISCELLANEOUS TOPICS I 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams, indeterminate frames an russes with maximum two degrees of norizontal thrust. FEXT BOK(S): Intermediate structural Analysis , Third edition, Volume I Second Edition Tata McGraw Hill publishing company limited, 2007. S S Banvikatti, Structural Analysis, Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd , 2009. Vaidyanathan.R, Perumal.P, Comprehensive St					ble t	o:			
Emphasis on the importance of Load factor in a design. Analyze the structure for statistical determinacy and indeterminacy Unit 1 INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES Nype truss - Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit II CABLES AND SUSPENSION BRIDGES Orgonents and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio bridges with three hinged stiffening girders. Unit III MATRIX FLEXIBILITY METHOD									
Analyze the structure for statistical determinacy and Indeterminacy Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES If ESULTANTS IN ARCHES If Instruction of the structure of the statistical determinacy with inclined chords - Warren truss with incline chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit II CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with three dimes for Bending Moment and Shear Force - Analysis of suspension bridges with the stiffening girders. Unit II MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. Unit V MATRIX STIFFNESS METHOD 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kinematic indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Insymmetrical arches - Influence lines for horizontal thrust. FEXT BOOK(S): Villiam weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti, Structural Analysis , Third edition, Volume I Second Edition Volume II , Vika Publishing House (p)					me	thods.			
Unit I INFLUENCE LINES FOR FORCES IN PLANE TRUSSES AND STRESS RESULTANTS IN ARCHES 9 N type truss - Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for S.F, B.M and normal thrust for moving concentrated loads and UDL. 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with thinged stiffening girders. Unit II MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames an trusses with maximum two degrees of kinematic indeterminacy. 9 Analysis of foontinuous beams, indeterminate frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 Insymmetrical arches - Influence lines for horizontal thrust. 9 Insymmetrical arches - Influence lines for horizontal thrust. 9	and the second sec	에는 이번 것은 이번 것은 것을 알려요. 이번 것은 이번 것은 것은 것은 것은 것을 알려요. 이번 것은 것을 알려졌다. 이번 것은 이번 것은 가지 않는 것은 것을 알려요. 이번 것을 하는 것이다. 이번							
RESULTANTS IN ARCHES Regression N type truss - Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit II CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two hinged stiffening girders. 9 Unit II MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames an trusses with maximum two degrees of static indeterminacy. 9 Analysis of fixed and continuous beams and portal frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 Core FURTHER READING 9 Insymmetrical arches - Influenc									
N type truss - Pratt truss with parallel chords - Pratt truss with inclined chords - Warren truss with incline chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for S.F, B.M and normal thrust for moving concentrated loads and UDL. Unit II CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two hinged stiffening girders. 9 Unit II MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames an russes with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of fixed and continuous beams and portal frames by mechanism method. 9 FOR FURTHER READING 9 Jusymmetrical arches - Influence lines for horizontal thrust. 1 FEXT BOOK(S): 1. Mareas for horizontal thrust.			E TF	RUS	SES	AND ST	RESS	n til N	9
chords. Symmetrical arches: Influence lines for horizontal thrust - Influence lines for B.M - Influence lines for S.F. B.M and normal thrust for moving concentrated loads and UDL. Unit II CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cabl under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated loads and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with the whinged stiffening girders. 9 Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kinematic indeterminacy. 9 Init V MATRIX STIFFNESS METHOD 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kinematic indeterminacy. 9 Init V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati indeterminacy. 9 Init V MISCELLANEOUS TOPICS 9 Ana									
for S.F. B.M and normal thrust for moving concentrated loads and UDL. 9 Unit II CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two hinged stiffening girders. 9 Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 Ont III MISCELLANEOUS TOPICS 9 Analysis of fixed and continuous beams and portal frames by mechanism method. 5 FOR FURTHER READING 9 Jusymmetrical arches - Influence lines for horizontal thrust. 5 <t< td=""><td>N type truss - F</td><td>Pratt truss with parallel chords - Pratt truss</td><td>s wit</td><td>th in</td><td>cline</td><td>d chords</td><td>- Warren</td><td>truss with in</td><td>clined</td></t<>	N type truss - F	Pratt truss with parallel chords - Pratt truss	s wit	th in	cline	d chords	- Warren	truss with in	clined
Unit II CABLES AND SUSPENSION BRIDGES 9 Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two hinged stiffening girders. 9 Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of kinematic indeterminacy. 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static indeterminacy. 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati ndeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Jnsymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007.							nes for B.I	vi - Influence	lines
Components and their Functions - Analysis of cable under concentrated loads and UDL - Shape of cable under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspensio oridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated load and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with twe hinged stiffening girders. Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames an russes with maximum two degrees of kinematic indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static indeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Jusymmetrical arches - Influence lines for horizontal thrust. FEXT BOOK(S): 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 2. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. 3. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Previtice Hall of			oad	s and		L.			0
 under self weight - Anchorage of suspension cables - Bending Moment and Shear Force in suspension ordges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated loa and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two hinged stiffening girders. Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of kinematic indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Jusymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti , Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Preprice Hall of the structural mechanics, Preprice Hall of the structural mechanics and the structural mechanics. 						1 1 1 1		01	
bridges with three hinged stiffened girders - Max Bending Moment due to moving single concentrated loa and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with tw hinged stiffening girders. Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kinematic indeterminacy. Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati ndeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Jusymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 2. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. 3. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of									
and UDL - Influence lines for Bending Moment and Shear Force - Analysis of suspension bridges with two Init III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static indeterminacy. 9 Analysis of ixed and continuous beams and portal frames by mechanism method. 9 Analysis of fixed and continuous beams and portal frames by mechanism method. 9 Insymmetrical arches - Influence lines for horizontal thrust. 10 TEXT BOOK(S): 1 William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 2 S Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. 2008. REFERENCE(S): 1 C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2 Rajasekaran S and	under self weig	ght - Anchorage of suspension cables - E	send	ling	Non	nent and	Shear Fo	rce in suspe	ensior
hinged stiffening girders. 9 Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 FOR FURTHER READING 9 Insymmetrical arches - Influence lines for horizontal thrust. 9 TEXT BOOK(S): 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGrav Hill publishing company limited, 2007. S Bhavikatti , Structural Analysis , Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. Maidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Ra	bridges with the	ree hinged stiffened girders - Max Bending	g Mo	omer	nt du	e to movi	ng single	concentrate	d load
Unit III MATRIX FLEXIBILITY METHOD 9 Introduction - Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static indeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 COR FURTHER READING Jusymmetrical arches - Influence lines for horizontal thrust. 9 1 William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 1 2 SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. 1 3 Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1 C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2 2 Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, P			r Fo	orce	- An	alysis of s	suspensio	n bridges wi	in two
Introduction Computation of flexibility matrices - Analysis of continuous beams, indeterminate frame and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati indeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 FOR FURTHER READING Junsymmetrical arches - Influence lines for horizontal thrust. 9 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 2 2. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. 1 3. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1 C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Previote Hall of									0
and trusses with maximum two degrees of static indeterminacy. 9 Unit IV MATRIX STIFFNESS METHOD 9 ntroduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of static analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 COR FURTHER READING 9 Unsymmetrical arches - Influence lines for horizontal thrust. 9 TEXT BOOK(S): 1 William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. Waidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural mechanicy and structural mechanicy.						and the second second	anna land		
Unit IV MATRIX STIFFNESS METHOD 9 ntroduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and russes with maximum two degrees of kinematic indeterminacy. 9 Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati ndeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 COR FURTHER READING 9 Jnsymmetrical arches - Influence lines for horizontal thrust. FEXT BOOK(S): 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 2. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. 3. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1. 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural manalysis Tata McGraw Hill publishing company limited, 1986.					conti	nuous be	ams, inde	eterminate fi	ames
 Introduction - equilibrium and compatibility - Analysis of continuous beams, indeterminate frames and rrusses with maximum two degrees of kinematic indeterminacy. Unit V MISCELLANEOUS TOPICS Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati ndeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Jnsymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , Third edition, Volume I Second Edition Volume II , Vika: Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural mechanics, Prentice H			nina	cy.					0
Init V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati indeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. 9 FOR FURTHER READING Unsymmetrical arches - Influence lines for horizontal thrust. 9 Insymmetrical arches - Influence lines for horizontal thrust. 6 9 Insymmetrical arches - Influence lines for horizontal thrust. 1 1 William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGrav Hill publishing company limited, 2007. 2 2 2 2 2 3 Naidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. 2 REFERENCE(S): 1 C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2 1 C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2 2 Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural mechanics, Prentice Hal							indotorna	incto fromo	100
Unit V MISCELLANEOUS TOPICS 9 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati ndeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Unsymmetrical arches - Influence lines for horizontal thrust. Image: Company limited, 2007. 1. William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. 2. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika: Publishing House (p) Itd ,2009. 3. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): 1. 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural mechanics, Prent	Introduction - e	equilibrium and compatibility - Analysis of	OT C	ontin	uou	s beams,	Indeterm	inate frame	s and
 Analysis of continuous beams, indeterminate frames and trusses with maximum two degrees of stati indeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Unsymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural mechanics. 			iina	cy.		and the second second			•
 Indeterminacy by kani's method. Plastic analysis of structures - Assumptions - Moment redistribution Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Unsymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of 			-						
 Analysis of fixed and continuous beams and portal frames by mechanism method. FOR FURTHER READING Unsymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika: Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural mechanics. 									
 FOR FURTHER READING Jnsymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika: Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural analysis Reference (Partice Hall of the structural mechanics). 								ent redistribu	ition -
 Jnsymmetrical arches - Influence lines for horizontal thrust. TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika: Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of the structural analysis Reference (Partice Hall of the structural mechanics). 			s by	me	cnar	nism metr	100.		
 TEXT BOOK(S): William weaver Jr.James M. Gare , Matrix Analysis Framed Structures, Third edition Tata McGrav Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of 									
 William weaver Jr.James M. Gare, Matrix Analysis Framed Structures, Third edition Tata McGrav Hill publishing company limited, 2007. SS Bhavikatti ,Structural Analysis, ,Third edition, Volume I Second Edition Volume II, Vika Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of 			ISI.						
 Hill publishing company limited, 2007. 2. SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vika: Publishing House (p) ltd ,2009. 3. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of 			- Er		4 Ct	ruoturoo	Third odi	ion Toto Ma	Grou
 Publishing House (p) Itd ,2009. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. REFERENCE(S): C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of Computational structural structural structural mechanics, Prentice Hall of Computational structural structural structural structural structu	Hill publish	ning company limited, 2007.							
REFERENCE(S): 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. 2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall o	Publishing	House (p) Itd ,2009.				Mt.			
 C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall c 			ural	Ana	ysis	, Vol I & I	Laxmi P	ublications, 2	2008.
2. Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of				- 6					
	1. C.K. Wang	, Intermediate structural analysis Tata Mc	Gra	w Hi	ll pu	blishing c	company l	imited, 1986	
			puta	tion	al st	ructural n	nechanics	, Prentice +	lall o)

Department	CIVIL ENGINEER	RING	1			R 2019	Semester VI	PC
Course Code	Course Name		Hou We	ek	Credit	Total Hours	Maximu Mark	
		L	Т	P	C		400	
19CE602	DESIGN OF RCC STRUCTURES	3	0	0	3	45	100	-
	ctive (s): The purpose of learning this cou				atructure			
	art knowledge on the basic design philoso						structures	
	e students be familiar about the codal pro omes: At the end of this course, learners					01 R.C.C	structures	
	tand the structural behaviour of footings b							
 Analyse 	a multi-bay multi storied frames with jo	bint (detai	lina	and to d	esian dee	p beams, c	orbel
and sta			aotai	ing		oolgii ao		
	ne importance of lateral soil pressure dist	ribut	ion d	on re	taining w	alls and a	ble to desig	n it fo
	loading condition				Ū			
 Analyse 	and Design various types of water tanks	usir	ng In	dian	standard	l codal pro	ovisions	
 Analyze 	and determine the critical loading condition	ion c	on br	idge	deck for	the econo	mical desig	า
	INDATIONS	100			<u>-</u>		120000	09
solated footing	gs -Combined footings of rectangular a	and	trap	ezoio	dal shap	e - Strap	beam foot	ings
Construction of the second	lesign of mat foundation. Design of is	olate	ed fo	poting	g subjec	ted to un	laxial and I	olaxia
noments								09
	LDING FRAMES in the design of multibay, multistoreyed	from	00	Flag	tic analy	cie usina	suitable sub	
rames for grav	vity loadings - Portal and Cantilever meth	nods	of a	nalv	sis for wi	nd forces	- Design of	frame
components -D	besign of Deep Beams-Design of Corbels	-Des	sian	of sta	airs span	ning horiz	ontally - Des	ign c
	Detailing of joints							
	TH RETAINING STRUCTURES					S. at his		09
	ilever and counterfort retaining walls for					- Stabilit	y requireme	nts o
	Effect of surcharge loading in the design	of re	taini	ng w	all	100	15.4.2.8	
	JID STORAGE STRUCTURES				(D		(10 0070	09
Design of unde	rground and on ground rectangular water	tan	KS- L	Jse c	ical roof	Dosign	of 1.5.3370 (-odes
Overnead tan	ks of rectangular shape and circular shang and foundation. Design of underground	ape v		arou	nd circul	- Design	or all compo anks	menta
	DGES			grou	na circui			09
	es - IRC loadings - Design of single spar	n sla	b bri	idae	deck for	class A lo	ading - Des	
he deck of T -	beam and slab bridge for class AA loadin	a De	esigr	ofs	ingle spa	n slab bri	dge deck for	class
A loading		J	J		• •			
OR FURTHER								
and the second s	n foundation design, Presentation on intze	e typ	e wa	ater t	ank			
EXT BOOK(S):		,	10	450 0000			000
	aju, Advanced Reinforced Concrete I	Jesi	gn (IS: 4	456-2000)), (Secol	na Ealtion),	CBS
	& Distributors, New Delhi, 2013.	lain	Lim	it C+	ata Dasi	an of Poi	nforced Con	crote
	ia, Ashok Kumar Jain and Arunkumar J lications (P) Ltd., New Delhi, 2015.	Jain,	LIM	11 31	ale Desig	gi u kei	norced Con	crete
	a Pillai and Devedas Menon, Reinforced	1 Co	ncre	te D	esian Ta	ata Mc Gr	aw Hill Publ	ishind
	ew Delhi, 2003.	1 00	nore		coign, re			
REFERENCE(S		C vés		i li se		dia dia 1	Cole The second	1
	hir, Design of reinforced concrete structur	res,	PHI	learr	ning Pvt.	Ltd., New	Delhi, 2011.	
	ese, Limit State Design of Reinforced Co							
2008.						(0)	0
3. IS 456:200	0 Plain and reinforced concrete Code of	Prac	tice			6(01	
010					(Imic	-	
1. 1. 1.								
						AL .		

Department	CIVIL ENGINEER	RING	;	id g		R 2019	Semester VI	PC
Course	Course Name		Hou We		Credit	Total	Maximu	
Code		L	Т	Ρ	С	Hours	Mark	S
19CE603	BASIC STRUCTURAL DESIGN	3	0	0	3	45	100	-
Course Object	tive (s): The purpose of learning this co	urse	is to					
 Impart kr 	nowledge on Limit State Design Method	ls for	stee	I Str	uctures			
 Impart kr 	nowledge on the codal provisions for the	e des	ign c	of ste	el structu	ires		
 Impart kr 	nowledge on the design of connections,	tens	ion r	nem	bers, con	npression	members, b	ean
and roof								
	mes: At the end of this course, learners	s will	be a	ble to	o:			
	olted and welded connections							
	ension members, Splices, Lug Angles a							
 Design c 	ompression members, Lacings, Battens	s and	colu	mn l	oase			
	aterally supported and unsupported Bea							
	knowledge about components of indust	trial s	struct	ures	and Des	sign beam	columns, G	Sant
	nd roof trusses		1					
	ODUCTION							9
	teel structures - Use of relevant Indian							
	nethod of design - Properties of steel -					ns - Types	s of connect	ions
	and welded connections for axial load -	- Effic	cienc	y of	joint.			
	ION MEMBERS		-	1				9
	pes of Tension Members - Calculation							s ar
	Design of tension members - Design of	tensi	on s	plice	s, Lug Ar	ngles and	Gussets	
	PRESSION MEMBERS	124					- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	9
	ypes of compression members - Theo							
	f an axially loaded column - Influence							
	mn - Codal provisions for compression						ssion Mem	pers
Unit IV DESI	s and battens - Design of column base:	Slap	Bas	e - G	usselled	Base.		0
		of lot	arall		mmontod	and unau	nnonted bee	9
acian of Comp	lesign of flexural members - Design of	of lat	erall	y su	pported	and unsu	рропеа реа	ams
	ound beams - Design of plate girders - I ELLANEOUS TOPICS	ntem	neula	ale a	nd beam	ig suitenei	IS. (9
the second s								
	eam Columns - Design of Beam Column							
irder.	g - Design of roof trusses and purlins	- mu	ouu	Suon	to gantr	y girder -	Design of g	antr
OR FURTHER	READING							
	ction of Steel Structures - Fire R	Aciet	ant	Des	ian - S	teel_Conc	rete. Comr	ocit
onstructions		(03)31	an	DCS		leer-oone	iete- oonip	031
EXT BOOK(S):								
	nian, Design of Steel Structures, Oxford	Uni	versi	ty P	ess 2011			
the second se	al, Limit State Design of Steel Structur		1		and the second se	and the second se	ion Pvt I td	Ne
Delhi, 2014.		00, 1	ala	, 1010	oraw m		ion i vi Eiu,	110
	kar, Limit State Design in Structural Stee	el Pl	HIE	arni	na Private	e Limited	New Delhi	201
EFERENCE(S)		01, 1 1	II LC	- carrin	ig i nua	o Ennicou,	Hew Donn,	201
	am, Design of Steel Structures, Dorling	Kind	ersle	w (Ir	dia) Pvt	Itd Pear	son Educati	on i
South Asia.	in, Boolgir of Oteor Otruotares, Borning	i tino	croic	y (11	iaia) i vi.	Ltd, i cai		0111
	7, IS 800 - 1984 General Construction i	in Ste	el -	Code	e of Pract	tice BIS M	Vew Delhi	
		ore				1		
						6.	14	
							-	
808 - 116	HEIRI V					0	hairman - B	20

3. R. Murugesan and A. P. Arulmanickam, Steel Tables in SI Units, Pratheeba Publishers, Coimbatore, 2009.

km

Chairman - BoS Dept. of Civil Engg. - ESEC

Chaimian - BoS Dept. of GeirEngg - ESEC

Department	CIVIL ENGINEE	RING					R 2019	5	emeste VI	ES
Course	Course Name			irs / eek	Cre	dit	Tota		Maxim	
Code'		L	Т	Р	C		Hours	5	Mar	KS
19ES601	WASTE WATER ENGINEERING	3	0	0	3		45		100	
 The object physical 	etive (s): The purpose of learning this co ectives of this course is to help students , chemical, and biological phenomena ge treatment plants.	deve	lop t	he a						
 Course Outco An ability stations The requisite streams An ability 	omes: At the end of this course, learners by to estimate sewage generation and uired understanding on the characterist y to perform basic design of the unit of	desig ics an	n se Id co	ewer ompo	syst	n of	sewage	, self	f purifica	tion (
	nt and the standard methods for disposal o owledge on sludge treatment and dispos		age.							
	NING AND DESIGN OF SEWERAGE		EM						2.5	9
	and composition of sewage - population				-San	tary	sewage	e flov	v estima	20
	 Hydraulics of flow in sanitary sewer wer appurtenances – corrosion in sewer 		pre	venti						
Irainage in build	dings-plumbing systems for drainage - R		/ate	r ting	1.					nping
Unit II PRIM Objectives – Ur	dings-plumbing systems for drainage - R IARY TREATMENT OF SEWAGE hit Operations and Processes – Select	Rain W	trea	atme	ent pr	oce	sses —	Onsi	ite sanita	9 ation
Unit II PRIM Dbjectives – Ur Septic tank- Gr reatment units Maintenance as	IARY TREATMENT OF SEWAGE hit Operations and Processes – Select ey water harvesting – Primary treatme - screens - grit chamber-primary sed	Rain W ion of ent –	trea Prin	atme ciple	ent pr es, fu	nctio	sses — ons and	Onsi desi	ite sanita	9 ation ewag
Unit II PRIM Objectives – Ur Septic tank- Gramman Gramman Maintenance as Maintenance as Unit III SECO Objectives – Second Cobjectives – Second Cobjectives – Second Maintenance – Waste	IARY TREATMENT OF SEWAGE hit Operations and Processes – Select ey water harvesting – Primary treatme - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Princi on systems -Trickling filters– Sequencing Stabilization Ponds – - Other treatment	ion of ent – liment iples, ng Ba nt met	trea Prin atio Fun tch	atme ciple n tai nctior Rea	ent pr es, fu nks - ns, - ctor(S eclan	Actionation	sses – ons and onstruction vated SI) – Mem on and F	Onsi desi on, C udge ibran Reuse	ite sanita ign of se Operatio e Proces ne Biorea e of sew	9 ation ewag n an 9 s an actor
Unit II PRIM Objectives – Ur Septic tank- Gr reatment units Maintenance as Unit III SECC Objectives – Sector Cobjectives – Sector Discrives – Sector JASB – Waste Recent Advance Sector	IARY TREATMENT OF SEWAGE hit Operations and Processes – Select ey water harvesting – Primary treatme - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Princi on systems -Trickling filters– Sequencing	ion of ent – liment iples, ng Ba nt met	trea Prin atio Fun tch	atme ciple n tai nctior Rea	ent pr es, fu nks - ns, - ctor(S eclan	Actionation	sses – ons and onstruction vated SI) – Mem on and F	Onsi desi on, C udge ibran Reuse	ite sanita ign of se Operatio e Proces ne Biorea e of sew	9 ation ewag n an 9 s an actor
Unit II PRIM Objectives – Ur Septic tank- Gramma – Gramma reatment units Maintenance as Maintenance as – Gramma Unit III SECO Objectives – Seconda Objectives – Seconda Extended aeration JASB JASB – Waste Recent Advance JISP Other IV DISP Standards for – I ag curve – deo	IARY TREATMENT OF SEWAGE nit Operations and Processes – Selection ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Principon on systems -Trickling filters– Sequencing Stabilization Ponds – Other treatment es in Sewage Treatment – Construction,	ion of ent – liment iples, ng Ba nt met Oper	Fun tch ation	atme ciple n tai nctior Rea s -R n and ncipl	ent pr es, fu nks - ns, - ctor(S eclan d Mai e - S	Actionation Actionation	sses – ons and onstruction vated SI) – Mem on and F nance as ourification	Onsi desi on, C udge bran Reuse pects	ite sanita ign of se Operatio e Proces ne Biorea e of sew s. river -O	9 ation ewag n an 9 s an actor /age 9 xyge
Unit IIPRIMObjectives – UrSeptic tank- Grreatment unitsMaintenance asUnit IIISECCObjectives – SecExtended aeratiJASB – WasteRecent AdvanceUnit IVDISPStandards for – Iag curve – deoodium hazardsUnit VSLUE	ARY TREATMENT OF SEWAGE it Operations and Processes – Select ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Princip on systems -Trickling filters– Sequencing Stabilization Ponds – - Other treatment es in Sewage Treatment – Construction, OSAL OF SEWAGE Disposal - Methods – dilution – Mass back exygenation and reaeration - Streeter–P - Soil dispersion system. DGE TREATMENT AND DISPOSAL	ion of ent – liment liment oper alance helps	Fun Fun tch hod ation e prin mod	atme ciple n tai nctior Rea s -R n and ncipl del -	ent pr es, fu nks - ctor(S eclan d Mai e - S Lanc	Actii BR hatio hter	sses – ons and onstruction vated SI) – Mem on and F nance as ourification posal –	Onsi desi on, C udge bran Reuse pects on of Sew	ite sanita ign of se Operatio e Proces ne Biorea e of sew s. river -O rage farm	9 ation ewag n an 9 ss an actor /age 9 xyge ning -
Unit II PRIM Objectives – Ur Septic tank- Gramma – Ur reatment units Maintenance as Maintenance as Unit III Value SECC Objectives – Sec Objectives – Sec Chief Advance Unit IV DISP Standards for – I ag curve – deo odium hazards Unit V Unit V SLUE Objectives – Slutandard rate an Judge drying be Sec	IARY TREATMENT OF SEWAGE nit Operations and Processes – Select ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Princion systems -Trickling filters– Sequencing Stabilization Ponds – - Other treatment es in Sewage Treatment – Construction, OSAL OF SEWAGE Disposal - Methods – dilution – Mass back exygenation and reaeration - Streeter–P - Soil dispersion system. OGE TREATMENT AND DISPOSAL udge characterization – Thickening - Ind High rate digester design- Biogas reads- ultimate residue disposal – recent a	ion of ent – liment iples, ng Ba nt met Oper alance helps Desig	Fun Fun tch hod ation prin mo	atme ciple n tai nctior Rea s -R n and s -R n and del -	ent pr es, fu nks - ctor(S eclan d Mai e - S Lanc	Activ BR hation elf p I dis	sses – ons and onstruction vated SI) – Mem on and F nance as ourification sposal –	Onsi desi on, C udge bran Reuse pects on of Sew	ite sanita ign of se Operatio e Proces ne Biorea e of sew s. river -O age farm e diges	9 ation ewag n an 9 ss an actor /age 9 xyge ning - 9 tion -
Unit II PRIM Objectives – Ur Septic tank- Gramman ceas – Maintenance as – Maintenance as – Maintenance as – Unit III SECO Objectives – Objectives – ASB – Vaste – Recent Advance – Unit IV DISP Standards for – I – ag curve – odium hazards – Unit V SLUE Objectives – SLUE – Dispectives – Subjectives – Subjectives – Unit V SLUE Objectives – Subjectives – Unit V SLUE Objectives – Subjectives – Subjectives – Subjectives – Subjectives – Subjectives –	IARY TREATMENT OF SEWAGE nit Operations and Processes – Selection ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. ONDARY TREATMENT OF SEWAGE election of Treatment Methods – Principal on systems -Trickling filters– Sequencing Stabilization Ponds – - Other treatment es in Sewage Treatment – Construction, OSAL OF SEWAGE Disposal - Methods – dilution – Mass base exygenation and reaeration - Streeter–P - Soil dispersion system. OGE TREATMENT AND DISPOSAL udge characterization – Thickening - Ind High rate digester design- Biogas reads- ultimate residue disposal – recent a	ain V ion of ent – liment liment oper alance helps Desig ecove	Fun Fun tch hod ation mod	atme ciple n tai nctior Rea s -R n and s -R n and del -	ent pr es, fu nks - ctor(S eclan d Mai e - S Land avity dge (Activities Activities Activities Activities Activities BR hatic	sses — ons and onstruction vated SI) — Mem on and F nance as ourification posal — kener- S ditioning	Onsi desi on, C udge bran Reuse pects on of Sew Sludg and	ite sanita ign of se Operatio e Proces ne Biorea e of sew s. river -O rage farm e diges Dewate	9 ation ewag n an 9 ss an actor /age 9 xyge ning - 9 tion -
Unit II PRIM Objectives – Ur Septic tank- Gradination – Ur Gradination – Ur Maintenance as – Unit Maintenance as – Unit Unit III SECC Objectives – Second Objectives – Second Mathematical acration – Waste Recent Advance – Unit IV DISP – Itandards for – Itandards for – Itandards Odium hazards – Stude Unit V SLUE Objectives – Slute Objectives – Slute Unit V SLUE Objectives – Slute Objectives – Slute Mathematical across – Gary, S.K.,	IARY TREATMENT OF SEWAGE nit Operations and Processes – Selection ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Princion on systems -Trickling filters– Sequencial Stabilization Ponds – - Other treatment es in Sewage Treatment – Construction, OSAL OF SEWAGE Disposal - Methods – dilution – Mass back exygenation and reaeration - Streeter–P - Soil dispersion system. OGE TREATMENT AND DISPOSAL udge characterization – Thickening - Ind High rate digester design- Biogas reads- ultimate residue disposal – recent a Environmental Engineering Vol. II, Khar	ion of ent – liment iples, ng Ba nt met Oper alance helps Desig ecove	Fun Fun tch hod ation prin mo n of ry – ces.	atme ciple n tai nctior Rea s -R n and s -R n and del -	ent pr es, fu nks - ctor(S eclan d Mai e - S Lanc avity dge (Actir BR hatio hter I dis	sses — ons and onstruction vated SI) — Memon and Finance as ourification sposal — kener- S ditioning	Onsi desi on, C udge bran Reuse pects on of Sew Sludg and	ite sanita ign of se Operatio Proces ne Biorea e of sew s. river -O rage farm e diges Dewate 3,	9 ation ewag n an 9 ss an actor /age 9 xyge ning - tion - ring -
Unit II PRIM Objectives – Ur Septic tank- Gradination – Gradination reatment units Maintenance as Maintenance as Unit III SECC Objectives – Social Second – Gradination Objectives – Social Second – Gradination Maintenance as Unit III SECC Objectives – Social Second – Gradination ASB – Waste – Gradination Recent Advance Unit IV DISP Garg curve – deologium – deologium odium hazards Unit V SLUE Objectives – Slutandard rate and – Slutandard rate and Iudge drying best EXT BOOK(S) – 1. Garg, S.K., – 2. Duggal K.N –	IARY TREATMENT OF SEWAGE nit Operations and Processes – Selection ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. ONDARY TREATMENT OF SEWAGE election of Treatment Methods – Principal on systems -Trickling filters– Sequencing Stabilization Ponds – - Other treatment es in Sewage Treatment – Construction, OSAL OF SEWAGE Disposal - Methods – dilution – Mass base exygenation and reaeration - Streeter–P - Soil dispersion system. OGE TREATMENT AND DISPOSAL udge characterization – Thickening - Ind High rate digester design- Biogas reads- ultimate residue disposal – recent a	ion of ent – liment iples, ng Ba nt met Oper alance helps Desig ecove advance	Fun Fun tch hod ation mod n of ry – ces.	atme ciple n tar nctior Rea s -R n and s -R n and del -	ent pr es, fu nks - ctor(S eclan d Mai e - S Lanc avity dge (s, Nev and C	Activ BR atic hatic to l dis conc v De o. L	sses — ons and onstruction vated SI) — Memon ance as ourification posal — kener- S ditioning elhi, 2019 td., New	Onsi desi on, C udge bran Reuse pects on of Sew Sludg and 5. 2. Dell	ite sanita ign of se Operatio Proces ie Biorea e of sew s. river -O rage farm e diges Dewate 3, hi, 2014.	9 ation ewag n an 9 ss an actor vage 9 xyge ning - tion - ring -
Unit II PRIM Objectives – Ur Septic tank- Gradination – Gradination reatment units Maintenance as Maintenance as – Gradination Unit III SECO Objectives – Second Chipectives – Second Maintenance as – Gradination Unit III SECO Schended aeration – Second JASB – Waste Recent Advance – Gradination Unit IV DISP Standards for – Gradination ag curve – deo odium hazards – Shut Unit V SLUD Objectives – Shut Itandard rate ar – Garg, S.K., I. Garg, S.K., I. Garg, S.K., J. Punmia, B.	IARY TREATMENT OF SEWAGE nit Operations and Processes – Selection ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Principon on systems -Trickling filters– Sequencing Stabilization Ponds – - Other treatment estabilization Ponds – - Other treatment estabilization Ponds – - Other treatment estabilization Ponds – - Other treatment Stabilization Ponds – - Other treatment OSAL OF SEWAGE Disposal - Methods – dilution – Mass base oxygenation and reaeration - Streeter–P - Soil dispersion system. OGE TREATMENT AND DISPOSAL udge characterization – Thickening - Ind High rate digester design- Biogas reads- ultimate residue disposal – recent at Environmental Engineering Vol. II, Khar <td>ion of ent – liment iples, ng Ba nt met Oper alance helps Desig ecove advance</td> <td>Fun Fun tch hod ation mod n of ry – ces.</td> <td>atme ciple n tar nctior Rea s -R n and s -R n and del -</td> <td>ent pr es, fu nks - ctor(S eclan d Mai e - S Lanc avity dge (s, Nev and C</td> <td>Activ BR atic hatic to l dis conc v De o. L</td> <td>sses — ons and onstruction vated SI) — Memon ance as ourification posal — kener- S ditioning elhi, 2019 td., New</td> <td>Onsi desi on, C udge bran Reuse pects on of Sew Sludg and 5. 2. Dell</td> <td>ite sanita ign of se Operatio Proces ie Biorea e of sew s. river -O rage farm e diges Dewate 3, hi, 2014.</td> <td>9 ation ewag n an 9 ss an actor vage 9 xyge ning - tion - ring -</td>	ion of ent – liment iples, ng Ba nt met Oper alance helps Desig ecove advance	Fun Fun tch hod ation mod n of ry – ces.	atme ciple n tar nctior Rea s -R n and s -R n and del -	ent pr es, fu nks - ctor(S eclan d Mai e - S Lanc avity dge (s, Nev and C	Activ BR atic hatic to l dis conc v De o. L	sses — ons and onstruction vated SI) — Memon ance as ourification posal — kener- S ditioning elhi, 2019 td., New	Onsi desi on, C udge bran Reuse pects on of Sew Sludg and 5. 2. Dell	ite sanita ign of se Operatio Proces ie Biorea e of sew s. river -O rage farm e diges Dewate 3, hi, 2014.	9 ation ewag n an 9 ss an actor vage 9 xyge ning - tion - ring -
Unit II PRIM Objectives – Ur Septic tank- Grament units Aaintenance as Maintenance as Unit III SECC Objectives – Secent Objectives – Secent Maintenance as Unit III SECC Objectives – Secent Market – Waste Recent Advance Unit IV DISP Standards for – I ag curve – deo odium hazards Unit V SLUE Objectives - Slutandard rate ar Iudge drying be EXT BOOK(S) 1. Garg, S.K., 2. Duggal K.N 3. Punmia, B. 2010. EFERENCE(S) 1. Metcalf and New Delhi, J	IARY TREATMENT OF SEWAGE nit Operations and Processes – Selection ey water harvesting – Primary treatment - screens - grit chamber-primary sed pects. DNDARY TREATMENT OF SEWAGE election of Treatment Methods – Princion on systems -Trickling filters– Sequencing Stabilization Ponds – - Other treatment es in Sewage Treatment – Construction, OSAL OF SEWAGE Disposal - Methods – dilution – Mass back exygenation and reaeration - Streeter–P - Soil dispersion system. OGE TREATMENT AND DISPOSAL udge characterization – Thickening - Ind High rate digester design- Biogas reads- ultimate residue disposal – recent a Environmental Engineering Vol. II, Khar ., "Elements of Environmental Engineering C., Jain, A.K., and Jain.A.K., Enviror I Eddy- Wastewater Engineering–Treat	Rain W ion of ent – liment iples, ng Ba nt met Oper alance helps Desig ecove advand nna Pr ing" S nment	Fun atio Fun tch hod ation e prin mod n of ry – ces. Cha cal E and	atme ciple n tar nctior Rea s -R n and s -R n and del - f gra Sluc shers and a Engir	ent pr es, fu nks - ctor(S ecland d Mai e - S Land dge (s, Nev and C neerir use,	Activ BR batic ba	sses — ons and onstruction vated SI) — Memon and F nance as ourification posal — cener- S ditioning elhi, 2019 td., New Vol.II, La	Onsi desi on, C udge bran Reuse pects on of Sew Bludg and 5. 2. Dell axmi	ite sanita ign of se Operatio Proces ne Biorea e of sew s. river -O rage farm ne diges Dewate 3, hi, 2014. Publica	9 ation ewag n an 9 ss an actor /age 9 xyge ning - 9 tion - ring -

3. Gray N.F, "Water Technology", Elsevier India Pvt. Ltd., New Delhi, 2006.

km

Chairman - BoS Dept. of Civil Engg. - ESFC

and the second s

De	partment				R 2019	Semester VI	PC				
(Course Code	Course Name	1. 1973	loui Nee		Credit	Total		u		
1	9CE604	CONCRETE AND HIGHWAY	LT		L	ТР		С	Hours	Mark	s
		LABORATORY	0	0	4	2	60	100			
		ve (s): The purpose of learning th he principles and procedures of te					terials				
• Exp No.		nes: At the end of this course, lea nows the techniques to character Name of	ize	vario	ous	pavemen	t materials	through rel	evai		
1.	4 To	Name of		~		3					
	Test on age					3					
2.	of the Party of the Local Division of the Lo	gregates- specific gravity									
	Test on age										
2.	Test on age	gregates- specific gravity gregates- los angels abrasion test									
2. 3.	Test on age Test on age Test on bite	gregates- specific gravity gregates- los angels abrasion test gregates- water absorption of agg					· 				
2. 3. 4. 5. 6.	Test on age Test on age Test on bitu Test on bitu Test on bitu	gregates- specific gravity gregates- los angels abrasion test gregates- water absorption of agg umen-specific gravity of bitumen umen- penetration test umen- viscosity test									
2. 3. 4. 5. 6. 7.	Test on age Test on age Test on bitu Test on bitu Test on bitu Test on bitu	gregates- specific gravity gregates- los angels abrasion test gregates- water absorption of agg umen-specific gravity of bitumen umen- penetration test umen- viscosity test umen- softening point test									
2. 3. 4. 5. 6. 7. 8.	Test on agg Test on bitu Test on bitu Test on bitu Test on bitu Test on bitu	gregates- specific gravity gregates- los angels abrasion test gregates- water absorption of agg umen-specific gravity of bitumen umen- penetration test umen- viscosity test umen- softening point test umen- ductility test									
2. 3. 4. 5. 6. 7. 8. 9.	Test on age Test on bitu Test on bitu Test on bitu Test on bitu Test on bitu Test on bitu	gregates- specific gravity gregates- los angels abrasion test gregates- water absorption of agg umen-specific gravity of bitumen umen- penetration test umen- viscosity test umen- softening point test umen- ductility test tuminous mixes -stripping test	rega	ates							
2. 3. 4. 5. 6. 7. 8.	Test on age Test on bitu Test on bitu Test on bitu Test on bitu Test on bitu Tests on bitu Tests on bitu	gregates- specific gravity gregates- los angels abrasion test gregates- water absorption of agg umen-specific gravity of bitumen umen- penetration test umen- viscosity test umen- softening point test umen- ductility test	rega	ates	conte	ent					

	Equipments	No of Equipments
1.	Concrete cylinder moulds	10
2.	Concrete Prism moulds	05
3.	Sieves	03
4.	Concrete Mixer	01
5.	Slump cone	03
6.	Flow table	01
7.	Vibrator	01
8.	Trovels and planers	05
9.	JTM – 400 kN capacity	01
10.	Vee Bee Consistometer	01
11.	Aggregate impact testing machine	- 01
12. (CBR Apparatus	01
13.	Blains Apparatus	01
14. I	os - Angeles abrasion testing machine	01
15.	Marshall Stability Apparatus	01
EXT E	BOOK(S):	
1.	M.S.Shetty, Concrete Technology, S.Chand and Co.,	Ltd., NewDelhi, 2003
2.	M.L.Gambhir, Concrete Technology, Tata Mc Graw H	ill Publishing Co., Ltd., New Delhi, 200
REFER	ENCE(S):	6 (0)
		Fm

REFERENCE(S):

Chairman - BoS Dept. of Civil Engg. - ESEC

1.	A.M.Neville, Properties of Concrete, Tata Mc Graw Hill publishers, 2003	12
2.	P.Kumar Mehta and Paulo J.M. Monteiro, Concrete - Micro structure, Properties and	
	Materials, Indian Concrete Institute, Chennai, 1997	

1.

Km I

Department	CIVIL ENGINE	ERING	6			R 2019	Semester VII	EEC
Course Code	Course Name		Hour / Wee	1.24	Credit	Total Hours	Maximu m	
ooue		L	Т	Ρ	С		Marks	
19CE605	COMPREHENSIVE REVIEW	3	0	0	3	45	100	
semeste Course Outco	ourage the comprehend the knowled or of B.E Degree through periodic exerci- omes: At the end of this course, learner or review, prepare and present technolog	ise. s will	be al	ble to	D:			
Guidelines fo	r Evaluation:						1	
	dents will be assessed 100%internally e subject related topics.	throug	gh w	eekly	y test wit	h objectiv	e type quest	ion

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	COMMON TO	O ALL BRANCHI	ES		111563	R 2019	Semester VI	E
Course Code	Course Name		lour Wee	k	Credit	Total Hours	Maximun Marks	Ŋ
		L	Т	P	C	nouro	marito	_
19TPS06	QUANTITATIVE APTITU LOGICAL REASONIN		0	2	0	30	100	
Course Object								
 To ascerta 	ns the occurrence of an eve	ent on the basis o	of alr	eady	present	information		
	a models to represent the di			math	nematical	reasoning.	8	
	e the work capacity by choc							
	h time, speed and distance			ncep	ts.			
	ne how various phenomena		1	1.1.				_
	mes: At the end of this cou							
	utcome of an event develop	이 것은 아이에 이 이 가지 않는 것은 것은 아이에 가지 않는 것이 같이 했다.			ility.			
	he area and surface volume				own and (Parrolating	the Concept	of
	I the concepts of Times and	a work and Pipes	and	CIS	ern and C	Jonelaung	the Concept	5 01
both. up.		d Distance and a		nto	of Pooto c	nd Stroom	c	
	oncepts of Time, Speed and					inu Stream	5.	
	e cause and effect of proble				ig.	- Kananananan		6
UNIT 1 PRO	BABILITY , PERMUTATION Rolling an unbiased dice –	Topping a fair a		Dre	wing a o	ard from a	nack of well	0
-ROBABILITY:	Picking up balls of certain	- Tossing a fair c		taini	ng halls o	of different	colors	
	Solution of the second se	lords with letters	_ Ar	rand	ements o	f nerson in	a row -	
	f books on a shelf.	forus with letters	- 71	any	emento o	r person in	arow	
	S: Formation of committee	- Selection of a	iesti	ons	from que	stion nane	rs	
UNIT 2 ARE			1001	0110	nom quo	otion paper		6
	Perimeter – Important points	about triangle	Qua	drila	teral – Fa	st track tec	chniques.	-
OLUME: Cubo	chineter important pointo	a nou inancie -		anna				
heir formulas.	ids – Cube – Cylinder – Co	ne – Frustum of a	a coi	ne –	Sphere -	Hemisphe	re – Pyramid	_
	ids – Cube – Cylinder – Co	ne – Frustum of	a coi	ne –	Sphere -	Hemisphe	re – Pyramid	-
		ne – Frustum of a	a coi	ne –	Sphere -	Hemisphe	re – Pyramid	- 6
UNIT 3 TIME	& WORK, PIPE & CISTER	ne – Frustum of a	a coi	ne –		Hemisphe	re – Pyramid	6
UNIT 3 TIME	& WORK, PIPE & CISTER RK: Introduction – Basic cor starting and ending.	ne – Frustum of a NS ncepts – Leaving	a cor and	ne – joini	ng – Alte	Hemisphe	re – Pyramid s – In betwee	6 en
UNIT 3 TIME	& WORK, PIPE & CISTER RK: Introduction – Basic cor starting and ending.	ne – Frustum of a NS ncepts – Leaving	a cor and	ne – joini	ng – Alte	Hemisphe	re – Pyramid s – In betwee	6 en
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS	& WORK, PIPE & CISTER RK: Introduction – Basic cor starting and ending. TERNS: Introduction - Basi	ne – Frustum of a NS ncepts – Leaving ic concepts – Ca	a cor and pacit	joini y of	ng – Alte	Hemisphe	re – Pyramid s – In betwee	6 en
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS UNIT 4 TIME TIME AND DIST	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basi & DISTANCE, TRAINS, BC ANCE: Definition – Averag	ne – Frustum of a NS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar	and pacit	joini y of S over	ng – Alter the total I red is sam	Hemisphe mative day iters –Wate	ere – Pyramid s – In betwee er flow in the ce covered is	6 en tan 6
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS UNIT 4 TIME TIME AND DIST	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basi & DISTANCE, TRAINS, BC ANCE: Definition – Averag	ne – Frustum of a NS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar	and pacit	joini y of S over	ng – Alter the total I red is sam	Hemisphe mative day iters –Wate	ere – Pyramid s – In betwee er flow in the ce covered is	6 en tan 6
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS UNIT 4 TIME TIME AND DIST different – Stopp and distance be	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Average bage time per hour for a train tween two moving bodies.	ne – Frustum of a NS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w	a cor and pacit EAM ice c	joini y of S over wo d	ng – Alter the total I ed is sam ifferent m	Hemisphe mative day iters –Wate ne – Distan odes of tra	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time	6 en tan 6
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS UNIT 4 TIME TIME AND DIS different – Stopp and distance be PROBLEMS ON	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Averag bage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts -	ne – Frustum of a INS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae	a cor and pacit EAM ice c	joini y of S over wo d	ng – Alter the total I ed is sam ifferent m	Hemisphe mative day iters –Wate ne – Distan odes of tra	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time	6 en tan 6
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS UNIT 4 TIME TIME AND DIS different – Stopp and distance be PROBLEMS OF crossing each of	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Averag bage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho	ne – Frustum of a INS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae prtcuts.	a cor and pacif EAM ice c ith tv – Di	joini y of S over wo d	ng – Alter the total I ed is sam ifferent m nt types o	Hemisphe mative day iters –Wate ne – Distan odes of tra of objects –	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains	6 en tan 6
UNIT 3 TIME TIME AND WOI days the works a PIPES AND CIS UNIT 4 TIME TIME AND DIS different – Stopp and distance be PROBLEMS ON crossing each o BOATS AND S	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Average tage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sp	ne – Frustum of a INS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae prtcuts.	a cor and pacif EAM ice c ith tv – Di	joini y of S over wo d	ng – Alter the total I ed is sam ifferent m nt types o	Hemisphe mative day iters –Wate ne – Distan odes of tra of objects –	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains	6 en tan 6
UNIT 3 TIME TIME AND WOI days the works a PIPES AND CIS UNIT 4 TIME TIME AND DIS different – Stopp and distance be PROBLEMS ON crossing each o BOATS AND S directions – imp	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Average tage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sportant formulae.	ne – Frustum of a INS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae prtcuts. peed of man (boar	and pacit AM ice c ith tw – Di t and	joini y of S over wo d ffere	ng – Alter the total I red is sam ifferent m nt types o eams) - M	Hemisphe rnative day iters –Wate ne – Distan odes of tra of objects – loving sam	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains ne and oppos	6 en tan 6
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS UNIT 4 TIME TIME AND DIS TIME AND S TIME	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Averag bage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sportant formulae. EMENT - CONCLUSION, SON	ne – Frustum of a RNS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae ortcuts. beed of man (boar ARGUMENTS, C	and pacit And pacit And ace c ith tw – Di t and CAUS	ne – joini y of S over wo d ffere I stre SE 8	ng – Alter the total I red is sam ifferent m nt types o eams) - M & EFFECT	Hemisphe mative day iters –Wate ne – Distan odes of tra of objects – floving sam	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains he and oppos	tan 6 6 6 6
UNIT 3 TIME TIME AND WOR days the works a PIPES AND CIS UNIT 4 TIME TIME AND DIS different – Stopp and distance be PROBLEMS ON crossing each of BOATS AND S directions – imp UNIT 5 STAT REAS	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Average tage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sportant formulae. EMENT - CONCLUSION , SON	ne – Frustum of a INS ncepts – Leaving ic concepts – Ca DATS AND STRE ie speed – Distar n – Time taken w – Basic formulae produts. need of man (boa ARGUMENTS, C nent to be true - T	a cor and pacif EAM ice c ith tw – Di t and CAU	ijoini y of S over wo d ffere I stre SE 8	ng – Alter the total I red is sam ifferent m nt types o eams) - M EEFFECT usions to	Hemisphe rnative day iters –Wate ne – Distan odes of tra of objects – foving sam T, ASSERT gether - Lo	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains he and oppos	tan 6 6 6 6
UNIT 3 TIME TIME AND WOR days the works a PIPES AND CIS UNIT 4 TIME TIME AND DIST different – Stopp and distance be PROBLEMS ON crossing each of BOATS AND S directions – imp UNIT 5 STAT REAS STATEMENT A	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Averag bage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sportant formulae. EMENT - CONCLUSION , SON ND CONCLUSION: Statem ND ARGUMENTS: Argume	ne – Frustum of a NS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae ortcuts. beed of man (boa ARGUMENTS, C ment to be true - T ents strong with re-	and pacifi pacifi and pacifi ce c ith two - Di t and CAUS	joini y of S over wo d ffere I stre SE 8	ng – Alter the total I ed is sam ifferent m nt types o eams) - M E EFFECT usions to the state	Hemisphe rnative day iters –Wate ne – Distan odes of tra of objects – foving sam r, ASSERT gether - Lo ment.	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains he and oppos	tan 6 6 6 6
UNIT 3 TIME TIME AND WOI days the works PIPES AND CIS UNIT 4 TIME TIME AND DIST different – Stopp and distance be PROBLEMS OF Crossing each of BOATS AND ST directions – imp UNIT 5 STAT REAS STATEMENT A CAUSE AND EI	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Average bage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sportant formulae. TEMENT - CONCLUSION , SON ND CONCLUSION: Statem ND ARGUMENTS: Argume FECT: Cause and effect re	ne – Frustum of a INS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae ortcuts. beed of man (boar ARGUMENTS, C nent to be true - T ents strong with re- elationship betwe	a cor and pacifi EAM ce c ith ty – Di t and CAU wwo c espeen th	joini y of S over wo d ffere I stre SE 8 SE 8	ng – Alter the total I ed is sam ifferent m nt types o eams) - M EEFFECT usions to the state o statem	Hemisphe rnative day iters –Wate ne – Distan odes of tra of objects – foving sam r, ASSERT gether - Lo ment. ents.	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains he and oppos TON & gically follow	tan 6 6 6 6 8
UNIT 3 TIME TIME AND WOI days the works a PIPES AND CIS UNIT 4 TIME TIME AND DIS different – Stopp and distance be PROBLEMS ON Crossing each of BOATS AND S COSSING EACH OF BOATS AND S COSSING EACH OF BOATS AND S COSSING EACH OF COSSING EA	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Averag bage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sportant formulae. EMENT - CONCLUSION , SON ND CONCLUSION: Statem ND ARGUMENTS: Argume FECT: Cause and effect re ID REASON: Assertion(A) a	ne – Frustum of a RNS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae ortcuts. beed of man (boa ARGUMENTS, C nent to be true - T ents strong with re- elationship betwe and Reason(R) –	a cor and pacifi EAM ce c ith ty – Di t and CAU wwo c espeen th	joini y of S over wo d ffere I stre SE 8 SE 8	ng – Alter the total I ed is sam ifferent m nt types o eams) - M EEFFECT usions to the state o statem	Hemisphe rnative day iters –Wate ne – Distan odes of tra of objects – foving sam r, ASSERT gether - Lo ment. ents.	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains he and oppos TON & gically follow	tan 6 6 6 6 8
UNIT 3 TIME TIME AND WOI days the works a PIPES AND CIS UNIT 4 TIME TIME AND DIS different – Stopp and distance be PROBLEMS ON Crossing each of BOATS AND S COSSING EACH OF BOATS AND S COSSING EACH OF BOATS AND S COSSING EACH OF COSSING EA	& WORK, PIPE & CISTER RK: Introduction – Basic constanting and ending. TERNS: Introduction - Basic & DISTANCE, TRAINS, BC ANCE: Definition – Average bage time per hour for a train tween two moving bodies. I TRAINS: Basic concepts – ther in both directions – Sho TREAMS: Introduction – Sportant formulae. TEMENT - CONCLUSION , SON ND CONCLUSION: Statem ND ARGUMENTS: Argume FECT: Cause and effect re	ne – Frustum of a RNS ncepts – Leaving ic concepts – Ca DATS AND STRE le speed – Distar n – Time taken w – Basic formulae ortcuts. beed of man (boa ARGUMENTS, C nent to be true - T ents strong with re- elationship betwe and Reason(R) –	a cor and pacifi EAM ce c ith ty – Di t and CAU wwo c espeen th	joini y of S over wo d ffere I stre SE 8 SE 8	ng – Alter the total I ed is sam ifferent m nt types o eams) - M EEFFECT usions to the state o statem	Hemisphe rnative day iters –Wate ne – Distan odes of tra of objects – foving sam r, ASSERT gether - Lo ment. ents.	ere – Pyramid s – In betwee er flow in the ce covered is nsport – Time Two trains he and oppos TON & gically follow	tan 6 6 6 6 8

TOTAL: 30 HOURS

REFERENCES:

- 1. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Fourth Edition, Tata McGraw-Hill Publishing Company Ltd, 2012
- 2. Arun Sharma, How to prepare for Data Interpretation for the CAT, First Edition, Tata McGraw-Hill Publishing Company Ltd, 2012.
- 3. R.V.Praveen,"Quantitative Aptitude and Reasoning"Third Edition, PHI Learning ,2016.
- 4. Dr.R S Aggarwal, Quantitative Aptitude, Revised and Enlarged Edition, S.Chand Publishing Company Ltd, 2017.
- 5. Arun Sharma "How to Prepare for Quantitative Aptitude" Eight Edition, McGraw Hill Education, 2018.
- 6. "Reasoning and Aptitude" for GATE and ESE Prelims, Made Easy Publication, 2020.

Chairman - BoS Dept. of Civil Engg. - ESEC

Chairman - BoS Dapt of Civil English 6660

	CIVIL ENGINEE	R 2019	Semester VII	P				
Course	Course Name		Hours /		Credit	Total Hours	Maximu m	
Code		L	Wee T	P	С	nours	Marks	
19CE701	ESTIMATION AND COSTING	3	0	2	4	60	100	
To impa foundation To make To know To know To study To unde Course Outco Perform Apply dif Carry ou Demons Estimates Brickwork - Woo Juantities for co Stimates of Bu Unit I COS	the students understand the methods of about the rate analysis and bill prepara about the specification writing rstand the valuation of land and building mes: At the end of this course, learners rate analysis of materials of construction ferent types of estimates in different situ t analysis of rates and bill preparation at trate the concepts of specification writing the total cost of construction and plan CS OF ESTIMATION of work in Building - Earthwork - Ceme od work - Ironwork - Flooring - Finishing tetailed and abstract estimates - An ildings. ST ESTIMATION OF QUANTITIES OF vation - Sand filling - Lime concrete - Conforced brickwork - Stone masonry - Pl	gation of esti- ations gs s will k n uation t diffe g of buil ent Co g work appro MATE emen asteri	n of mati be al srent lding boncr k Sta boxim ERI /	the ing the ble to loca a and a and a ate ALS Pair	tions Carry ou vork - R. rd units- method	f buildings ut valuatio C.C. work Principles of Estima C work - C poring - W	n of assets - Stonewo of working ating - Deta Cement mort	1 k le 1 ar
vashing - Distervorks - AC sheetvorks - AC she	empering - Varnishing - Woodwork - Cet roofing, etc. IMATION OF BUILDINGS Ind framed structures - Calculation of colour washing and painting / varnishin f - Estimating of a septic tank, soak pit - Sewer line - Tube well - Open well CIFICATION AND TENDERS e of rates - Analysis of rates - Specific rations - Tenders -Tamilnadu Tender and Document - Contracts - Types o egal requirements. UATION	quant g for - Sani - Esti cation Trans	ities shoj itary imat is - spar	of k os, ro and e of source	orickwork coms, re water su bitumino ces - Pre Act - e	, RCC, P sidential b upply insta us and co eparation e-tender -	work for R.0 CC, Plasteriouilding with allations - Wa ement concr of detailed a Preparation	1 ng fla te t an s
vashing - Distervorks - AC sheeverks	At roofing, etc. IMATION OF BUILDINGS and framed structures - Calculation of colour washing and painting / varnishing f - Estimating of a septic tank, soak pit - Sewer line - Tube well - Open well CIFICATION AND TENDERS e of rates - Analysis of rates - Specific ations - Tenders -Tamilnadu Tender and Document - Contracts - Types of egal requirements. UATION bse of valuation, types of property- Depresence, Gross income, Outgoing and N al method of valuations - Typical problet on Building.	quant g for - Sani - Esti cation Trans f con reciati let inc	ities shop itary imat spar tract	of k os, ro and e of sourcy cs - Sinki	orickwork coms, re- water su bitumino ces - Pre Act - e Drafting ng fund, pitalized	, RCC, P sidential k upply insta us and co eparation -tender - of contra- Leasehold value and	work for R.0 CC, Plasteri puilding with allations - Wa ement concr of detailed a Preparation ct document d and freeho	1 ng flateete 1 no s 1 d

 Kohli, D.D and Kohli, R.C., "A Text Book of Estimating and Costing (Civil)", S.Chand& Company Ltd., 2004

REFERENCE(S):

- 1 Gurcharan Singh and Jagdish Singh "A Text Book of Estimating, Costing and Valuation", Standard Publishers Distributors, Delhi, 1998
- 2 K. S. Randwala and K.K. Rangwala "Elements of Estimating and Costing", Chavotar Publishing House, India, 1995

TEXT BOOK(S):

- William weaver Jr.James M. Gare, Matrix Analysis Framed Structures, Third edition Tata McGraw Hill publishing company limited, 2007.
- SS Bhavikatti ,Structural Analysis , ,Third edition, Volume I Second Edition Volume II , Vikas Publishing House (p) ltd ,2009.
- 3. Vaidyanathan.R, Perumal.P, Comprehensive Structural Analysis, Vol I & II Laxmi Publications, 2008. **REFERENCE(S):**
- 1. C.K. Wang, Intermediate structural analysis Tata McGraw Hill publishing company limited, 1986.
- Rajasekaran S and Sankarasubramaniyan R Computational structural mechanics, Prentice Hall of India, New Delhi ,2008.

Chairman - Bis Fant of The Early - EBRC

	CIVIL ENGINE	R 2019	Semester VII					
Course Code	Course Name	Hours / Week			Credit	Total Hours	Maximu m	
Code		L	Т	P	С	1	Marks 100 asurements ar and analyse th ny. of structures. me in the prac	5
19CE702	STRUCTURAL DYNAMICS AND EARTHQUAKE ENGINEERING	3	0	0	3	45	100	
 To introc the facto To impa dynamic To under To under Course Outco Knowled Students 	will be able to apply the developed	f earth n seisr ns ne ucture he ase rs will mode nd solv natura alyse metho g – De n of and fo	qua nic a cess s. be a l dev ve co l cala data odolo egree Equa	kes, areas ary ic de ble to velop ompli amity a and ogies e of ation	s. to under sign met o: ment. cated pro / in the d d to apply freedom s of mo	stand and hodology. oblem. amage of y the sam safe and - idealisa tion of S	d analyse t structures. e in the pra stable desig tion of struc	he ctica gn c 9 ture m -
Two degree of	TIPLE DEGREE OF FREEDOM SYS	TEM			11-11			
	freedom system - modes of vibration	ns – fe	ormu	Iatio	n of equ	ations of	motion of n	9 nulti
vibrations - dam	om (MDOF) system - Eigen values ar ped and undamped MDOF system – M MENTS OF SEISMOLOGY	nd Eig Iodal s	en v supe	rpos	rs – Res ition met	ponse to hods	free and for	nulti ced
vibrations - dam Unit III ELE Elements of Eng Theory – Charac	om (MDOF) system - Eigen values ar ped and undamped MDOF system – M	nd Eig Iodal s	en v supe e – F	rpos Plate	rs – Res ition met Tectonic	ponse to hods theory –	free and for Elastic rebo	nulti ced 9 und
vibrations - dam Unit III ELE Elements of Eng Theory – Charac of earthquakes -	om (MDOF) system - Eigen values ar ped and undamped MDOF system – M MENTS OF SEISMOLOGY jineering Seismology - Causes of Earth cteristic of earthquake – Estimation of	nd Eig Iodal s nquak earthq	en v supe e – F uake	Plate Plate	rs – Res ition met Tectonic	ponse to hods theory –	free and for Elastic rebo	nulti ced 9 und
vibrations - dam Unit III ELE Elements of Eng Theory – Charac of earthquakes – Unit IV RES Effect of earthqu and Prestressed	om (MDOF) system - Eigen values ar ped and undamped MDOF system – M MENTS OF SEISMOLOGY ineering Seismology - Causes of Earth cteristic of earthquake – Estimation of - Spectral Acceleration.	nd Eig Iodal s nquak earthq HQU/ Behavi Ioadir	en v supe e – F uake AKE our	Plate Plate par of R Pinc	rs – Res ition met Tectonic ameters einforcec	ponse to hods - theory – - Magnitur I Cement ect – Bouc	free and for Elastic rebo de and inten Concrete, S hinger Effec	9 und sity 9 teel ts –
vibrations - dam Unit III ELE Elements of Eng Theory – Charac of earthquakes - Unit IV RES Effect of earthquand Prestressed Evaluation of earthquakes.	om (MDOF) system - Eigen values ar ped and undamped MDOF system – M MENTS OF SEISMOLOGY ineering Seismology - Causes of Earth cteristic of earthquake – Estimation of - Spectral Acceleration. PONSE OF STRUCTURES TO EART take on different type of structures – If Concrete Structure under earthquake	nd Eig Iodal s nquak earthq HQU/ Behavi Ioadir	en v supe e – F uake AKE our	Plate Plate par of R Pinc	rs – Res ition met Tectonic ameters einforcec	ponse to hods - theory – - Magnitur I Cement ect – Bouc	free and for Elastic rebo de and inten Concrete, S hinger Effec	9 und sity 9 teel ts –
vibrations - dam Unit III ELE Elements of Eng Theory – Characo of earthquakes - Unit IV RES Effect of earthquand Prestressed Evaluation of earthquakes. Unit V DES Causes of dam Guidelines for E	om (MDOF) system - Eigen values ar ped and undamped MDOF system – M <u>MENTS OF SEISMOLOGY</u> ineering Seismology - Causes of Earth cteristic of earthquake – Estimation of - Spectral Acceleration. <u>PONSE OF STRUCTURES TO EART</u> take on different type of structures – H Concrete Structure under earthquake inthquake forces as per IS:1893 – 200	nd Eig Iodal s nquak earthq Behavi Ioadin D2 - R chitect ake res	en v supe e – F uake our ng – espo ural sista	Plate Plate par of R Pinconse	rs – Res ition met Tectonic ameters einforcec ching effe Spectra- cepts as esign for	ponse to hods theory – - Magnitue I Cement ect – Bouc Lessons I s per IS:4 masonry	free and for Elastic rebo de and inten Concrete, S hinger Effec learnt from p 1326 – 199 and Reinfor	9 und asity 9 teel ts – past 9 3 –
Vibrations - dam Unit III ELE Elements of Eng Theory - Characo of earthquakes - Unit IV RES Effect of earthquakes. Unit V RES Evaluation of earthquakes. Unit V DES Causes of dam Guidelines for E Cement Concret TEXT BOOK(S)	om (MDOF) system - Eigen values ar ped and undamped MDOF system – M <u>MENTS OF SEISMOLOGY</u> ineering Seismology - Causes of Earth cteristic of earthquake – Estimation of - Spectral Acceleration. PONSE OF STRUCTURES TO EART take on different type of structures – If Concrete Structure under earthquake inthquake forces as per IS:1893 – 200 IGN METHODOLOGY age – Planning considerations / Ara arthquake resistant design – Earthqua e buildings – Later load analysis – Des	nd Eig Iodal s nquak earthq Behavi Ioadin 02 - Ro chitect ake res sign an	en v supe e – F uake our ng – espo ural sista	of R Plate Plate par of R Pinc onse con	rs – Res ition met Tectonic ameters einforcec ching effe Spectra- cepts as esign for ng as pe	ponse to hods theory – - Magnitud I Cement ect – Bouc Lessons I Lessons I s per IS:4 masonry r IS:13920	free and for Elastic rebo de and inten Concrete, S hinger Effec learnt from p 1326 – 199 and Reinfor 0 – 1993.	9 und asity 9 teel ts – oast 9 3 – ced

 Agarwal. P and Shrikhande. M., "Earthquake Resistant Design of Structures", Prentice Hall of India Pvt. Ltd. 2007

REFERENCE(S):

1 Biggs, J.M., "Introduction to Structural Dynamics", McGraw Hill Book Co., New York, 1964

2 Dowrick, D.J., "Earthquake Resistant Design", John Wiley & Sons, London, 2009

³ Paz, M. and Leigh.W. "Structural Dynamics – Theory & Computation", 4th Edition, CBS Publishers & Distributors, Shahdara, Delhi, 2006.

Department	CIVIL ENGINEERING			R 2019	Semester VII PC		
Course Code	Course Name	Hours / Wee			Credit	Total Hours	Maximu m
Code		L	Т	Ρ	С		Marks
19CE703	COMPUTER AIDED DESIGN AND DRAFTING LABORATORY	BORATORY 0 0 4 2 60		100			
 To acqu 	c tive (s): The purpose of learning this cou ire hands on experience in design and p ructures normally encountered in Civil En	repa	ratio	n of		I drawings	s for concrete /
	omes: At the end of this course, learners					1	2
practiceTo expension	erience in design andpreparation of str tered inCivil Engineering practice.						
	and drawing of RCC cantilever and cou	nter	fort 1	type	retaining	walls wit	h reinforcement
details	,						
	of solid slab and RCC Tee beam bridges	for I	RCI	oadi	ng and re	inforceme	ent details
	and drafting of circular and rectangular R						
		100					
1.00	of plate Girder Bridge - Truss Girder bridg	ges -	- Dei	talleo	a Drawing	gs includir	ig connections
5. Design	of hemispherical bottomed steel tank						
EXT BOOK(S):						
1. Krishnaraju	u,N. "Structural Design & Drawing, Unive	rsitie	s Pr	ess,	2009		
Laxmi Pub	.C., Ashok Kumar Jain, Arun Kumar Jai lications Pvt. Ltd., 2003.	n, "C	omp	orehe	ensive De	esign of S	teel Structures,
EFERENCE(S					000 0		010
1 Krishnamu	rthy, D., "Structural Design & Drawing – ' and Veena Gore, "Limit State Design	Vol.	Stee	a III, el St	CBS Pul ructures"	IS800-20	010. 07 Structures

Carrier an England Science

Π,

Department	partment CIVIL ENGINEERING						Semester VII	EEC
Course	Course Name	Hours / Week Credit			Credit	Total Hours	Maximu	
Code		L	Т	Р	С	nouis	m Marks	
19CE704	DESIGN PROJECT	0	0	4	2	60	100	

Course Objective (s): The purpose of learning this course is

- To impart and improve the design capability of the student.
- This course conceives purely a design problem in any one of the disciplines of Civil Engineering; e.g., Design of an RC structure, Design of a waste water treatment plant,
- Design of a foundation system, Design of traffic intersection etc. The design problem can be allotted to either an individual student or a group of students comprising of not more than four. At the end of the course the group should submit a complete report on the design problem consisting of the data given, the design calculations, specifications if any and complete set of drawings which follow the design.

Course Outcomes: At the end of this course, learners will be able :

- To Formulate a real world problem, identify the requirement and develop the design solutions
- To Express the technical ideas, strategies and methodologies
- To Utilize the new tools, algorithms, techniques that contribute to obtain the solution of the project
- On completion of the design project students will have a better experience in designing various design problems related to Civil Engineering
- To Prepare report and present the oral demonstrations

The students in a group of 3 to 4 works on a topic approved by the head of the department under the guidance of a faculty member and prepares a comprehensive project report after completing the work to the satisfaction of the supervisor. The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The project work is evaluated based on oral presentation and the project report jointly by external and internal examiners constituted by the Head of the Department.

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEE	RING	R.			R 2019	Semester VII	EE C
Course	Course Name	Hours / Week Credit			Credit	Total Hours	Maximu	
Code		L	Т	Р	С	nours	VII	
19CE705	INDUSTRIAL TRAINING	0	0	0	1		100	1

Course Objective (s): The purpose of learning this course is

 To train the students in field work so as to have a firsthand knowledge of practical problems in carrying out engineering tasks. To develop skills in facing and solving the field problems.

Course Outcomes: At the end of this course, learners will be able :

- To understand the intricacies of implementation textbook knowledge into practice
- To understand the concepts of developments and implementation of new techniques

STRATEGY:

The students individually undertake training in reputed civil engineering companies for the specified duration. At the end of the training, a report on the work done will be prepared and presented. The students will be evaluated through a viva-voce examination by a team of internal staff.

Chairman - BoS Dept. of Civil Engg. - ESEC

Continue but base of divit Enory -Enfect

Department	CIVIL ENGIN	EERING	*:	icit.	ev mid:1	R 2019	Semester VIII	EE C
Course	Course Name			rs / eek	Credit	Total	Maximu	
Code		L	Т	Р	С	Hours	Mark	S
19CE801	PROJECT WORK	0	0	12	6	300	100	1.2.2.0
challenging	es: of completion of the project v practical problems and find solution							o any
faculty mer satisfaction	t works on a topic approved by nber and prepares a compreher . The student will be evaluated b xaminers including one external e	nsive pro based on	ject the	repo	ort after o	completing	g the work t	o the
2-2 . ricursia	4)50		:4		(4)	Eim	A	

Depar	tment	CIVIL ENGINEE	RING				R 2019	Semester VI	OE
				lour		Credit	Total	Maxim	um
Course	Code	Course Name	L	Wee T	к Р	C	Hours	Mar	
19CE	Y01	GREEN BUILDINGS	3	0	0	3	45	100	
•• 1	mpart knowl	(s): The purpose of learning this edge on the sustainable construct concept of green building			es				
• k • E • S	dentify the re Explain the g Select a suita Select a suita Ilustrate gree	a: At the end of this course, learned equirements of green buildings areen building design process and able sustainable landscaping and able sustainable hydrologic landso en building commissioning and im IABLE CONSTRUCTION AND G	l assess energy caping a plemen	men strat and e tatio	it tegie energ n.	s for gree ly strateg	ies for gree		9
Ethics a resource	and sustain concerns -	ability - Increased CO2 trade-S Green building movement and o	Sustaina	ble	cons	struction	- Major e	environmenta	al ar
Unit II	BREEN F	BUILDING PROCESS AND ASSI	ESSME	NT					9
Unit III and ar efficienc design s strategie manage	SUSTAIN nd landscap y Storm wa strategies - es - Smart b ment studies	t standards - Building rating sys IABLE LANDSCAPING AND EN be approaches for green buildi ter management - Heat island n Building envelope - Active m uildings and energy managemen	ERGY ings -su nitigation echanic it systen	istaii n - E al s ns-C	nable Build yster ase	e landsca ing energ ns -Inno study on	apes - La gy issues vative ene	ndscaping v - Building er ergy optimiz	9 vaten nergy atior nergy
		G HYDROLOGIC SYSTEM AND						etrotomu C	9
building material	materials is s and produ	uilding water supply strategy - Hi sues and priorities - LCA of buil acts - Construction and demolition ng material loops in practice-Case	ding ma n waste	teria ma	als ai nage	nd produce ment De	cts - Emer sign for de	ging constru	ction
Unit V	GREEN E	BUILDING IMPLEMENTATION				cshi ba	a ha ba		9
Essentia green bu high per	ls of buildir uildings - Qu	ning - Health and safety planning ng commissioning - Costs and b uantifying green building costs - een buildings	penefits	of b	ouildin	ng comm	issioningT	he economi	cs of
1. Ch	arles. J. Ki ns, Inc., Ne	bert, Sustainable Construction: w Jersey, 2008						and the second second	ey 8
		losle and M. Schwarz, Green Bui ag Berlin Heidelberg, 2010.	ilding: G	uide	book	for Susta	ainable Aro	chitecture,	
3. Je	rry Yudelsor	N I I O D "I I O O	ices: Str	ateg	ies fo	or succes	s, Elsevier	r, 2008	
	rry Vudelson	n, Marketing Green Building Servi							12
4. Th	e Fairmont I	n, Marketing Green Building Servi n, Marketing Green Buildings: G Press Inc., 2006. Dean, Green by Design: Creat						-	

Departme	ent	CIVIL ENG	INEERI	NG			R 2019	Semester VI	OE
Course		Course Name		ours Wee		Credit	Total	Maximu	
Code		Course Name	L	Т	Р	С	Hours	Marks	\$
19CEY	1382475	HAZARDOUS WASTE MANAGEMENT	3	0	0	3	45	45 100	
): The purpose of learning th he type, nature and treatme			ous w	astes.			
• An stak • Abili	insight in eholders i ty to plan ty to desi	At the end of this course, lean nto the characterization of under the national legal fram minimization of hazardous w gn facilities for the storage	f hazar ework vastes	dous	wa	stes and			
1. SS2220 1.292-10	NTRODU								10
		finition- Regulatory aspects gories - Analysis of hazardo							
hazardous s		•	Jus was		ilysic		biogreat to		
Construction of the second	STRUCTURE AND ADDRESS	OUS WASTES MANAGEMI storage and transport- TSI	N. ALEXANDERSKI'L		n ni	in de la		1. A.	10
Encapsulati landfills-Site remediation Unit III B Biomedical Handling a	on-Pyroly selectio – onsite a BIOMEDIC waste-De nd Collect	and thermal treatment of sis and Incineration–Biologi ns-design and operation-H and offsite Techniques AL WASTE MANAGEMEN finition– Regulatory aspect tion–Segregation and labe al. Infection control Practices	ical Trea IW redu T s of Bio ling- Tre	atmei uctioi medi	nt of n- R ical V	Hazardo ecycling Waste. Sc	us Waste and reus ources–Cla	Hazardous e–Hazardous	waste Site 9 Vaste
		TIVE WASTE MANAGEME							9
radioactive Characteriza	wastes- ation – Tre	Definition–Measurement of Transuranic Waste-and eatment and Control - Radia	their i	mana	agem	ent-Uran	ium Min		leve ilings 8
		f E-I Waste management, V	Vaste ch	arac	torict	ics- Gene	ration_ (collection - Ma	100000
	n-Transpo	rt– Treatment and dispos							
TEXT BOOK	KS:								
1. Hazar	dous was	e management Charles A.V	Ventz. S	econ	d edi	tion 1995	McGraw I	Hill Internation	nal.
		te management Michael [2010.Waveland Press.	D. La G	ierga	i, Ph	ilipL Buc	kingham,	Jeffrey C. E	vans
3. Criteria	a for haza	rdous waste landfills–CPCB	guidelir	nes 2	000	3	. Soles		
REFERENC	E(S):								
Publis	hers,	us waste management, "						dial and	1.11
2. Integra A.Vigi		waste management Geor	ge Tech	obar	noglo	ous, Hilary	y Theisen	& Sammuel	
3. Stand Hill 19	ard handl 97	book of Hazardous waste t						1.0	
		Solidwaste in developing co	ountries	by Fr	rank	Flint off, V	VH Oregic	nal publicatio	n.
1. 4	1.1.1	States of a property of		1			f		

Chairman - BoS

Department	B.E CIVIL EN	IGINE	RING	3		R 2019	Semester VI	OE
	Course Name	Hour	s / W	eek	Credit	Total	Maximu	m
Course Code	Course Name	L	Т	Ρ	С	Hours	Marks	
19CEY03	DISASTER PREPAREDNESS AND PLANNING	3	0	0	3	45	100	1
Course Objective	ve (s): The purpose of learning this an exposure on the various elemen	s cours	e is to atural	o disast	ters			

Impart knowledge on measurement, effect and management techniques for different disasters

Course Outcomes: At the end of this course, learners will be able to:

- Characterize the various natural and man- made disasters
 - Identify the various types of disasters in coastal and marine and techniques to control marine pollution
- Explain the causes, effects of atmospheric pollution and land pollution
- Analyze the inter-relationship between disasters and development
- Interpret the importance of various disaster management cycle and framework

Unit I INTRODUCTION TO DISASTERS

Definition - Disaster, Hazard, Vulnerability, Resilience, Risks - Disasters: Types of disasters - Earthquake, Landslide, Flood, Drought, Fire, Forest Fire, Industrial and Technological Disasters, Climate Change-Classification, Causes, Impacts - Do's and Don'ts during disaster - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change

Unit II EARTHQUAKES AND TSUNAMI

Earthquakes - causes of earthquakes – effects - plate tectonics - seismic waves - measures of size of earthquakes - earthquake resistant design concepts. Tsunami – causes – effects – undersea earthquakes – landslides – volcanic eruptions – impact of sea meteorite – remedial measures – precautions – case studies

Unit III FLOODS AND DROUGHTS

Climatic Hazards – Floods - causes of flooding - regional flood frequency analysis – flood control measures - flood routing - flood forecasting - warning systems. Droughts – causes - types of droughts - effects of drought – mitigation - case studies

Unit IV LANDSLIDES AND SLOPE STABILITY: MANAGEMENT

Landslides - Causes - principles of stability analysis – remedial and corrective measures for slope stabilization – mitigation – cause studies.

Unit V DISASTER PREPAREDNESS AND MANAGEMENT

Preparedness: Monitoring of Phenomena Triggering a Disaster or Hazard; Evaluation of Risk: Application of Remote Sensing, Data from Meteorological and other Agencies, Media Reports: Governmental and Community Preparedness. NDLA, National Disaster Management.

TEXT BOOK(S):

- R. Nishith, Singh AK, Disaster Management in India: Perspectives, issues and strategies, 1st Edition, New Royal book Company,2007.
- strategies, 1 Edition, New Royal book Company,20

REFERENCE(S):

- 1. Manual on natural disaster management in India, M C Gupta, NIDM, New Delhi.
- 2. J Michael Duncan and Stephan G Wright, Soil Strength and Slope Stability,2nd edition John Wiley & Sons, Inc, 2005.

9

9

9

9

Department	CIVIL ENGINEER	RING	1			R 2019	Semester VI	0
Course Code	Course Name		Hour / Wee		Credit	Total Hours	Maximu m	E.
ooue		L	Τ	Ρ	С		Marks	2
19CEY04	MASS TRANSPORTATION SYSTEMS	3	0	0	3	45	100	
 To enha 	c tive (s): The purpose of learning this cou ance the knowledge on function of public t art knowledge on mass transportation syst	trans			e role of	governme	ent units	
Analyz Unders Identify Better Knowle Unit I	omes: At the end of this course, learners the four various modes of mass transport stand the Acquisition of skills on mass trans the cost benefit ratios of transport system knowledge on planning of transit systems edge on developments in public transport RODUCTION	ortat nspo ms b atior	ion ortati oy dif	on s fere	ystems nt metho			9
uided way sys	tation systems - Mass rapid transit systems, cabin taxi, dual mode bus - Para to ablic transport SS TRANSPORTATION SYSTEM							m -
		- T			-		D.	9
	role of Transit - Recent Trends Mas							
	s - Spatial - Temporal and Behavioral -							
	ransportation Planning - Demand Surveys				ented lar	nd use dev	velopment.	
	SIGN AND EVALUATION OF MASS TRA Planning - Performance Evaluation of M							9
Making, - Evalu Ferminals and the Dispatch Policy Operational and	ation and Selection Methods - Selection heir functions - Design, Typical Characte , Vehicle Requirements, Spacing of Bus Management Issues - Reserved Bus La ANSIT PLANNING	Pro ristio	ocedi cs pos,	ures Sch - R	- Econo eduling, s oute Spa	mic Evalu Service Ar acing and	ation Metho nalysis, Vehi Performanc	ds. cle
lexible transit -	efinition - Shuttle systems - Corridors - T Individual public transportation system -						stic cases or	nly
And the second second second	BLIC TRANSIT							9
ystem characte nd stopping po	public transit - History - Personal pub eristics - Mass transit definitions and class licy - Schedule development.							
EXT BOOK(S) 1. Grey G.E. EFERENCE(S)	& Hoel, LA, Public Transportation? Prenti	ce H	Iall, E	Engl	ewood C	liffs, N.J	- MILLO TH	
	•	ngine	eerin	g, P	rentice H	all of Ind	lia, New Del	
1. C. Jotin Ki 2003	nisty and B. Kent Lall, Transportation Er							hi,
2003 2. Hutchinson	, B.G., Principles of Urban Transport Syst						w York, 1974	
 2003 Hutchinson M. J. Bruto 	, B.G., Principles of Urban Transport Syst n, Introduction to Transportation Planning	, Hu	tchir	nson	, London	, 1992		1
 2003 Hutchinson M. J. Bruton Vuchic V.R Cliffs, New 	, B.G., Principles of Urban Transport Syst	, Hu nd T	tchir echr	nson nolog	, London gy, Prent	, 1992 ice Hall, Iı		1

Begum, S., Rasul, M. G., & Akbar, D, An Investigation on Thermo Chemical Conversions of Solid
Waste for Energy Recovery. World Academy of Science, Engineering and Technology, 62, 624-30.scholar.waset.org/1307-6892/9976, 2012.

Kim

Chairman - BoS Dept. of Civil Engg. - ESEC

Chaimh to - Bo3
 Dept. of Givit England Birl

Department	OPEN ELECTIVES	5				R 2019	Semester VI	OE
Course Code	Course Name		lour Wee		Credit	Total	Maxim	
		L	Τ	Ρ	C	Hours	Mar	'ks
19CEY05	TRANSPORT AND ENVIRONMENT	3	0	0	3	45	100	
 The ob 	tive (s): The purpose of learning this course jective of this course is to create an awa s on the environment and society.			over	view of t	he impact	of Transport	ation
 Unders Get kno Unders the plan Predict Unit I 	omes: At the end of this course, learners we stood the impact of Transportation projects owledge on methods of impact analysis ar stand environmental Laws on Transportation nning stage. and assess the impact of transportation p CODUCTION	on nd th on P oroje	the enerration of the energy o	envir pplic cts a	onment. ations. nd the mi			oted in
Environmental I Historical Devel							ortation Proje	
the second s	HODOLOGIES	1						8
	– Screening and Scoping – Methods of Independent of Scoping – Methods of Screening and Scoping – Methods of Scoping – Methods of Scoping – Methods of Scoping – Scoping – Methods of Scoping – Methods of Scoping – Methods of Scoping – Scoping – Methods of Scoping – Methods of Scoping – Scoping	mpa	ct Ar	nalys	is – Appli	cations -	Appropriate	
nethodology. Unit III ENVI	RONMENTAL IMPACT, PREDICTION A		224	FSS	MENT			10
	Assessment of Impact of Transportation P					s on water	air noise la	1.
acquisition and i	resettlement, Socio economic impact, indi	gen	ous p	beop	le, aesthe	etics, healt	h and safety,	
energy studies,	IRC guidelines.							
WASHING AND DESCRIPTION	RONMENTAL MITIGATION AND MANA							9
	impact on Natural and Man-made Environ vironmental Management Plan, Energy C							
Unit V EIA C	CASE STUDIES						9	9
IA Case Studie	es on Highway, Railway, Airways and Wat	erwa	ays F	Proje	cts			
EXTBOOKS:								
1. Canter, L.F	R., Environmental Impact Assessment, Mo	Gra	w Hi	II, Ne	ew Delhi,	1996.	1.5	
	ad Congress (IRC), Environmental Impact							
^{3.} Delhi, 2006								
^{4.} Bombay, 2		Sci	ence	and	d Manag	ement, S	hroff Publish	ners,
REFERENCE(S								1
States and the second s	u and David, C.Hooten, Environmental Im pany, 1995	pac	t Ana	alysis	s Handbo	ok, McGra	w Hill	
	Banks, Introduction to Transportation Eng							
	nk, A Handbook on Roads and Environme							
	jan Trivedi, International Encyclopedia of and Environment, New Delhi, 1998	Ecol	ogy	and	Environm	ent - El/(,)	Indian Institu	ute

· the state

Department	CIVIL ENGINEE	RING				R 2019	Semester VI
Course	Course Name		lour / Wee		Credit	Total Hours	Maximu m
Code		L	Т	Ρ	С		Marks
19CEY06	CONTRACT MANAGEMENT	3	0	0	3	45	100
Course Object To aware Impart ki Legal rec Course Outco Prepare Infer the Explain Summa Choose Jnit I CON dian Contract pecifications - contractor - Int Jnit II TEN Fender reques Specifications - Changes in C	tive (s): The purpose of learning this contends on contracts for construction indu- nowledge on tender preparation, tender quirements and Labor Regulations. mes: At the end of this course, learners contract documents including standard procedures of bidding and accepting of the different types of property rights and rize the duties and powers of arbitrators the laws related to construction induster TRACTS Act – Need – Provisions - Scope Types of contract documents used for roduction to BOT and BOOT projects - DERS at For Proposals - Bids & Proposal - Critical /Red Flag conditions - Contra- contracts - Differing site conditions Wrong practices in contracting (Bid sho	ering s will d and of tend d pat s. ry e for const EPC ls - ract a - Co	is to proc be a inte ders ents mod truct con	ble to rnati difica ion - tracts Eval d & escal	arbitrations / o: onal norr ations / Contrac s. uation - Notice to ation -	improvem t procurer Contract Proceed Delays, S	lure and laws nent - Contra nent - Selections t Conditions
troduction –Int ecrets - Law r fringement - P atents act - Pro Jnit IV ARE rbitration and aws – Agreeme owers and duti ase studies.	AL REQUIREMENTS ellectual property - Main forms of IP- elating to copyright in India – Owners iracy in internet – Remedies and proc cess of obtaining patent – Application, ITRATION litigation procedure - preparation, sett ents – Subject matter violations - Appoi es of arbitrator - Enforcement of award	ship o edure exam tleme intme d – Co	of co es in inati nt, e nt of osts	pyrig Indi ion, o evide arbi - Arb	ghts and a - Law oppositio nce - Co trators - 0	assignme relating to n and sea omparison Conditions	ent - Criteria p patents und lling of patents of patents of Actions a s of arbitration
Unit V LAW	IS APPLICABLE TO CONSTRUCTION		a la facto de la compañía de la comp				
ct - Contract La	es Act - Workmen's Compensation Ac abour Act - Minimum Wages Act - Inter- from time to time.	t - En -state	Mig	yer's rant	Liability Workme	Act - Pay n Act - BC	ment of Wage CW Act - oth
EXT BOOK(S)		Engl	000	ing	Contract	e in India	all Ath Editio
M.M.Tripath EFERENCE(S 1. Joseph T. E	Bockrath, —Contracts and the Legal E	-					
	Graw-Hill, New York, 2010. ze, —Construction Contractsll, 3rd Editi	ion, N	lcGr	aw-F	lill, New	York, 201	e f

 To expose the sustainability To emphasis t To prepare the 	Course Name WEALTH FROM WASTE s): The purpose of learning this co		lours Neel T	k	Credit	Total	Maxim	
Course Objective (s To expose the sustainability To emphasis t To prepare the	s): The purpose of learning this co	L 3	Т	10.00		247.02		
Course Objective (s • To expose the • sustainability • To emphasis t • To prepare the	s): The purpose of learning this co	3		Ρ	С	Hours	Ма	rks
 To expose the sustainability To emphasis t To prepare the 	and the strategy of the strategy and the strategy of the strat		0	0	3	45	100	
 micro-level to r 	students to the need of reuse and he significance of energy and reso students to design and optimize s macro-level	d recyc ource r	ling ecov	/ery	from was	te materia	ls	
 Explain the constraints Summarize the Compare aero Interpret the precycling 	At the end of this course, learners mposition and attributes of wastes ermo-chemical conversion of energi bic and anaerobic methods of reso inciples of industrial waste manag	s and n gy fron ource r gement	netho n RE recov t and	ods o DF ar very Leco	of resource nd fuel ble from orga nomic fea	ending anic waste asibility foi	s	
	NTALS OF SOLID WASTE MAN	100		- 1				8
Examples - Waste man Unit II THERMOC Thermo-chemical methods - C Cogeneration for CHP Cogeneration - Carbon Carbon	ods - Waste collection systems - Unagement hierarchy - Waste mana HEMICAL CONVERSION hods for energy production - Detai verview of RDF - Methods of fuel - Methods to improve fuel efficien zation for briquettes and pellets –	ils of in blendi ncy - G	nt po ncine ng - as cl	eratio Fuel lean	n, gasific composi up techno	ation and tion and a ologies - F	pyrolysis - S nalysis - undamentals	s of
	CAL CONVERSION			_	0	1011		10
rinciples of fermentat	Anaerobic digestion - Design aspe ion - Concept of MFC - Trans-este waste for hydrogen production.							
	L WASTE MANAGEMENT							10
aper, glass, metals, r onstruction wastes - I	waste management - Types of inc ubber and e-wastes - Partial repla Economics of energy production fr ollution control mechanisms in indu	cemer om wa	nt of aste	mate	erials in c	ement ind	ustry - Reuse	
	WASTE DISPOSAL						the second se	7
	I conditioner and fertilizer - Waste zardous wastes - Recovery of ma						s of landfill -	
EXTBOOKS:		3.14				1.1		
 Energy and Reso W. McDonough, 	Priyangshu M, Wealth from Wast burces Institute, New Delhi, ISBN: M. Braungart, Cradle to Cradle: R s, ISBN-10: 0865475873, 2002.	97881	799	3424	1, 2011.			ates:
	ts, Energy from Waste - An Evalua	ation o	of Co	nuor	ion Tool			heila
	ISBN 0853343527. DOI: https://c							

	0139603786, 2005.
۷.	M. Datta, Waste Disposal in Engineered Landfills, Narosa Publishing House, ISBN-10: 8173191409,1997.
3.	Begum, S., Rasul, M. G., & Akbar, D, An Investigation on Thermo Chemical Conversions of Solid Waste for Energy Recovery. World Academy of Science, Engineering and Technology, 62, 624- 30.scholar.waset.org/1307-6892/9976, 2012.

knlef

Chairman - 835 Depe an Chairteaga - F380

Department	CIVIL ENGINEER	RING			R 2019	Semest er VII	OE
Course Code	Course Name	Hours/V k		Credit	Total Hours	Maxin m	
19CEY08	RISK AND SAFETY MANAGEMENT	L T 3 0	P 0	C 3	45	Mar 100	KS
	ctive (s): The purpose of learning this co		U	J	45	100	
	ore the various risk and safety managem		icces	sful com	pletion of (Constructio	on
Course Outco	omes: At the end of this course, learners	will be a	ble to	D:	1.1		
	ne basics risk assessment for industrial s						
	hazards and its remedial measures in the			and part of the second second second			
	the safety measures in handling construct						
 Indicate pollutior 	the importance of environmental safety	and the r	ole o	rindividu	al in preve	ention Of	
	e fire safety installation and maintenance	of sprink	ler in	stallation			
	RODUCTION	or sprink		Stanation			9
	nt and control- Legal Basis for Risk Asse	essment	- Hat	zards re	medial me	asures - 9	
	cy- Motivation of employees - Workpla						
	onsibilities - Training for Safety and He						
ersonnel.	ç ,				0		
and the second se	STRUCTION SAFETY CONSTRUCTION				. C		9
Quality and Sa	fety Concerns in Construction -Organiz	ing for C	uality	y and Sa	afety - Wo	rk and Ma	ateria
	Importance of Safety during project con						
precaution to h	azardous atmosphere and materials - S	atety fac	ilities	at const	truction sit	es - Train	ina t
and and all off and	I amount in the first state of the second stat						
	d operation staff - Emergency rescue eq					Injuries -	
mplications.		luipment	- Co:	sts of Co	nstruction	Injuries -	Lega
mplications. Unit III SAFI	ETY MEASURES IN HANDLING CONS	uipment	- Co	sts of Co	nstruction	•	Lega
mplications. Unit III SAFI General require	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction	uipment TRUCTIC Handling	- Co DNEC of C	sts of Co QUIPMEN oncrete f	nstruction ITS orms and	shoring Sa	Lega 9 afety
mplications. Unit III SAFI General require neasures for ho	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem	TRUCTIC Handling nents OSI	- Co DNEC of C HA (C	sts of Co QUIPMEN oncrete f Occupatio	nstruction ITS orms and onal Safety	shoring Sa y and Heal	Lega 9 afety
mplications. Unit III SAFI General require neasures for ho Administration)	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess	TRUCTIC Handling nents OSI	- Co DNEC of C HA (C	sts of Co QUIPMEN oncrete f Occupatio	nstruction ITS orms and onal Safety	shoring Sa y and Heal	Lega 9 afety
mplications. Unit III SAFI General require neasures for ho Administration) Electrical safety	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem	TRUCTIC Handling nents OSI	- Co DNEC of C HA (C	sts of Co QUIPMEN oncrete f Occupatio	nstruction ITS orms and onal Safety	shoring Sa y and Heal	Lega 9 afety
Implications. Unit III SAFI General require neasures for ho Administration) Electrical safety Unit IV ENVI Scope and Impo	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ	TRUCTIC Handling nents OSI ment for mental in	- Cos of C HA ((erect	Sts of Co QUIPMEN oncrete f Docupation ing RC 8 assesses	nstruction ITS orms and onal Safety Steel me nent (EIA)	shoring Sa y and Heal mbers -	Lega 9 afety thy 9
Implications. Unit III SAFI General require neasures for ho Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p	TY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob	TRUCTIC Handling hents OSI ment for mental in bal warm	- Co of C HA (C erect	sts of Cc QUIPMEN oncrete f Dccupation ing RC & assessm greenhou	nstruction NTS orms and onal Safety Steel me nent (EIA) se effect,	shoring Sa y and Hea mbers - urbanizatio	Lega 9 afety thy 9 on -
Implications. Unit III SAFI General require neasures for ho Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governmental p	TY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob ment in environment protection- National	TRUCTIC Handling hents OSI ment for mental in bal warmi Committe	- Cos of C HA (C erect npact ing, g ee or	Sts of Co OUIPMEN Oncrete f Doccupation ing RC 8 assessing greenhout of environ	nstruction ITS forms and forms and forms and seel me nent (EIA) se effect, mental Pla	shoring Sa y and Hea mbers - urbanizatio	Lega 9 afety thy 9 on -
Implications. Unit III SAFI General require neasures for ho Initiation) Iectrical safety Unit IV ENVI Goope and Impo nvironmental p Nois of Governmental A	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob ment in environment protection- National appraisal Committee (EAC) - Role of indi	TRUCTIC Handling hents OSI ment for mental in bal warmi Committe	- Cos of C HA (C erect npact ing, g ee or	Sts of Co OUIPMEN Oncrete f Doccupation ing RC 8 assessing greenhout of environ	nstruction ITS forms and forms and forms and seel me nent (EIA) se effect, mental Pla	shoring Sa y and Hea mbers - urbanizatio	Lega 9 afety thy 9 on - ;P)-
Implications. Unit III SAFI General require SAFI neasures for ho Safety Init IV ENVI Cope and Impo Sope and Impo Invironmental p Sole of Governmental A Unit V FIRE	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob ment in environment protection- National oppraisal Committee (EAC) - Role of indi SAFETY INSTALLATION	TRUCTIC Handling nents OSI ment for mental in bal warmi Committe vidual in	- Cos of C HA (C erect npact ing, g ee or preve	Sts of Co QUIPMEN oncrete f Docupation ing RC 8 assessing reenhout n environ ention of	nstruction ITS orms and onal Safety Steel me nent (EIA) se effect, mental Pla pollution.	shoring Sa y and Heal mbers - urbanizatio anning (NC	Lega afety thy 9 on - :P)- 9
Implications. Unit III SAFI General require neasures for how neasures for how neasures for how Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governmental A Implication Unit V FIRE The extinguishing Fire extinguishing	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob nent in environment protection- National Appraisal Committee (EAC) - Role of indi SAFETY INSTALLATION og appliances -Selection requirements, in	TRUCTIC Handling nents OSI ment for mental in bal warmi Committe vidual in	- Cos of C HA (C erect ing, c ee or preve	Sts of Co OUIPMEN Oncrete f Docupation ing RC & assessing reenhout environ ention of mainten	nstruction ITS orms and onal Safety Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp	shoring Sa y and Heal mbers - urbanizatio anning (NC	Lega 9 afety thy 9 on - :P)- 9 tem
Implications. Unit III SAFI General require Safety Unit IV ENVI Scope and Impo Safety Cole of Governi Safety Invironmental p Safety Unit V FIRE The extinguishin Maintenance of	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob ment in environment protection- National Appraisal Committee (EAC) - Role of indi SAFETY INSTALLATION og appliances -Selection requirements, in sprinkler installation - Pressure gauges,	TRUCTIC Handling hents OSI ment for mental in bal warmi Committe vidual in Installation	- Cos of C of C HA ((erect npact ing, g ee or preve	assessing reenhout ention of mainten control v	nstruction ITS forms and forms and forms and seel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir	shoring Sa y and Heal mbers - urbanizatio anning (NC rinkler sys re protectio	Lega 9 afety thy 9 on - ;P)- 9 tem on
Implications. Unit III SAFI General require SaFI General require SaFI General require SaFI General require SaFI Mainistration Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governmental A Implication Unit V FIRE The extinguishin Maintenance of equirements for Safety	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob ment in environment protection- National Appraisal Committee (EAC) - Role of indi SAFETY INSTALLATION og appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S	TRUCTIC Handling hents OSI ment for mental in bal warm Committe vidual in Installation Systems,	- Cos of C of C HA (C erect ing, g ee or preve	Sts of Co QUIPMEN oncrete f Doccupation ing RC & assessm greenhout ention of mainten control v ually ope	nstruction ITS forms and forms and forms and seel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir	shoring Sa y and Heal mbers - urbanizatio anning (NC rinkler sys re protectio	Lega 9 afety thy 9 on - :P)- 9 tem on
Implications. Unit III SAFI General require neasures for hore Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governmental A Implication Init V FIRE Fire extinguishin Aaintenance of equirements for equirements for etectors, Fire etectors, Fire etectors, Fire etectors	ETY MEASURES IN HANDLING CONS ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob nent in environment protection- National oppraisal Committee (EAC) - Role of indi SAFETY INSTALLATION ag appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b	TRUCTIC Handling hents OSI ment for mental in bal warm Committe vidual in Installation Systems,	- Cos of C of C HA (C erect ing, g ee or preve	Sts of Co QUIPMEN oncrete f Doccupation ing RC & assessm greenhout ention of mainten control v ually ope	nstruction ITS forms and forms and forms and seel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir	shoring Sa y and Heal mbers - urbanizatio anning (NC rinkler sys re protectio	Lega 9 afety thy 9 on - ;P)- 9 tem on
Implications. Unit III SAFI General require neasures for how Init IV Environ Init IV ENVI Cope and Impo Environmental p Role of Governmental A Init V Init IV FIRE The extinguishin Initenance of equirements for equirements equirements equirements equirements equirements equiremen	ETY MEASURES IN HANDLING CONST ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ collution - Sustainable development- Glob ment in environment protection- National oppraisal Committee (EAC) - Role of indi SAFETY INSTALLATION ag appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b DING	TRUCTIC Handling hents OSI ments OSI ment for mental in bal warm Committe vidual in Installation Systems, puildings,	- Cos of C of C HA (C erect ing, g ee or preve a and on of Manu hote	assessing assessing reenhout ention of mainten control v ually ope ls etc.	nstruction ITS orms and onal Safety a Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir rated fire a	shoring Sa y and Heal mbers - urbanizatio anning (NC - rinkler sys re protectio alarms - Sr	Lega 9 afety thy 9 9
Implications. Unit III SAFI General require neasures for how Init IV Environ Init IV ENVI Cope and Impo Environmental p Cole of Governmental p Environmental p Init V FIRE The extinguishin Maintenance of equirements for Environs for etectors, Fire e E URTHER REA Eafety Activities	ETY MEASURES IN HANDLING CONST ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ bollution - Sustainable development- Glob nent in environment protection- National Appraisal Committee (EAC) - Role of indi SAFETY INSTALLATION ag appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b DING of ILO (International Labour Organisatio	TRUCTIC Handling nents OSI ments OSI ment for mental in bal warm Committe vidual in Installation Installation Systems, puildings, n) Job sit	- Cos of C of C HA (C erect ing, g ee or preve a and on of Manu hote	assessing assessing reenhout ention of mainten control v ually ope ls etc.	nstruction ITS orms and onal Safety Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir rated fire a	shoring Sa y and Heal mbers - urbanizatio anning (NC - rinkler sys re protectio alarms - Sr y installatio	Lega 9 afety thy 9 9
Implications. Unit III SAFI General require neasures for how Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governmental A Implication Unit V FIRE Fire extinguishin Administration Administration FIRE Scope and Impo Environmental p Role of Governmental A Implication Unit V FIRE Fire extinguishin Maintenance of equirements for Implications, Fire e Curther REA Safety Activities Safety Activities Fire Detector Ra	ETY MEASURES IN HANDLING CONST ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob nent in environment protection- National oppraisal Committee (EAC) - Role of indi SAFETY INSTALLATION appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b DING of ILO (International Labour Organisation adiation detector- Case studies on fire Ha	TRUCTIC Handling nents OSI ments OSI ment for mental in bal warm Committe vidual in Installation Installation Systems, puildings, n) Job sit	- Cos of C of C HA (C erect ing, g ee or preve a and on of Manu hote	assessing assessing reenhout ention of mainten control v ually ope ls etc.	nstruction ITS orms and onal Safety Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir rated fire a	shoring Sa y and Heal mbers - urbanizatio anning (NC - rinkler sys re protectio alarms - Sr y installatio	Lega 9 ifety thy 9 on - :P)- 9 tem - on noke
Implications. Unit III SAFI General require neasures for how Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governmental A Implication Unit V FIRE The extinguishin Administration Administration Environmental p Role of Governmental A Implication Unit V FIRE The extinguishin Administration Administration Environmental A Unit V FIRE The extinguishin Administration Administration Environmental A Unit V FIRE The extinguishin Administration Administration Environmental A Unit V FIRE The extinguishin Administration Administration Environmental A Constructions Fire extinguishin Administration Environmental A Extremely Activities Environmental A Extremely Activities Environmental A <	ETY MEASURES IN HANDLING CONST ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ pollution - Sustainable development- Glob nent in environment protection- National oppraisal Committee (EAC) - Role of indi SAFETY INSTALLATION appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b DING of ILO (International Labour Organisation adiation detector- Case studies on fire Ha	TRUCTIC Handling hents OSI ments OSI ment for mental in bal warmi Committe vidual in Installation Installation Systems, buildings, n) Job sita azards in	- Cos of C of C HA (C erect npact ing, g ee or preve a and on of Manu hote the cos	sts of Co QUIPMEN oncrete f Doccupation ing RC 8 assessing reenhout n environ ention of mainten control v ually ope Is etc. nditions. onstructi	nstruction NTS orms and onal Safety a Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir rated fire a Fire Safety on industr	shoring Sa y and Heal mbers - urbanizatio anning (NC - rinkler sys re protectio alarms - Sr y installatio	Lega 9 afety thy 9 on - P)- 9 tem on sons-
Implications. Unit III SAFI General require neasures for how Init IV Eneral require neasures for how neasures for how Init IV ENVI Scope and Impo Environmental p Role of Governmental A Implication Unit V FIRE The extinguishin Finte extinguishin Maintenance of equirements for etectors, Fire e Implication URTHER REA EFERENCE(S) 1. Risk asses Kingdom Z. 2. Rao.S and	ETY MEASURES IN HANDLING CONST ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ bollution - Sustainable development- Glob nent in environment protection- National Appraisal Committee (EAC) - Role of indi SAFETY INSTALLATION of appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b DING of ILO (International Labour Organisation idiation detector- Case studies on fire Ha	TRUCTIC Handling hents OSI ments OSI ment for mental im bal warmi Committe vidual in Installation Installation Systems, buildings, m) Job site azards in	- Cos of C of C HA (C erect ing, g ee or preve a and on of Manu hote the col the col	assessing assessing concrete f Doccupation ing RC & assessing reenhout an environ ention of mainten control v ually ope ls etc. anditions. onstruction	nstruction NTS orms and onal Safety Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir rated fire a Fire Safety on industr	shoring Sa y and Heal mbers - urbanizatio anning (NC - rinkler sys re protectio alarms - Sr y installatio y	Lega 9 afety thy 9 0n - FP)- 9 tem on sons-
Implications. Unit III SAFI General require neasures for how Administration) Electrical safety Unit IV ENVI Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governation Environmental p Init V FIRE Fire extinguishir Maintenance of Init extensors, Fire extinguishir Fire extinguishir Adatest Activities Fire extinguishir Adatest Activities Fire extinguishir Adatest Activities Fire extinguishir Alatest Activities Fire extinguishir Alatest Activities Fire extinguishir Alatest Activities Fire extinguishir Alatest Activities Fire extended on the second	ETY MEASURES IN HANDLING CONST ments of safety in concrete construction oisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ collution - Sustainable development- Glob ment in environment protection- National oppraisal Committee (EAC) - Role of indi SAFETY INSTALLATION ag appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b DING of ILO (International Labour Organisation diation detector- Case studies on fire Ha sement- A Practical Guide, 1993, Instituti Saluja H.L., Electrical Safety, Fire Safet	TRUCTIC Handling nents OSI ment for mental in bal warmi Committe vidual in Installation Installation Systems, puildings, n) Job site azards in on of Occord y Engine	- Cos on EC of C HA (C erect ing, g ee or preve a and on of Manu hote the c cupat	assessing assessing concrete f Doccupation ing RC & assessing reenhout an environ ention of mainten control v ually ope ls etc. anditions. onstruction	nstruction NTS orms and onal Safety Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir rated fire a Fire Safety on industr	shoring Sa y and Heal mbers - urbanizatio anning (NC - rinkler sys re protectio alarms - Sr y installatio y	Lega 9 afety thy 9 on - ;P)- 9 tem noke
Implications. Unit III SAFI General require neasures for how Administration) Electrical safety Unit IV ENVI Scope and Impo Environmental p Role of Governmental P Implications Unit V FIRE The extinguishin Maintenance of equirements for etectors, Fire extinguishin Gafety Activities FIRE Correctors, Fire extinguishin Etectors, Fire extinguishin Aaintenance of Equirements for equirements for Etectors, Fire extinguishin Cafety Activities Fire Detector Ration Cafety Activities Eterence(S) 1. Risk asses Kingdom Cafety Activities 2. Rao.S and Khanna Pu Cafety Activities 3. Grundy, J. 4. R.K. Jain &	ETY MEASURES IN HANDLING CONST ments of safety in concrete construction bisting and erection of prefabricated elem for Prestressing Operations Risk Assess in construction site. RONMENTAL SAFETY ortance of Environmental safety- Environ bollution - Sustainable development- Glob nent in environment protection- National Appraisal Committee (EAC) - Role of indi SAFETY INSTALLATION og appliances -Selection requirements, in sprinkler installation - Pressure gauges, buildings and riser system- Fire alarm S extinguishing appliances in multi storied b DING of ILO (International Labour Organisation idiation detector- Case studies on fire Ha sement- A Practical Guide, 1993, Instituti Saluja H.L., Electrical Safety, Fire Safet ublishers, first edition, 1998	TRUCTIC Handling nents OSI ments OSI ment for mental in bal warmi Committe vidual in stallation Installation Systems, buildings, n) Job site azards in on of Occo y Engine	- Cos of C of C HA (C erect ing, c ee or preve a and on of Manu hote cupat ering 2006	ats of Co QUIPMEN oncrete f Dccupation ing RC 8 assessing reenhout environ ention of mainten control v ually ope ls etc. nditions. onstruction ional Saf	Instruction ITS orms and onal Safety Steel me nent (EIA) se effect, mental Pla pollution. ance – Sp alves – Fir rated fire a Fire Safety on industr rety and He ety Manag	shoring Sa y and Heal mbers - urbanizatio anning (NC - rinkler sys re protectio alarms - Sr y installatio y ealth, Unit	Lega 9 afety thy 9 on - P)- 9 tem on sons-

Department	CIVIL ENGINEERIN	١G				R 2019	Semester VII	OE
Course Code	Course Name		lour Wee		Credit	Total	Maxim	
		L	Т	Ρ	С	Hours	Mar	ks
19CEY09	PROJECT FORMULATION AND APPRAISAL	3	0	0	3	45	100	
selection acquai	ive (s): opective of the course is to make the st on, and implementation and review the c nt the students with the application of erial problems in order to select the project	apita mat	al ex	penc	liture inve	estments.	This also ain	ns to
 Studen technic 		npute	er co	des	for any	physical p		
	RODUCTION TO PROJECT FORMULATI							9
in its performan	projects, Importance of project formulation ce; scientific management, lifecycle of pro nancial appraisal, payback period, IRR, D	oject	; deta	ailed	project re	gement; re eport, and	asons for she feasibility stu	ortfal Idies
	JECT FORMULATIONS	. ,		1				9
for project ident	tion: definition, objectives; Stages of proje ification and formulation; Feasibility studie ofit analysis; Project appraisal and report.	ct fo es, ir	rmul iput a	ation analy	and their sis, finan	r significar cial cost-b	ice; Methodo enefit analys	logy is,
	JECT RISK APPRAISALS							9
	sures of project risk, sensitivity Analysis, s on Tree Analysis, UNIDO and little Mirele				lysis, Bre	ak Even A	nalysis, Simu	ulatio
Unit IV PRO	JECT IMPLEMENTATION AND MONITO	DRIN	IG					9
monitoring: me	entation, stages of implementation, Tea aning objectives and significance; Monit verrun and under runs, unit index techniqu	oring	ork, g tec	acto hniq	rs in pro ues: integ	ject imple grated rep	mentation; F orting, Miles	Proje tone
	JECT EVALUATIONS							
TORNAR AND AND A TORNAR AND A TORNAR AND A TORNAR AND A	JECTEVALUATIONS			1.21				9
oroject evaluati	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar nal development projects.	ppro	oach sis, s	and ocial	steps, Life -cost ben	e of a proje efit analys	ect; Techniqu	les o
oroject evaluati urban and regio	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar	ppro	oach sis, s	and ocial	steps, Life -cost ben	e of a proje efit analys	ect; Techniqu	ies o
project evaluati urban and regic TEXTBOOKS:	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar	nalys	sis, s	ocial	-cost ben	efit analys	ect; Techniqu is; case stud	ies o ies in
TEXTBOOKS: 1. Chandra I McGraw-I REFERENCE	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar nal development projects. P., 2009, Projects: Planning, Analysis, Fin till Publishing. S):	anci	sis, s ng, li	ocial mple	-cost ben	efit analys	ect; Techniqu is; case stud v, 7th Ed. Ta	ies o ies in ta
roject evaluati urban and regio TEXTBOOKS: 1. Chandra I McGraw-I REFERENCE 1. Meredith Wiley & S	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar nal development projects. P., 2009, Projects: Planning, Analysis, Fin dill Publishing. S): J.R. & Mantel S.J., Jr., 2000, Project Mana ons.	anci	ng, li nent:	ocial mple	-cost ben mentation lanageria	efit analys n & Reviev I Approach	ect; Techniqu iis; case stud v, 7th Ed. Ta n, 4th Ed. Joł	ies o ies ir ta
roject evaluati urban and regio TEXTBOOKS: 1. Chandra I McGraw-I REFERENCE 1. Meredith Wiley & S 2. Patel B.M Publishing	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar nal development projects. P., 2009, Projects: Planning, Analysis, Fin dill Publishing. S): J.R. & Mantel S.J., Jr., 2000, Project Mana ons. ., 2000, Project Management: Strategic Fi g House Pvt. Ltd.	anci ager inan	ng, li nent: cial f	ocial mple : A M Planr	-cost ben mentation lanageria hing Exan	efit analys n & Reviev I Approach nination &	ect; Techniqu iis; case stud v, 7th Ed. Ta n, 4th Ed. Joł	ies o ies ir ta
project evaluati urban and regio TEXTBOOKS: 1. Chandra I McGraw-H REFERENCE 1. Meredith Wiley & S 2. Patel B.M Publishing 3. Finnerty J	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar nal development projects. P., 2009, Projects: Planning, Analysis, Fin dill Publishing. S): J.R. & Mantel S.J., Jr., 2000, Project Mana ons. , 2000, Project Management: Strategic Fi d House Pvt. Ltd. . D., 1996, Project Financing: Asset-Base	anci ager inan d Fir	ng, linent: cial F	ocial mple : A M Planr ial E	-cost ben mentation lanageria ning Exan ngineerin	efit analys n & Reviev I Approach nination & g, Wiley	ect; Techniqu is; case stud v, 7th Ed. Ta n, 4th Ed. Joh Control, Vika	ta nn
project evaluati urban and region TEXTBOOKS: 1. Chandra I McGraw-H REFERENCE 1. Meredith Wiley & S 2. Patel B.M Publishing 3. Finnerty J 4. Newbolc Press.	on: meaning, objectives, scope, stages, a on: input analysis, financial cost-benefit ar nal development projects. P., 2009, Projects: Planning, Analysis, Fin dill Publishing. S): J.R. & Mantel S.J., Jr., 2000, Project Mana ons. ., 2000, Project Management: Strategic Fi g House Pvt. Ltd.	anci ager inan d Fii	ng, li nent: cial f nanc Lane	ocial mple : A M Planr ial E	-cost ben mentation lanageria ning Exan ngineerin	efit analys n & Reviev I Approach nination & g, Wiley	ect; Techniqu is; case stud v, 7th Ed. Ta n, 4th Ed. Joh Control, Vika	ta nn

De hi

Department	CIVIL ENGINEERIN	IG			100	R 2019	Semester VII	OE
Course Code	Course Name		lour Wee		Credit	Total	Maxin	
		L	Т	Ρ	С	Hours	Ма	rks
19CEY10	INTEGRATED WATER RESOURCE MANAGEMENT	3	0	0	3	45	100	
 Studymann They and Course Outcor There with The study They will Unit I CONT Water as a globy development – C Unit II WATE Economic view of valuation method Case studies. resources manage 	Objective (s): dents will be introduced to the role of dis- hagement of water resources. y will be exposed to global food security regulatory settings, in the context of IWF mes : At the end of the course the stu- ill be a paradigm shift in attitude of the stu- lents will gain knowledge about economic l gain a broad understanding of the comp EXT FOR IWRM hal issue: key challenges and needs – complexity of the IWRM process – Examin ER ECONOMICS f water issues: economic characteristics Is – Water economic instruments, policy Pricing: distinction between values and gement: PPP objectives, PPP options, other and PDP and W/PM	/ an RM ude ude c as blexi Def ning of v opti d c	d pu nt w nts to pect ities initio the vater ons f harg	blic- ill be owar s of of de n of key goo for w es -	private pa e able to ds interdia water. ealing with IWRM w elements d and ser rater cons	articipation understar sciplinary water res vithin the of IWRM vices – No ervation a sector inv	issues and nd research ources• pro broader cor process onmarket mo nd sustainal olvement in	blems 9 ntext o 12 onetary ble use wate
	etween PPP and IWRM R SUPPLY AND HEALTH WITHIN THE	: 1\A/	DM	CON				9
	vater and human health: options to inclu	0.0000000000000000000000000000000000000			Contraction of the solution of the	Concernance and the second	ntions for h	10223
	and promotion in the context of IWRM							
development		1				662	- Terral Landy	110
	CULTURE IN THE CONCEPT OF IWRM		-1-	\/:	tuel mete	n trada fa		10
water security - I	rroduction: "blue" versus "green" water rrigation efficiencies, irrigation methods a	and	curre				or achieving	100
	R LEGAL AND REGULATORY SETTIN	945.9 <i>5</i> 1		Inct	ional law	in the erec	ofwator	6
management. Un	w and governance: principles of internati derstanding UN law on non-navigable us /ith legal and regulatory framework.):	ses	of int	erna	itional wat	ter course	s – Develop	ment
1. Technical Committee	Advisory Committee, Integrated Wate Background Paper No: 4. Global water p	artr	nersh	nip, S	Stockholm	, Sweden.	2002	
^{2.} Background	Advisory Committee, Poverty Reducti paper no: 8. Global water partnership, 5	Stoc	khol	m, S	weden, 2	003		100
3. Technical A 1998.	Advisory Committee, Regulation and Priv Advisory Committee Background paper N	o:1.	Glo	bal w	vater partr	nership, St	tockholm, Sv	weden
4. institutional Committee	Advisory Committee, Dublin principles for and legal arrangements for Integrated V Background paper No: 3. Global water p	Vate artn	er Re	esou ip, S	rces Mana tockholm	agement, ' , Sweden.	Technical A 1999.	dvisory
5. practice". 7	Advisory Committee, Water as social a Fechnical Advisory Committee Backgr Sweden, 1998.							
6. Technical Background	Advisory Committee, Effective Wate paper No: 7. Global water partnership, 9	Stoc	khol	m, S	weden, 2	003.		nmittee
^{7.} Wiley and S	as V., Principles of water resources: his ons Inc., New York. 2003.							
8. Mollinga .P. Publications	. etal " Integrated Water Resources Ma s. 2006	anag	geme	ent",	vvater in	South As	ch volume	, Sage

Department	С	IVIL ENGINE	ERING	G			R 2019	Semest er VII	OE
			lours/\	Weel	<	Credit	Total	Maxim	u
Course Code	Course Name	e	L	Т	Р	С	Hours	m Mark	s
19CEY11	RENEWABLE SOURCES tive (s): The purpose of le	ENERGY	3	0	0	3	45	100	
 To know To know To learn To know To know Course Outco Have classing 	exposure on solar radiation of about the various collect of about the various applic of about the wind energy a of about geothermal energy of the solution of this of ear understanding of mar- ing and have same basic	ctors used for cations in sola and biomass a gy with other e course, learne nagerial functi	storing ar energand its energy ers will ions lik	g sola gy. ecor sour be a ce pla	ar er Iomi Ices ble Innir	nergy. ic aspects to: ng, organi	zing, staffi		&
Unit I INT	RODUCTION		_						9
adiation on title Unit II SOL Tat plate and o	of the sun, the solar ed surface, instruments for AR ENERGY COLLECT concentrating collectors, o	or measuring : ION	solar r	adiat	ion	and sun s	hine, solar	radiation d	ata 9
nalysis, advan	ced collectors AR ENERGY STORAGE		CATIC	NIC	-				9
ifferent metho	ds, Sensible, latent heat technique, solar distillation	and stratified	storag	je, so				ations-solar	1175/1
Unit IV WIN		on and drying	, priote	500112		nergy cor	IVEISION		9
anna a anna	tentials, horizontal and v	artical avia wi	indmill	s, pe : diae	estic	on, types c	of Bio-gasc	s, Betzcrite ligesters, g	eria
BIO-MASS: Prini ield, combustion ispects.	nciples of Bio-Conversion on characteristics of bio-g	n, Anaerobic/a	aerobic		g, I.(C.Engined	peration a	ind econon	nic
BIO-MASS: Prinield, combustionspects. Unit V GEO Resources, typ DTEC, Principle Potential and combusted		n, Anaerobic/a gas, utilization of harnessing OTEC plants ini-hydel powe	the es, therr	nergy nody nts, a	y, p man	otential ir nic cycles their econ	n India. O . Tidal an	CEANENE d wave er	9 RGN nergy
BIO-MASS: Prinield, combustion spects. Unit V GEO Resources, type DTEC, Principle Contral and conversion: EXTBOOKS:	on characteristics of bio-g THERMAL ENERGY bes of wells, methods o es utilization, setting of onversion techniques, mi	n, Anaerobic/a gas, utilization of harnessing OTEC plants ini-hydel powe cycle, limitation	the e the e the rplar ns, prir	nergy nody nts, a nciple	y, p man and es o	otential ir nic cycles their econ f DEC	n India. O . Tidal an nomics. DI	CEANENE d wave er	9 RG ¹ nergy
IO-MASS: Prinield, combustions spects. Unit V GEO Resources, type DTEC, Principle otential and conversions EXTBOOKS: 1. Rai G.D.,	on characteristics of bio-g THERMAL ENERGY bes of wells, methods o es utilization, setting of onversion techniques, mi Need for DEC, Carnot c	n, Anaerobic/a gas, utilization of harnessing OTEC plants ini-hydel powe cycle, limitation rgy Sources",	the es, therr er plar ns, prir Khanr	nergy mody nts, a nciple	y, p man and es o	otential ir nic cycles their econ f DEC hers, 201	n India. O . Tidal an nomics. DI 1	CEANENE d wave er RECT ENE	9 RG herg
IO-MASS: Prinield, combustions spects. Unit V GEO Resources, type otential and conversions EXTBOOKS: 1. Rai G.D., 2. Twidell &	on characteristics of bio-g THERMAL ENERGY Des of wells, methods o es utilization, setting of onversion techniques, mi Need for DEC, Carnot c "Non-Conventional Energy Wier, "Renewable Energy	n, Anaerobic/a gas, utilization of harnessing OTEC plants ini-hydel powe cycle, limitation rgy Sources",	the es, therr er plar ns, prir Khanr	nergy mody nts, a nciple	y, p man and es o	otential ir nic cycles their econ f DEC hers, 201	n India. O . Tidal an nomics. DI 1	CEANENE d wave er RECT ENE	9 RG herg
IO-MASS: Prinield, combustions spects. Unit V GEO Resources, type DTEC, Principle otential and conversions EXTBOOKS: 1. Rai G.D., 2. Twidell & EFERENCE(S	on characteristics of bio-g THERMAL ENERGY Des of wells, methods o es utilization, setting of onversion techniques, mi Need for DEC, Carnot c "Non-Conventional Energy Wier, "Renewable Energy	n, Anaerobic/a gas, utilization of harnessing OTEC plants ini-hydel powe cycle, limitation rgy Sources", y Resources",	the e the e the r the r ther er plar ns, prir Khanr , CRC	nergy mody nts, a nciple na Pu Pres	y, p man and es o iblis	otential ir nic cycles their econ f DEC hers, 201 ⁻ aylor & Fi	n India. O . Tidal an nomics. Dl 1 1 rancis), 20	CEANENE d wave er RECT ENE 11.	9 RG herg

Department	CIVIL ENGINEER	RING	;		- 11 deg	R 2019	Semester VII	0
Course	Course Name	ł	Hour / Wee		Credit	Total Hours	Maximu m	I
Code		L	T	P	С		Marks	;
19CEY12	ARCHITECTURE AND URBAN PLANNING	3	0	0	3	45	100	
 To provide To impart for sustain Course Outcom Design bui Assess an Prepare th Assess of Assess the Unit I INTRO Definition and classion Intro Definition and classion Intro Definition and classion Definition Definition and classion Definition Definition Definition Definition Definition	ve (s): The purpose of learning this course a knowledge on fundamentals of arch training on preparation of different type able development nes: At the end of this course, learners ildings with respect to architectural point d select the best urban layout plan ne Environmental Impact Assessment for the proposals with the knowledge of co e management systems for developme DUCTION ssification of urban areas -Trend of un thetics - Planning process - Variou CEPTS OF URBAN PLANNING ation of planning areas -Regional p n and Transportation Plan-Building typi ing rules and regulations - Building ser	itect es o will nt of or ar ost-b nt rban s st olan oces	ture f pla be a viev ny ci izati izati izati age: , Mi - Ap	and ns, in ble to v vil pr fit an on -A s of aster	nplemen o: oject. alysis Architectu the plan plan, s ition of a	tation and ural design nning pro Structure nthropome	n - Integratio cess-Survey plan, detai etry and spa	9 on o ys i 9 led
evelopment plan an - important r ecessity - forms - Jnit IV FINAN lan implementationalue and Internal	Development plan - Needs, goals, - collection of data - surveys - procedu measures and stages of development stages. Plan implementation - Chandi ICING OF PLANS on - Project evaluation - Economic eva rate of return - problems] - Urban Pla n-governmental organizations - Public	ure f pla garh alua nnin	or pi in. T in cas tion g ag	own se stu [Ben jenci	ration - gr planning udy efit cost es and th	uidelines o g - object ratio meth neir functio	of developm s - principle od, Net pres	ent s - 9 sent
	LOPMENT MANAGEMENT SYSTEM	*	icipe			ng.		9
Planning standar nfrastructure - Soo ettlement - Devel	ds - The basic frame work - distrib cial infrastructure - Commercial activity opment control rules - Zoning regulatio	utior - va	ariati	ons i	n norms	and stand		cal
	EADINGS ween urban local bodies and other t housing boards including slum boards						ater supply	&
EXT BOOK(S):								-
	an Climate and Architecture , Applied S		0.000					
 VRA. Saathar EFERENCE(S): 	opan and K. Yogeshwari, Principles of	Arch	nitec	ture,	Raamali	ngaa Publ	ication, 200	5
	o, Urban Planning, CBS Publishers and	1 Dis	strib	itors	New De	lhi 2005		-
 Gallian B Arth Pvt., Ltd., Nev 	ur and Simon Eisner, The Urban Patte v Delhi, 1995	ern,	City	Plan	ning and	Design, /	2 Sector Sector	
London, 1990			< >200404/1942	11.5	104100-000 -0 0-000	· · · ·	s, Hutchinso	on,
4. Francis D.K. C	Ching, Architecture: Form, Space and C	Orde	er, VI	NR, I	N.Y., 199	9 F	im Sy	2

Department	CIVIL ENGINEE	RING	3		4	R 2019	Semester VII	OE
Course	Course Name		lour Wee		Credit	Total Hours	Maximu Marks	
Code		L	Т	Р	С	nours	Warks	
19CEY13	MODERN CONSTRUCTION MATERIALS	3	0	0	3	45	100	
 To stud such as material 	ctive (s): The purpose of learning this co y and understand the properties of mod s special concretes, metals, composite ls, and smart materials.	dern es, w	cons /ater	pro	ion mate ofing cor	rials use npounds	ed inconstru s,non-weath	ctior ering
	omes: At the end of this course, Student				, used in	the field		
	e the knowledge of modern construction	mate	nais		e used in	the lield		9
and a second second second second second	CIAL CONCRETES aviour of concretes – Properties and Adv				1.01	atte anal	I l'ada	9
ompacting cor oncrete	oncrete – Properties and Applications of ocrete, Alternate Materials to concrete or	Fibre high	e Rei 1 per	form	ced Conc ance & hi	rete, Se gh Strer	lf ngth	9
	TALS		_					J
and advantag Applications o		oes o	of Co	pating	ys & Coa	atings to	reinforceme	
	MPOSITES					L ₁		9
ypes of Plas	tics - Properties & Manufacturing pro	oces	s – /	Adva	intages	of Reinf	forced poly	mers
	P – FRP on different structural eleme	ents -	– Ap	plica	ations of	FRP.		9
	HER MATERIALS		200	of N	on woath	oring M	latorials and	
ypes and pro ses – Types o onstruction cl	perties of Water Proofing Compounds of Flooring and Facade Materials and i pemicals	ts ap	pes	ation,	, concret	e admix	tures and	11.5
	ART AND INTELLIGENT MATERIALS		12					9
ypes & Differ	ences between Smart and Intelligent pplications of smart & Intelligent Mate	Mat	erial	s – S	Special f	eatures	 Case stu 	dies
EXT BOOK		Jiriare						
	S, Concrete Technology: Theory and	Pra	ctice	SO	Chand &	Compa	ny Ltd., 20	05
2. Santhaku	mar.A.R., Concrete Technology, Oxfo	ord L	Inive	ersity	press.	New De	lhi. 2005.	
EFERENCE(S					, ·			
1 Mamlouk,		Mat	erial	s f	or Civ	il and	Construe	ctior
· · · · · · · · · · · · · · · · · · ·	nayaji, Civil Engineering Materials, Pr	entic	e Ha	all In	c., 2001			
, ACI Repo	ort 440.2R-02, "Guide for the designs for strengthening concrete structure	gn a	ind	cons	struction	of ext		ndec
4. Ashby, M Properties	M.F. and Jones.D.R.H.H. "Engine applications and designs", Elsevier I	eerin Publi	g N icatio	Mate	rials 1: 2005.			to
	y, C., Modern Construction Materials						$\left(\right)$	
						kin	1 ht	

(2) , dCitulmian - 956 Sept. of Civil Engel - 6560

Depa	artment	CIVIL ENGINEE	ERING				R 2019	Semester V	PE
Cours	e Code	Course Name	Но	urs/V k	Nee	Credit	Total	Maximum N	/larks
coure			L	Т	Ρ	С	Hours		
190	EX01	HYDROLOGY	3	0	0	3	45	100	
		e (s): knowledge on hydrological cycle, sp applications including flood routing a						d analysis of	rainfal
• • Unit1	precipitation The stude estimating The stude PRECI	nts gain the knowledge needed on h on nts are able to apply the various me the various losses of precipitation, nts will know the basics of groundwa PITATION	thods of stream f ater and	field low, hydr	l mea flooc aulic	asureme I and floo s of sub	nts and em od routing. surface flov	pirical formula N	e for
measu duratio	rement me n, frequenc	 Types of precipitation – Forms thods – Temporal measurement m cy relationship – Probable maximum 	ethods - n precipit	– Fre	eque	ncy ana	surement lysis of poi	of Rainfall – nt rainfall – In	Spatia tensity
Unit I		RACTION FROM PRECIPITATION sipitation – Evaporation process –		oir ev	ano	ration -	Infiltration	process - Inf	
capacit	y – Measu	rement of infiltration – Infiltration ind	lices – E	ffecti	ive ra	ainfall	minucation	procees in	
Unit I		OGRAPHS	1.20				Red and		10
Factors curve h	affecting ydrograph	Hydrograph – Baseflow separation – Unit hydrograph of different devia	n – Unit ations - S	hydr Synth	ogra ietic	ph – De Unit Hyd	erivation of rograph	unit hydrogra	ph – S
Unit l	V FLOOI	DS AND FLOOD ROUTING					1		9
		studies – Recurrence interval – Gur nnel Routing – Flood control	nbel's m	etho	d – I	-lood ro	uting – Res	servoir flood ro	uting -
Unit \		ND WATER HYDROLOGY							9
Types Recupe	of aquifer eration test	s – Darcy's law – Dupuit's ass – Transmissibility – Specific capaci	umption: ty – Pun	s – nping	Con test	fined A – Stead	quifer – U ly flow anal	Inconfined Aq Iysis Only	uifer -
TEXTE	OOKS:			1	1				16.00
1. S	ubramanya	a, K., "Engineering Hydrology", Tata	McGrav	v Hill	Pub	lishing (Co., Ltd., 20	000	
2. R	aghunath,	H.M., "Hydrology", Wiley Eastern Lt	td., 2000)		En é el	21 54 NF		12.61
3 J	ayarami Re	eddy .P. Hydrology, Tata McGraw H	ill, 2008						244
4 N	ladan Moh	an das and Mimi Das Saikia, Hydrol	logy, Pre	entice	e Hal	l of India	a, 2013.		
	RENCE(S)								
1. C	how, V.T.	and Maidment D.R., "Hydrology for	Enginee	are"	MAG	row Hill	Inc Itd 2	000	
	a second s	, "Hydrology", McGraw Hill Inc., Ltd.		515,	IVICO		IIIC., Ltd., 2	.000.	

Dearthing

Department	CIVIL ENGINEER	CIVIL ENGINEERING							
Course Code	Course Name	Но	urs/\ k	Wee	Credit	Total	Maximum	Marks	
	1	L	Т	Ρ	С	Hours			
19CEX02	HIGHWAY ENGINEERING	3	0	0	3	45	100		
	tive (s): an overview about the highway enginee nance of highways as per IRC standards,						sign, construc	tion and	
 To Des To Gair To und of pave 	knowledge on planning and aligning of hig ign flexible and rigid pavements. In knowledge on Highway construction ma erstand the concept of pavement manag ments.	terial	s, pro	opert	ies, testir	ng method	s		
	HWAY PLANNING AND ALIGNMENT							8	
India – factors for alignment, o functions – Typ	highway planning – Modal limitations tow influencing highway alignment – Soil suit objectives, conventional and modern metho ical cross sections of Urban and Rural ro	ability hods ·	ana	lysis	- Road e	cology - E	ngineering su	rveys nd	
	DMETRIC DESIGN OF HIGHWAYS		0.00			10.21	Constant -	10	
	l elements - Sight distances – Horizontal								
	al curves - Gradients, Special considerati	ion fo	r hill	road	s - Hairpi	n bends –	Lateral and v	ertical	
clearance at un		CNITC			1.			140	
	GIGN OF FLEXIBLE AND RIGID PAVEM	2.2.2.4.1.2.2.1				ulle and a		10	
	ponents and their role - Design principles – Embankments- Problems in Flexible pa					xible and r	igid Pavemen		
Unit IV HIG	HWAY CONSTRUCTION MATERIALS A	ND F	RAC	CTIC	E		N. A. LAND	9	
	ruction materials, properties, testing meth							ate &	
	on Bituminous mixes-Construction practi								
	Concrete road construction, Polymer mo								
	Geo-Textiles, Geo-Membrane (problem no Instruction machineries.		udeo	x) - (x	Juanty co	ontrol meas	sures - Highwa	ay	
Unit V EVA	LUATION AND MAINTENANCE OF PA	VEME	NTS	5				9	
	ess in flexible and rigid pavements – Type				nce – Pa	vement M	anagement Sy	177	
	aluation, roughness, present serviceability							,	
evaluation by d	eflection measurements - Strengthening	of pa	veme	ents	-Highwa	y Project fo	ormulation	. × 1	
TEXTBOOKS:									
1. Khanna.S	S. K., Justo.C.E.G and Veeraragavan A. "	Highv	vay E	Engir	neering",	Nemchand	Publishers, 2	2014	
REFERENCE	(S):		÷.,			· · · · ·		1001.0	
1. Subrama Chennai,	nian K.P., "Highways, Railways, Airport a 2010	nd Ha	arbou	ur En	gineering	g", Scitech	Publications ((India),	
	.R. "Principles and Practice of Highway E	Engine	erin	g", K	hanna Te	echnical P	ublications, 8t	h	
	ad Congress (IRC), Guidelines for the De	esign	of Fle	exible	e Pavem	ents, (Thir	rd Revision), T	RC: 37-	
3163	Can Brillol D In Minth						turt	K	

Depa	rtment	CIVIL ENGINEERI	ING				R 2019	Semester V	PE
Course	Code	Course Name	Ho	urs/\ k	Wee	Credit	Total	Maximum	Mark
oouroo	, cour	oourse nume	L	Т	Ρ	С	Hours	S	
19C	EX03	TOTAL STATION AND GPS SURVEYING	3	0	0	3	45	100	
Course	Objective	e (s):							
	• To une	derstand the working of Total Station	equip	men	t and	solve the	e surveying	problems	
Unit I Methods applicat waves, factors Conditic applicat	Outcome: Worki Propa The fi Variou FUNDA s of Measu ions and o Propagatic affecting I ons-Compution of firs	s: At the end of the course the stud ing principles of total station and GPS agation of EMR through atmosphere a unctioning various types total station a us techniques available for surveying MENTALS OF TOTAL STATION AN uring Distance, Basic Principles of T comparison with conventional survey on properties, wave propagation at la RI-Computation of group for light tation of RI for microwaves at ambi- t velocity correction. Measurement prection - Total atmospheric correction	lent v instru- and G and r DELI Total ying. ower and ent c of at	vill b umer PS e napp ECTF Stati Clas and near ondit tmos	e ab nts tions equip bing v ROM. ion, I ssifica high infra tion - pher	le to und for its eff ments ar vith total AGNETIO Historical ation - a her freque ared way Referen ic param	lerstand fects ad their app station and CWAVES Developm pplications encies- Re ves at sta nee refraction neters- Mes	nent, Classific of Electrom fractive index ndard and a ve index- Re an refractive	agnetic (RI) - mbient al time
Unit II Electro- Station Total St of Total	ELECTI optical sys instrument ation instru I Station i	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principl	STEN princi nciple optic	/ ple, , wo al an	Sour rking id Mie	ces of E principle crowave	rror, Infrar , Sources system. Ca	ed and Lase of Error, Mic are and mainte	rowave enance
Unit II Electro- Station Total St of Total surveya	ELECTI optical sys instrument ation instru I Station i pplications	RO-OPTICAL ANDMICROWAVE SY stem: Measuring principle, Working p s. Microwave system: Measuring prin iments. Comparison between Electro- nstruments – Traversing and Trilate	STEN princi nciple optic	/ ple, , wo al an	Sour rking id Mie	ces of E principle crowave	rror, Infrar , Sources system. Ca	ed and Lase of Error, Mic are and mainte	r Total rowave enance
Unit II Electro- Station Total St of Total surveya Unit III Basic co orbital r Position satellite Selectiv	ELECTI optical sys instrument ation instru I Station i pplications SATELI oncepts of motion - Ke ing concept configurat e Availabili	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principle, Working principle, Working principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Microwave system: Measuring principle, Working principle, Microwave system: Measuring principle, Working principle, Microwave system: Automatic principle, Working principle, State principle	STEN princi nciple optic eratio relopr erturb ferent deterr	/ ple, al an on-CC nent ing fo seg ninat	Sour rking d Mid OGO - app orces ment	ces of E principle crowave function olications s - Geod	rror, Infrar e, Sources system. Ca s, offsets - Geoid ar etic satellit e, control a	ed and Lase of Error, Mic are and mainte and stake o nd Ellipsoid- s and user segr	r Total rowave enance ut-land 10 satellite effect - nents - ng and
Unit II Electro- Station Total St of Total surveya Unit III Basic co orbital r Position satellite Selectiv Unit IV	ELECTI optical sys instrument ation instru I Station in pplications SATELI oncepts of motion - Ke ing concept configurat e Availabili GPS DA	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principle, Working principle, Working principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Comparison between Electro- nstruments – Traversing and Trilate LITE SYSTEM GPS - Historical perspective and developterian motion – Kepler's Law - Per- ot –GNSS, IRNSS and GAGAN - Difficitor – GPS signal structure - Orbit of ty - Task of control segment - GPS reconstruction	STEN princi nciple optic eratio relopr erturbi ferent leterr eceive	nent ing fo seg ninat	Sour rking d Mid DGO - app orces ment	ces of E principle crowave function olications s - Geod s - space	rror, Infrar e, Sources system. Ca s, offsets - Geoid an etic satellit e, control a esentation	ed and Lase of Error, Mic are and mainte and stake o nd Ellipsoid- s and user segr - Anti Spoofi	r Total rowave enance ut-land 10 satellite effect - ments - mg and 9
Unit II Electro- Station Total St of Total surveya Unit III Basic co orbital r Position satellite Selectiv Unit IV GPS of concept software Kinemal	ELECTI optical sys instrument ation instru I Station i pplications SATELI oncepts of motion - Ke ing concept configurat e Availabili GPS DA oservables of parame e modules tic and pure ing- use of	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principle, Working principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Comparison between Electronestruments – Traversing and Trilate LITE SYSTEM GPS - Historical perspective and developterian motion – Kepler's Law - Perspective and developterian motion – Kepler's Law - Person – GNSS, IRNSS and GAGAN - Diffion – GPS signal structure - Orbit of ty - Task of control segment - GPS representation – downloading the or -solutions of cycle slips, ambiguities e Kinematic methods -satellite geometer different softwares available in the micro-	STEM principle optic eratio relopre- trurbi- ferent deterri- ceive tion - data c, Cor etry & arket	nent nent seg ninat rs.	Sour rking d Mid OGO - app orces ment tion a ear c EX F ts of uracy	ces of E principle crowaves function olications s - Geod s - Space and repres ombinatio ormat – rapid, st	Fror, Infrar e, Sources system. Ca s, offsets - Geoid ar etic satellit e, control a esentation on and de Differential atic metho	red and Lase of Error, Mic and stake of and stake of and Ellipsoid-s and user segr - Anti Spoofie rived observa I data proces ds with GPS	r Total rowave enance ut-land 10 satellite effect - ng and 9 ables - ssing - - semi aseline
Unit II Electro- Station Total St of Total surveya Unit III Basic cc orbital r Position satellite Selectiv Unit IV GPS of concept software Kinemal process Unit V	ELECTI optical sys instrument ation instru I Station in pplications SATELI oncepts of motion - Ke ing concept configurat e Availabili GPS DA oservables of parame e modules tic and pure ing- use of HYDRO	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principle, Working principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Comparison between Electronestruments – Traversing and Trilate LITE SYSTEM GPS - Historical perspective and developterian motion – Kepler's Law - Perspective and developterian motion – Kepler's Law - Perspective and GAGAN - Diffion – GPS signal structure - Orbit of ty - Task of control segment - GPS restrict and carrier phase observated eter estimation – downloading the consolutions of cycle slips, ambiguities and the Kinematic methods -satellite geometric different softwares available in the material of the construction of t	STEM princi- nciple optic eration erlopr erturbi- ferent deterr ceive tion - data , Cor etry & arket. _ SUF	nent ing fo seg ninat rs.	Sour rking d Mid DGO - app orces ment tion a ear c EX F ts of uracy	ces of E principle crowave function olications s - Geod s - Space and repre- ombinatio ormat – rapid, st	rror, Infrar e, Sources system. Ca s, offsets - Geoid ar etic satellit e, control a esentation on and de Differentia atic metho es - applica	red and Lase of Error, Mic are and mainte and stake o nd Ellipsoid- s and user segr - Anti Spoofie rived observa I data proces ds with GPS ations- long b	r Total rowave enance ut-land 10 satellite effect - ments - ments - ng and 9 ables - ssing - - semi aseline 8
Unit II Electro- Station Total St of Total surveya Unit III Basic co orbital r Position satellite Selectiv Unit IV GPS of concept software Kinemal process Unit V Reconna- Sourveyin GyroThe Settleme	ELECTI optical sys instrument ation instru I Station in pplications SATELI oncepts of motion - Ke ing concept configurat e Availabili GPS DA oservables of parame e modules tic and pure ing- use of HYDRO aissance – ding metho ng Equipn eodolite–Si ent procedu	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principle, Working principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Comparison between Electronestruments – Traversing and Trilate LITE SYSTEM GPS - Historical perspective and developterian motion – Kepler's Law - Perspective and developterian motion – Kepler's Law - Person – GNSS, IRNSS and GAGAN - Diffion – GPS signal structure - Orbit of ty - Task of control segment - GPS representation – downloading the or -solutions of cycle slips, ambiguities e Kinematic methods -satellite geometer different softwares available in the micro-	STEM princinciple optic eratio relopre- erturbite ferent deterre- ceive tion - data , Cor etry & arket. SUF s and veys nnel	I ple, ple, al an on-CC ment ing fo seg ninat rs. line RINE accu accu VE1 wate alig	Sour rking d Mid DGO - app orces ment tion a ear c EX F ts of uracy /ING erwa easu	ces of E principle crowave function olications s - Geod s - Space and repre- ombinatio ormat – rapid, st y measure ys – Hyd rement on	rror, Infrar e, Sources system. Ca s, offsets - Geoid ar etic satellit e, control a esentation on and de Differential atic metho es - applica rographic s f current ar settingout-	ed and Lase of Error, Micl are and mainte and stake o nd Ellipsoid- s and user segr - Anti Spoofie rived observa I data proces ds with GPS ations- long b survey- Tides nd discharge - Transferofaz	r Total rowave enance ut-land atellite effect - ng and 9 ables - ssing - - semi aseline 8 - MSL - Mine imuth-
Unit II Electro- Station Total St of Total surveya Unit III Basic co orbital r Position satellite Selectiv Unit IV GPS of concept software Kinemal process Unit V Reconna Surveyin GyroThe Settleme TEXTBC	ELECTI optical sys instrument ation instru I Station in pplications SATELI oncepts of motion - Ke ing concept configurat e Availabili GPS DA oservables of parame e modules tic and pure ing- use of HYDRO aissance – ding metho ng Equipm eodolite–SI ent procedu DOKS:	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principle, Working principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Comparison between Electro- Instruments – Traversing and Trilate LITE SYSTEM GPS - Historical perspective and developterian motion – Kepler's Law - Perecent – GNSS, IRNSS and GAGAN - Differion – GPS signal structure - Orbit of ty - Task of control segment - GPS reaction – GPS signal structure - GPS reaction – downloading the of ty - Task of control segment - GPS reactions of cycle slips, ambiguities the eter estimation – downloading the of -solutions of cycle slips, ambiguities the Kinematic methods -satellite geometric GRAPHIC, MINE AND CADASTRAL Route surveys for highways, railways ds – Three point problem – River sur- nent – Weisbach triangle – Tur- naftsandaudits-Cadastralsurvey-Legal ure – deformation studies	STEM princinciple optic eratio relopre- erturbit ferent deterre- ceive tion - data , Cor etry & arket. SUF s and veys nnel I – F	I ple, wo al an in-CC ment ing fi iseg minat rs. line RINE accu RINE accu VE1 wate alig Real	Sour rking d Mid DGO - app orces ment tion a ear c EX F ts of uracy /ING erwa easu nmei _ T	ces of E principle crowave function olications s - Geod s - space and repre- ombinatio ormat – rapid, st y measure ys – Hyd rement o nt and faxcadas	rror, Infrar e, Sources system. Ca s, offsets - Geoid ar etic satellit e, control a esentation on and de Differential atic metho es - applica rographic s f current ar settingout- tre – Land	ed and Lase of Error, Micl are and mainte and stake o nd Ellipsoid- s and user segr - Anti Spoofie rived observa I data proces ds with GPS ations- long b survey- Tides nd discharge - Transferofaz	r Total rowave enance ut-land atellite effect - ng and 9 ables - ssing - - semi aseline 8 - MSL - Mine imuth-
Unit II Electro- Station Total St of Total surveya Unit III Basic co orbital r Position satellite Selectiv Unit IV GPS of concept software Kinemal process Unit V Reconne Surveyin GyroThe Settleme TEXTBC	ELECTI optical sys instrument ation instru I Station in pplications SATELI oncepts of motion - Ke ing concept configurat e Availabili GPS DA oservables of parame e modules tic and pure ing- use of HYDRO aissance – ding metho ng Equipm eodolite–SI ent procedu DOKS:	RO-OPTICAL ANDMICROWAVE SY tem: Measuring principle, Working principle, Working principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Microwave system: Measuring principles, Comparison between Electronestruments – Traversing and Trilate LITE SYSTEM GPS - Historical perspective and developterian motion – Kepler's Law - Perspective and developterian motion – Kepler's Law - Perspective and GAGAN - Diffion – GPS signal structure - Orbit of ty - Task of control segment - GPS respective and carrier phase observate eter estimation – downloading the observate eter estimation – downloading the observate eter estimation – downloading the observate different softwares available in the maximum of the observate of the surveys for highways, railways ds – Three point problem – River sur- ment – Weisbach triangle – Tur- maftsandaudits-Cadastralsurvey-Legal	STEM princinciple optic eratio relopre- erturbit ferent deterre- ceive tion - data , Cor etry & arket. SUF s and veys nnel I – F	I ple, wo al an in-CC ment ing fi iseg minat rs. line RINE accu RINE accu VE1 wate alig Real	Sour rking d Mid DGO - app orces ment tion a ear c EX F ts of uracy /ING erwa easu nmei _ T	ces of E principle crowave function olications s - Geod s - space and repre- ombinatio ormat – rapid, st y measure ys – Hyd rement o nt and faxcadas	rror, Infrar e, Sources system. Ca s, offsets - Geoid ar etic satellit e, control a esentation on and de Differential atic metho es - applica rographic s f current ar settingout- tre – Land	ed and Lase of Error, Micl are and mainte and stake o nd Ellipsoid- s and user segr - Anti Spoofie rived observa I data proces ds with GPS ations- long b survey- Tides nd discharge - Transferofaz	r Total rowave enance ut-land atellite effect - ng and g ables - ssing - - semi aseline 8 - MSL - Mine imuth-

Cost of Fight Carlot and

Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEER	R 2019	Semester V	PE			
Course Code	Course Name	k			Total Hours	Maxir Ma	num Irks
1005101		LT	P	C	45	100	
19CEX04 Course Objectiv	DISASTER MANAGEMENT	3 0	0	3	45	100	
 To p To e disa To e To e To e 	provide students an exposure to disaster ensure that students begin to understan ensure prevention and risk reduction gain a preliminary understanding of app enhance awareness of institutional proc develop rudimentary ability to respond t reas where they live, with due sensitivit	nd the relation proaches of cesses in t to their su	of Dis	hip betwe aster Ris ountry and	een vulner k Reductio	on (DRR)	
 Diffe Asse Drav dam 	es: At the end of the course the studen erentiate the types of disasters, causes ess vulnerability and various methods of w the hazard and vulnerability profile of age assessment and management	and their of risk red	impa uctior	ct on env n measure	ironment a es as well	as mitigation	
Unit I INTRO	DUCTION TODISASTERS	The star	1.10		Contraction of		9
Landslide, Flood environmental, h	er, Hazard, Vulnerability, Resilience, R , Drought, Fire etc - Classification, Ca lealth, psychosocial, etc Differential	uses, Imp	pacts	including	social, e	conomic, po	litical,
change- Dos and Unit II APPR Disaster cycle -	 Global trends in disasters: urban dis Don'ts during various types of Disaste OACHES TO DISASTER RISK REDUC Phases, Culture of safety, prevention nonstructural measures, Roles and 	sasters, p rs CTION (D n, mitigati	ande RR) ion a	mics, con nd prepa	nplex eme	community	9 based
change- Dos and Unit II APPR Disaster cycle - DRR, Structural- Institutions/Urban Processes and F	Don'ts during various types of Disaster OACHES TO DISASTER RISK REDUCT Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, Framework at State and Central Leve	sasters, p rs CTION (D n, mitigati d respons , Centre, l- State D	ande RR) ion a sibiliti and	mics, con nd prepa es of- c other s	nplex eme aredness o ommunity, take- holo	community l , Panchaya ders- Institu	9 based ti Raj
change- Dos and Unit II APPR Disaster cycle - DRR, Structural- Institutions/Urban Processes and F Early Warning Sy	Don'ts during various types of Disaster OACHES TO DISASTER RISK REDUC Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, ramework at State and Central Leve stem – Advisories from Appropriate Ag	sasters, p rs CTION (D n, mitigati d respons , Centre, l- State D jencies	ande IRR) ion a sibiliti and Disast	mics, con nd prepa es of- co other s er Mana	nplex eme aredness o ommunity, take- holo gement A	community l , Panchaya ders- Institu	limate 9 based ti Raj ttional MA) –
change- Dos and Unit IIAPPRDisaster cycle - DRR, Structural- Institutions/Urban Processes and F Early Warning SyUnit IIIINTER Factors affecting embankments, ch	Don'ts during various types of Disaster OACHES TO DISASTER RISK REDUCT Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, Framework at State and Central Leve	sasters, p rs CTION (D n, mitigati d respons , Centre, l- State D gencies ERS AND impact o ge Adapta	ande PRR) ion a sibiliti and Disast D DEV f De ation-	mics, con nd prepa es of- c other s er Mana /ELOPM velopmer IPCC Sc	nplex eme aredness o ommunity, take- holo gement A ENT nt projects enario and	community I , Panchaya ders- Institu uthority(SDM s such as o d Scenarios	limate 9 based ti Raj tional MA) – 9 dams,
change- Dos and Unit IIAPPRDisaster cycle - DRR, Structural- Institutions/Urban Processes and F Early Warning SyUnit IIIINTER Factors affecting embankments, chr context of India - Unit IV	Don'ts during various types of Disaster OACHES TO DISASTER RISK REDUC Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, ramework at State and Central Leve stem – Advisories from Appropriate Ag -RELATIONSHIP BETWEEN DISAST Vulnerabilities, differential impacts, nanges in Land-use etc Climate Chang Relevance of indigenous knowledge, a TER RISK MANAGEMENT IN INDIA	sasters, p rs CTION (D n, mitigati d respons , Centre, l- State D gencies ERS AND impact o ge Adapta ppropriate	ande PRR) ion a sibiliti and Disast D DEV f Dev ation- e tech	mics, con nd prepa es of- c other s er Mana /ELOPM velopmer IPCC Sc inology a	nplex eme aredness o ommunity, take- hold gement A gement A ENT nt projects enario and nd localres	ergencies, C community I , Panchaya ders- Institu uthority(SDM s such as o d Scenarios sources	limate 9 based ti Raj tional MA) – 9 dams, in the 9
change- Dos and Unit II APPR Disaster cycle - DRR, Structural- Institutions/Urban Processes and F Early Warning Sy Unit III INTER Factors affecting embankments, ch context of India - Unit IV DISAS Hazard and Vulne Health, Waste Ma Management Act nformation Technologic Disaster - Disa	Don'ts during various types of Disaste OACHES TO DISASTER RISK REDUC Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, ramework at State and Central Leve stem – Advisories from Appropriate Ag -RELATIONSHIP BETWEEN DISAST Vulnerabilities, differential impacts, nanges in Land-use etc Climate Chang Relevance of indigenous knowledge, a TER RISK MANAGEMENT IN INDIA erability profile of India, Components of anagement, Institutional arrangements and Policy - Other related policies, pla nology Components in Preparedness, Inster Damage Assessment.	sasters, p rs CTION (D n, mitigati d respons , Centre, encies ERS ANE impact o ge Adapta ppropriate (Mitigatic ans, progr Risk Asse	ande RR) ion a sibiliti and Disast D DEV f Dev ation- e tech er Rel on, Re rammessme	mics, con nd prepa es of- c other s er Mana /ELOPM velopmer IPCC Sc nology a ief: Wate esponse es and le ent, Resp	nplex eme aredness of ommunity, take- hold gement A ENT at projects enario and nd localres and Prepa egislation oonse and	ergencies, C community I , Panchaya ders- Institu uthority(SDM s such as o d Scenarios sources Sanitation, S aredness, Di – Role of GI Recovery P	limate 9 based ti Raj ttional MA) – 9 dams, in the 9 helter, saster S and bhases
Change- Dos and Unit II APPR Disaster cycle - DRR, Structural- Institutions/Urban Processes and F Early Warning Sy Unit III INTER Factors affecting embankments, ch context of India - Unit IV DISAS Hazard and Vulne Health, Waste Ma Management Act nformation Technol of Disaster – Disas Unit V DISAS WORK	Don'ts during various types of Disaster OACHES TO DISASTER RISK REDUC Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, ramework at State and Central Leve stem – Advisories from Appropriate Ag RELATIONSHIP BETWEEN DISAST Vulnerabilities, differential impacts, nanges in Land-use etc Climate Chang Relevance of indigenous knowledge, a TER RISK MANAGEMENT IN INDIA erability profile of India, Components of anagement, Institutional arrangements and Policy - Other related policies, pla nology Components in Preparedness, Ister Damage Assessment. TER MANAGEMENT: APPLICATIO (S)	sasters, p rs CTION (D n, mitigati d respons , Centre, encies ERS AND impact o ge Adapta ppropriate (Mitigatic ans, proge Risk Asse	ande RR) ion a sibiliti and Disast D DEV f De ation- etech er Rel on, Re rammessme D CA	mics, con nd prepa es of- co other s er Mana /ELOPM velopmer IPCC Sc inology a ief: Wate esponse es and le ent, Resp	nplex eme aredness of ommunity, take- hold gement A ENT nt projects enario and nd localres and Prepa egislation bonse and JDIES AI	ergencies, C community I , Panchayar ders- Institu authority(SDM s such as o d Scenarios sources Sanitation, S aredness, Di – Role of GI Recovery P	limate 9 based ti Raj tional MA) – 9 dams, in the 9 helter, saster S and hases 9
change- Dos and Unit II APPR Disaster cycle - DRR, Structural- Institutions/Urban Processes and F Early Warning Sy Unit III INTER Factors affecting embankments, ch context of India - Unit IV DISAS Hazard and Vuln Health, Waste Ma Management Act Information Technol Of Disaster – Disa Unit V DISAS WORK Andslide Hazard Nanagement, Floor	Don'ts during various types of Disaster OACHES TO DISASTER RISK REDUC Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, ramework at State and Central Leve stem – Advisories from Appropriate Ag RELATIONSHIP BETWEEN DISAST Vulnerabilities, differential impacts, nanges in Land-use etc Climate Chang Relevance of indigenous knowledge, a TER RISK MANAGEMENT IN INDIA erability profile of India, Components of anagement, Institutional arrangements and Policy - Other related policies, pla hology Components in Preparedness, ester Damage Assessment. TER MANAGEMENT: APPLICATIO (S) d Zonation: Case Studies, Earthque ase Studies, Drought Assessment: ods: Fluvial and Pluvial Flooding: Case Studies, Space Based Inputs for Disa	sasters, p rs CTION (D n, mitigatid d respons , Centre, l- State D gencies ERS AND impact o ge Adapta ppropriate (Mitigatic ans, progr Risk Asse ONS AND take Vulr Case St se Studie	ande RR) ion a sibiliti and Disast D DEV f De ation- e tech er Rel on, Re ramme essme D CA herab tudies s; Fo	mics, con nd prepa es of- co other s er Mana /ELOPM velopmer IPCC Sc nology a ief: Wate esponse es and le ent, Resp SE STU ility Asse s, Coast rest Fire	nplex eme aredness of ommunity, take- holo gement A ENT nt projects enario and nd localres and Prepa egislation oonse and JDIES AI essment al Floodin : Case St	ergencies, C community I , Panchaya ders- Institu uthority(SDM s such as o d Scenarios sources Sanitation, S aredness, Di – Role of Gl Recovery P ND FIELD of Buildings ng: Storm tudies, Man	limate 9 based ti Raj tional MA) – 9 dams, in the 9 helter, saster S and hases 9 s and Surge Made
Change- Dos and Unit II APPR Disaster cycle - DRR, Structural- Institutions/Urban Processes and F Early Warning Sy Unit III INTER Factors affecting embankments, ch context of India - Unit IV DISAS Hazard and Vulne Health, Waste Ma Management Act nformation Technof Disaster – Disa Unit V DISAS Management Act nformation Technof Disaster – Disa WORK andslide Hazar nfrastructure: Ca Assessment, Floor disasters: Case S	Don'ts during various types of Disaster OACHES TO DISASTER RISK REDUC Phases, Culture of safety, prevention nonstructural measures, Roles and Local Bodies (PRIs/ULBs), States, ramework at State and Central Leve stem – Advisories from Appropriate Ag RELATIONSHIP BETWEEN DISAST Vulnerabilities, differential impacts, nanges in Land-use etc Climate Chang Relevance of indigenous knowledge, a TER RISK MANAGEMENT IN INDIA erability profile of India, Components of anagement, Institutional arrangements and Policy - Other related policies, pla hology Components in Preparedness, ester Damage Assessment. TER MANAGEMENT: APPLICATIO (S) d Zonation: Case Studies, Earthque ase Studies, Drought Assessment: ods: Fluvial and Pluvial Flooding: Case Studies, Space Based Inputs for Disa	sasters, p rs CTION (D n, mitigatid d respons , Centre, l- State D gencies ERS AND impact o ge Adapta ppropriate (Mitigatic ans, progr Risk Asse ONS AND take Vulr Case St se Studie	ande RR) ion a sibiliti and Disast D DEV f De ation- e tech er Rel on, Re ramme essme D CA herab tudies s; Fo	mics, con nd prepa es of- co other s er Mana /ELOPM velopmer IPCC Sc nology a ief: Wate esponse es and le ent, Resp SE STU ility Asse s, Coast rest Fire	nplex eme aredness of ommunity, take- holo gement A ENT nt projects enario and nd localres and Prepa egislation oonse and JDIES AI essment al Floodin : Case St	ergencies, C community I , Panchaya ders- Institu uthority(SDM s such as o d Scenarios sources Sanitation, S aredness, Di – Role of Gl Recovery P ND FIELD of Buildings ng: Storm tudies, Man	limate 9 based ti Raj tional MA) – 9 dams, in the 9 helter, saster S and hases 9 s and Surge Made

Dept. of Civil Engg. - ESEC

2	Tushar Bhattacharya, "Disaster Science and Management", McGraw Hill India Education Pvt. Ltd., 2012. ISBN-10: 1259007367, ISBN-13:978-1259007361]
2.	Ltd., 2012. ISBN-10: 1259007367, ISBN-13:978-1259007361]
~	Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM,
3	New Delhi, 2011
4	KapurAnu Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi,2010.
RE	ERENCE(S):
1.	Govt. of India: Disaster Management Act, Government of India, New Delhi, 2005
2.	Government of India, National Disaster ManagementPolicy,2009.

102 ..

KnOf

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEERIN	NG				R 2019	Semester V	PE
Course Code	Course Name		lour Wee	k	Credit	Total	Maximum	n Mark
		L	Т	Ρ	С	Hours		
19CEX05	GROUND IMPROVEMENT TECHNIQUES	3	0	0	3	45	100	
 Exposed The diffusion as des Course Outco Gain kn Underst Get kno Underst 	ctive (s): The purpose of learning this cound to various problems associated with soil erent techniques will be taught to them to ign techniques required to implement variones: At the end of this course, learners would ge on methods and selection of grout and dewatering techniques and design for wledge on insitu treatment of cohesionles and the concept of earth renforcement an now types of grouts and grouting techniques.	l dep o imp ous o will b und i r sim s an ad de	osits prove groun e ab mpro ple c d col	e the nd im le to overr cases hesiv	characte proveme ent techi s. ve soils.	eristics of d ent methods niques.	lifficult soils a	as well
	BLEMATIC SOIL AND IMPROVEMENT		HNIC	QUE	S			8
Role of ground problems in allu	improvement in foundation engineering – ivial, lateritic and black cotton soils – Sele onditions	Metl ection	nods n of s	of g uitat	round im ble groun	provement d improven	 Geotechnic nent techniqu 	cal les
the second se	ATERING				1			10
lowatoring To	chniques - Well points - Vacuum and e	lectr	oosn	notic	methods	s - Seepad	e analysis fo	or two
imensional flov	w for fully and partially penetrated slots in	hom	oger	neou	s deposit	ts – Design		ases.
limensional flov Unit III INSI nsitu densifica	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow	hom ND as	COH dee	neou IESIN p co	s deposit /E SOILS	ts – Design S n – Dyna	for simple ca mic compac	ases. 10 tion -
Immensional flow Unit III INSI Insitu densification, S /ibroflotation, S vith sand drain Installation tech Unit IV EAR	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits TH REINFORCEMENT	hom AND as ion. t clay of ab	COH dee Cons y gro oove	neou IESIN p co solida pund meth	s deposit /E SOILS ompactio ation of c using st nods and	ts – Design S n – Dyna ohesionles one colum their limita	for simple ca mic compac s soils - Prelo ns and Lime tions.	ases. 10 tion - bading
dimensional flow Unit III INSI nsitu densifica /ibroflotation, S vith sand drain nstallation tech Unit IV EAR Concept of rein Simple design	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits	hom AND as tion. t t clay of ab	COH dee Cons y gro ove Reii	neou IESIV p co solida bund meth	s deposit /E SOILS ompactio ation of c using st nods and ed earth	ts – Design S n – Dyna ohesionles one columi their limitation wall – Mec	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism	ases. 10 tion - bading piles- 9
Immensional flowUnit IIIINSIInsitudensification, Si/ibroflotation, Sivith sand drainInstallation techInstallation techUnit IVEARConcept of reimSimple designoad works andUnit VGRO	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. DUTING TECHNIQUES	hom as ion. t clay of ab	COH dee Cons y gro oove Reii of Ge	neou IESIV p co solida bund meth nforc	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi	ts – Design S n – Dyna ohesionles one colum their limitat wall – Mec iltration, dra	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, sepa	ases. 10 tion - bading piles- 9 ration, 8
Immensional flowUnit IIIINSInsitudensification, Si/ibroflotation, Sisand drainnstallation techtechUnit IVEARConcept of reinSimple designoad works andUnit VGROypes of grouts	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications.	hom as ion. (t clay of ab rial – ons o	COH dee Cons y gro ove Rein of Ge	neou IESIN p co solida bund meth nforc	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi	ts – Design S n – Dyna ohesionles one colum their limitat wall – Mec iltration, dra	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, sepa	ases. 10 tion - bading piles- 9 ration, 8
Immensional flowUnit IIIINSInsitudensification, Si/ibroflotation, Sisand drainnstallation techtechUnit IVEARConcept of reinSimple designoad works andUnit VGROypes of grouts	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow cand compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. UTING TECHNIQUES – Grouting equipments and machinery –	hom as ion. (t clay of ab rial – ons o	COH dee Cons y gro ove Rein of Ge	neou IESIN p co solida bund meth nforc	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi	ts – Design S n – Dyna ohesionles one colum their limitat wall – Mec iltration, dra	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, sepa	ases. 10 tion - bading piles- 9 ration, 8
Immensional flow Unit III INSI Insitu densification, S /ibroflotation, S installation tech /ibroflotation tech Init IV Unit IV EAR Concept of reim Simple design oad works and Unit V Unit V GRO ypes of grouts with cement, lim EXTBOOKS: 1.	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow cand compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. DUTING TECHNIQUES – Grouting equipments and machinery – ne and chemicals – Stabilization of expanse mama Raj. P, "Ground Improvement Techr	hom AND as ion. (t clay of ab rial – ons o sive s	COH dee Cons y gro pove Rein of Ge ction soil	neou IESIN p co solida bund meth nforc eotex meth	s deposit /E SOILS ompactio ation of c using st nods and ed earth tiles in fi nods – G	ts – Design S n – Dyna ohesionles: one columi their limitat wall – Mec iltration, dra rout monito cations, 2 nd	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ pring – Stabili Edition, 2016	ases. 10 tion - bading piles- 9 ration, 8 zation 6.
limensional flow Unit III INSI nsitu densification, S /ibroflotation, S sith sand drain /ibroflotation tech Init IV Unit IV EAR Concept of reint Simple design oad works and Unit V Unit V GRO ypes of grouts vith cement, lim EXTBOOKS: 1.	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits TH REINFORCEMENT forcement – Types of reinforcement mater Applications of reinforced earth; Function containment applications. DUTING TECHNIQUES – Grouting equipments and machinery – the and chemicals – Stabilization of expanse	hom AND as ion. (t clay of ab rial – ons o sive s	COH dee Cons y gro pove Rein of Ge ction soil	neou IESIN p co solida bund meth nforc eotex meth	s deposit /E SOILS ompactio ation of c using st nods and ed earth tiles in fi nods – G	ts – Design S n – Dyna ohesionles: one columi their limitation wall – Mec iltration, dra rout monitor cations, 2 nd	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ pring – Stabili Edition, 2016	ases. 10 tion - bading piles- 9 ration, 8 zation 6.
Immensional flow Unit III INSI Insitu densification, S /ibroflotation, S ithroflotation, S /ibroflotation tech ithroflotation tech Unit IV EAR Concept of reim Simple design oad works and Unit V Unit V GRO Types of grouts with cement, lim EXTBOOKS: 1. Purushoth 2. Koerner, 1994. 1994.	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow cand compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. DUTING TECHNIQUES – Grouting equipments and machinery – ne and chemicals – Stabilization of expanse mama Raj. P, "Ground Improvement Techr	hom AND as ion. (t clay of ab rial – ons o lnjeo sive s hique	COH dee Cons y grc oove Rein of Ge ction soil	neou IESIN p co solida ound meth nforceotex meth .aksh	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi nods – G mmi Public oundatior	ts – Design S n – Dyna ohesionles one columi their limitation wall – Mec iltration, dra rout monitor cations, 2 nd n Engineer	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ oring – Stabili Edition, 2010 ing", McGrav	ases. 10 tion - bading piles- 9 ration, 8 zation 6. w Hill,
limensional flow Unit III INSI nsitu densification, S /ibroflotation, S insitu /ibroflotation, S isod Unit IV EAR Concept of reim isod Simple design oad works and Unit V GRO Gypes of grouts isod /ith cement, lim im EXTBOOKS: 1. 1. Purushoth 2. Koerner, 1994. 3. Nihar Ran 4. Mittal.S, "/	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits of TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. DUTING TECHNIQUES – Grouting equipments and machinery – the and chemicals – Stabilization of expanse mama Raj. P, "Ground Improvement Technical M jan Patra, "Ground Improvement Technical M An Introduction to Ground Improvement E	hom AND as ion. (t clay of ab rial – ons o lnjec sive	ction soil ction soil ction soil	neou IESIN p co solida ound meth nforceotex meth .aksh in Fo as Pi	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi nods – G mmi Public oundation ublishing	ts – Design S n – Dyna ohesionles one columi their limitation wall – Mec iltration, dra rout monitor cations, 2 nd n Engineer House, Fir	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ oring – Stabili Edition, 2010 ing", McGrav	ases. 10 tion - bading piles- 9 ration, 8 zation 6. v Hill, 12.
Immensional flow Unit III INSI Insitu densification, S /ibroflotation, S ithrought is and drain installation tech Unit IV EAR Oncept of reim Simple design oad works and Unit V GRO Unit V GRO GRO ypes of grouts /ith cement, lim EXTBOOKS: 1. Purushoth 1. Purushoth 1. 2. Koerner, 1994. 3. 3. Nihar Ran 4. 4. Mittal.S, "/	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits of TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. UTING TECHNIQUES – Grouting equipments and machinery – the and chemicals – Stabilization of expanse mama Raj. P, "Ground Improvement Technical M jan Patra, "Ground Improvement Technical M An Introduction to Ground Improvement E S):	hom AND as ion. (t clay of ab rial – ons o lnjec sive	cons dee Cons y grc bove Rein of Ge ction soil es", L ods i	meou IESIN p co solida ound meth nforceotex meth .aksh in Fo as Pr ng", N	s deposit /E SOILS ompactio ation of c using st nods and ed earth ctiles in fi nods – G mmi Public oundation ublishing Aedtech I	ts – Design S n – Dyna ohesionles one colum their limitat wall – Mec iltration, dra rout monito cations, 2 nd n Engineer House, Fir Publisher, F	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ oring – Stabili Edition, 2016 ing", McGrav st Edition, 20	ases. 10 tion - bading piles- 9 ration, 8 zation 6. v Hill, 12. 2013.
limensional flow Unit III INSI nsitu densification, S /ibroflotation, S vith sand drain nstallation tech Unit IV EAR Oncept of rein Simple design oad works and Unit V Unit V GRO ypes of grouts vith cement, lim EXTBOOKS: 1. 1. Purushoth 2. Koerner, 1994. 3. Nihar Ran 4. Mittal.S, "/ REFERENCE(1. 1. Moseley, 2nd Editio	w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits of TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. UTING TECHNIQUES – Grouting equipments and machinery – the and chemicals – Stabilization of expanse mama Raj. P, "Ground Improvement Techric R.M. "Construction and Geotechnical M jan Patra, "Ground Improvement Techniq An Introduction to Ground Improvement E S): M.P and Kirsch. K., 'Ground Improvement n, 2004.	hom AND as ion. (t clay of ab rial – ons o Injec sive : nique Aetho ues" ingin	COH dee Cons y gro bove Rein of Ge ction soil es", L ods i , Vika eerin	neou IESIN p co solida ound meth nforce eotex meth .aksh in Fo as Pr ng", N Pres	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi nods – G ami Public oundation ublishing Aedtech I s, Taylor	is – Design S n – Dyna ohesionlesion one columitheir limitation wall – Mec iltration, dra rout monitor cations, 2 nd n Engineer House, Fir Publisher, Fir and France	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ oring – Stabili Edition, 2016 ing", McGrav st Edition, 20 First Edition, 20	ases. 10 tion - bading piles- 9 ration, 8 zation 6. w Hill, 12. 2013. adon,
limensional flow Unit III INSI nsitu densification, S /ibroflotation, S vith sand drain nstallation tech Unit IV EAR Oncept of rein Simple design oad works and Unit V Unit V GRO ypes of grouts vith cement, lim EXTBOOKS: 1. 1. Purushoth 2. Koerner, 1994. 3. Nihar Ran 4. Mittal.S, "/ REFERENCE(1. 1. Moseley, 2nd Editio	 w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits of TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. DUTING TECHNIQUES – Grouting equipments and machinery – the and chemicals – Stabilization of expanse mama Raj. P, "Ground Improvement Technical Mamma Patra, "Ground Improvement Technical An Introduction to Ground Improvement E S): M.P and Kirsch. K., 'Ground Improvement M.P and Kirsch. K. 'Ground Improvement M.P and Kirsch. K. 'Ground Improvement M.P and Kirsch. K. 'Ground Improvement M.P and Kirsch. K.	hom AND as ion. (t clay of ab rial – ons o Injec sive : nique Aetho ues" ingin	COH dee Cons y gro bove Rein of Ge ction soil es", L ods i , Vika eerin	neou IESIN p co solida ound meth nforce eotex meth .aksh in Fo as Pr ng", N Pres	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi nods – G ami Public oundation ublishing Aedtech I s, Taylor	is – Design S n – Dyna ohesionlesion one columitheir limitation wall – Mec iltration, dra rout monitor cations, 2 nd n Engineer House, Fir Publisher, Fir and France	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ oring – Stabili Edition, 2016 ing", McGrav st Edition, 20 First Edition, 20	ases. 10 tion - bading piles- 9 ration, 8 zation 6. w Hill, 12. 2013. adon,
limensional flow Unit III INSI nsitu densification, S /ibroflotation, S vith sand drain /ibroflotation tech Unit IV Unit IV EAR Concept of reim Simple design oad works and Unit V GRO Unit V GRO GRO Sypes of grouts vith cement, lim EXTBOOKS: 1. Purushoth 1. Purushoth 2. 1. Purushoth 3. Nihar Ran 4. Mittal.S, "/ REFERENCE(1. Moseley, 2nd Editio 2. 2nd Editio 3. 3. Jones C.J 3.	 w for fully and partially penetrated slots in TU TREATMENT OF COHESIONLESS A ation of cohesionless soils – Shallow and compaction piles and deep compact is, and fabric drains, Stabilization of soft niques – Simple design - Relative merits of TH REINFORCEMENT forcement – Types of reinforcement mater - Applications of reinforced earth; Function containment applications. DUTING TECHNIQUES – Grouting equipments and machinery – the and chemicals – Stabilization of expanse mama Raj. P, "Ground Improvement Technical Mamma Patra, "Ground Improvement Technical An Introduction to Ground Improvement E S): M.P and Kirsch. K., 'Ground Improvement M.P and Kirsch. K. 'Ground Improvement M.P and Kirsch. K. 'Ground Improvement M.P and Kirsch. K. 'Ground Improvement M.P and Kirsch. K.	hom AND as ion. (t clay of ab rial – ons o Injec sive : nique Metho ues" ingin nt", S	cons cove cove cove cove cove cove cove cove	neou IESIN p co solida ound meth nforceotex meth .aksh in Fo as Pi ng", N Pres Pres	s deposit /E SOILS ompactio ation of c using st nods and ed earth ttiles in fi nods – G mi Public oundation ublishing Medtech I s, Taylor s, Taylor s Telford	is – Design S n – Dyna ohesionlesionlesione columitheir limitation their limitation wall – Mec iltration, dra rout monitor cations, 2 nd n Engineer House, Fir Publisher, Fir and Franci and Franci	for simple ca mic compac s soils - Prelo ns and Lime tions. hanism ainage, separ oring – Stabili Edition, 2016 ing", McGrav st Edition, 20 First Edition, 20 First Edition, 20 s Group, Lon is Group, Lon , 1996.	ases. 10 tion - bading piles- 9 ration, 8 zation 6. w Hill, 12. 2013. idon, idon,

5.	Das, B.M., "Principles of Foundation Engineering" (seventh edition), Cengage learning, 2010.
6.	Coduto, D.P., "Geotechnical Engineering – Principles and Practices", Prentice Hall of India Pvt.Ltd. New Delhi, 2011.
7.	Koerner, R.M., "Designing with Geosynthetics" (Sixth Edition), Xlibris Corporation, U.S.A, 2012.
8.	IS Code 9759 : 1981 (Reaffirmed 1998) "Guidelines for Dewatering During Construction", Bureau of Indian Standards, New Delhi
9.	IS Code 15284 (Part 1): 2003 "Design and Construction for Ground Improvement – Guidelines" (Stone Column), Bureau of Indian Standards, New Delhi.

Kmlef

Department	CIVIL ENGINEERI	NG			a	R 2019	Semester V	PE
Course Code	Course Name	1	Hour Wee	k	Credit C	Total Hours	Maxim Marl	
19CEX06	TRAFFIC ENGINEERING AND MANAGEMENT	L 3	Т 0	Р 0	3	45	100	13
To give integra	ctive (s): The purpose of learning this cou an overview of Traffic engineering, tra- ted approach in traffic planning as well.	ffic r	egula			ment and	traffic safety	with
AnalyzeDesign	omes: At the end of this course, learners traffic problems and plan for traffic syste Channels, Intersections, signals and park Traffic management Systems	ms v	ariou	ıs us	es		÷	
Unit I	FFIC PLANNING AND CHARACTERIST	rics		s				9
Fundamentals	rístics – Road user characteristics – PIEV of Traffic Flow – Urban Traffic problems ir urban infrastructure – Towards Sustaina	n İndi	a – I	nteg	rated plan	ning of tow	vn, country,	
Unit II TRA	FFIC SURVEYS							10
motorized tran presentation – Statistical appli and significance		Or -Me	igin ethoc	Des ls, ir	tination S	Survey – on and p	Methods and oresentation -	d - s
	FFIC DESIGN AND VISUAL AIDS							10
	sign - channelization, Rotary intersection							
	on - Traffic signs including VMS and r working pedestrian facilities & cycle track		mari	kings	– Signif	icant roles	s of traffic co	ntrol
	FIC SAFETY AND ENVIRONMENT	3.						8
Road accidents Air and Noise F	– Causes, effect, prevention, and cost – collution, causes, abatement measures – on-motorized transport							
	FFIC MANAGEMENT							8
	anagement System - Traffic System M	lanac	eme	ent (TSM) with	h IRC sta	ndards — Tr	
Regulatory Mea parking pricing	sures-Travel Demand Management (TDI – All segregation methods- Coordination c management, enforcement and education	M) – on a	Dire	ct an	d indirect	methods	 Congestion 	and
EXTBOOKS:								
	and the second			1. 1		- C		
1. Kadiyali.L	.R. "Traffic Engineering and Transport Pla	annin	g", k	han	na Publisł	ners, Delhi	, 2013	
	ads Congress (IRC) Specifications: Guid		~ ·				·	ning
2. Indian Ro and Mana	ads Congress (IRC) Specifications: Guid	eline	s an	d Sp	ecial Pub	lications o	n Traffic Plan	ning
 Indian Ro and Mana Salter. R.I 	ads Congress (IRC) Specifications: Guid gement. and Hounsell N.B, "Highway Traffic Anal	eline	s an	d Sp	ecial Pub	lications o	n Traffic Plan	ning
2. Indian Ro and Mana 3. Salter. R.I REFERENCE(1. Fred L. N Traffic Ar	ads Congress (IRC) Specifications: Guid gement. and Hounsell N.B, "Highway Traffic Anal S): lannering, Scott S. Washburn and Walter alysis, Wiley India Pvt. Ltd., New Delhi, 2	eline ysis a P.Kil 011	and o	d Sp desig ki, P	ecial Pub gn", Macm rinciples c	lications o nillan Press of Highway	n Traffic Plan s Ltd. 1996. r Engineering	and
2. Indian Ro and Mana 3. Salter. R.I REFERENCE(1. Fred L. M Traffic Ar 2. arber an Learning,	ads Congress (IRC) Specifications: Guid gement. and Hounsell N.B, "Highway Traffic Anal S): lannering, Scott S. Washburn and Walter alysis, Wiley India Pvt. Ltd., New Delhi, 2 d Hoel, "Principles of Traffic New Delhi, 2010	eline ysis a P.Kil 011 and	and of ares	d Sp desig ki, P lighw	ecial Pub gn", Macm rinciples c vay E	lications o nillan Press of Highway Engineerin	n Traffic Plan Ltd. 1996. Engineering g", CENGAG	and
 Indian Ro and Mana Salter. R.I REFERENCE(1. Fred L. N Traffic Ar arber an Learning, SP:43-19 Areas, 19 	ads Congress (IRC) Specifications: Guid gement. and Hounsell N.B, "Highway Traffic Anal S): lannering, Scott S. Washburn and Walter alysis, Wiley India Pvt. Ltd., New Delhi, 2 d Hoel, "Principles of Traffic New Delhi, 2010 94, IRC Specification, "Guidelines on Low	eline ysis a P.Kil 011 and v-cos	and of ares	d Sp desig ki, P lighw	ecial Pub gn", Macm rinciples c vay E Managem	lications o hillan Press of Highway Engineerin ent Techni	n Traffic Plan s Ltd. 1996. r Engineering g", CENGAG ques" for Urb	and E an

1	Company, 1996
5.	Hobbs.F.D. "Traffic Planning and Engineering", University of Brimingham, Peragamon Press Ltd, 2005
6.	Taylor MAP and Young W, "Traffic Analysis – New Technology and New Solutions", Hargreen Publishing Company, 1998.

Kmle

Die 1-, goal Hall to men

Department	CIVIL ENGINEER	2	R 2019	Semester V	PE		
Course Code	Course Name	Hours Weel		Credit C	Total Hours	Maximum	Mark
19CEX07	REMOTE SENSING AND GIS	3 0	0	3	45	100	
	ve (s): The purpose of learning this co		-				
 To impart To develo Course Outcom Identify the objects on Interpret the satellite data 		nd Analysis oplication. s will be abl ns, its inter isition, stor	le to: ractio	ons with manipul	the atmos ation, ana		
	Remote Sensing and GIS to perform r						
and the second s	e the database concepts of GIS for t	and the second se		t of desig	n specifica	ations for dev	elopin
an and the	ving the imagery by selecting suitable						
	principles and concepts of remot	e sensing	and	GIS te	chniques	for some im	porta
application				÷.			
	<u> </u>						
	MENTALS OF REMOTE SENSING story of remote sensing - Indian						9
efan-Boltzman Spectral Resp egetation and so	pectrum - Wavelength regions impo and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors.	ering and a ctral reflecta	bsor	sensing ption - A	- Particle a tmospheric	and Wave the windows-Co	eory -
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS of image interpretation - Basic ele Data Products - Digital Image Prod	ering and a ctral reflecta S ements of i cessing - F	nbsor ance mag Pre-p	sensing ption - A of EMR e interpre- processing	- Particle a tmospheric with eart etation - V g - Image	and Wave the windows-Co h surface - v isual interpre compression	eory - ncept water, 9 tation
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS of image interpretation - Basic ele Data Products - Digital Image Prod aniques - Multispectral Image classific	ering and a ctral reflects S ements of i cessing - F ation - Supe	ibsor ance mag Pre-p ervis	sensing ption - A of EMR e interpre processing ed and u	- Particle a tmospheric with eart etation - V g - Image	and Wave the windows-Co h surface - v isual interpre compression	eory - ncept water, 9 tation n and
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOG	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic ele Data Products - Digital Image Prod oniques - Multispectral Image classific RAPHICAL INFORMATION SYSTEM	ering and a ctral reflects ments of i cessing - F ation - Super I AND ITS A	mag Pre-p ervis	sensing ption - A of EMR e interpre- processing ed and u LYSIS	- Particle a tmospheric with eart etation - V g - Image nsupervise	and Wave the windows-Co h surface - v isual interpre compression	eory - incept water, 9 tation n and 9
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOG IS definition - B	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS of image interpretation - Basic ele Data Products - Digital Image Prod aniques - Multispectral Image classific	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS A s - Spatial	mag Pre-p ervis ANA and	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data -	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V	eory - incept water, 9 tation n and 9 /ector
tefan-Boltzman a Spectral Resp egetation and so Jnit II IMAGE oncept and type eys - Types of hancement tech Jnit III GEOG IS definition - B ata - Analysis ar oncept of GPS a	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic ele Data Products - Digital Image Products Data Products - Digital Image Classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages.	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS A s - Spatial	mag Pre-p ervis ANA and	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data -	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V	eory - ncept water, 9 tation n and 9 /ector tions-
tefan-Boltzman a Spectral Resp egetation and so Jnit II IMAGE oncept and type eys - Types of nhancement tech Jnit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Jnit IV DATA	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Special - Platforms and Sensors. INTERPRETATION AND ANALYSIS of image interpretation - Basic electron Data Products - Digital Image Products oniques - Multispectral Image classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type ind structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS	ering and a ctral reflects ments of i cessing - F ation - Supe I AND ITS A s - Spatial i - Maps - N	mag pre-p ervis ANA and lap p	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V of map projec	eory - ncept water, 9 tation n and 9 /ector tions- 9
tefan-Boltzman a Spectral Resp egetation and so Jnit II IMAGE oncept and type eys - Types of hancement tech Jnit III GEOGI IS definition - B ata - Analysis ar oncept of GPS a Jnit IV DATA I put methods - echnique - Topo	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Special - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic electron Data Products - Digital Image Products Data Products - Digital Image Classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces	ering and a ctral reflects ments of i cessing - F ation - Supe I AND ITS A s - Spatial i - Maps - M	mag Pre-p ervis ANA and 1ap p	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o patial Anal	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V of map projec	eory - ncept water, 9 tation n and 9 /ector tions- 9 ay
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Unit IV DATA I put methods - echnique - Topo emote Sensing a	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Special - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic electron Data Products - Digital Image Products Data Products - Digital Image Classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces	ering and a ctral reflects aments of i cessing - F ation - Super I AND ITS A s - Spatial a - Maps - M ery Building -TIN -DEM	mag Pre-p ervis ANA and lap p - D	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slo	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o patial Anal	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V of map projec	eory - ncept water, 9 tation n and 9 /ector tions- 9 ay
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOGI IS definition - B ata - Analysis ar oncept of GPS a Unit IV DATA I put methods - echnique - Topo emote Sensing a Unit V MAJOF atural Resource	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec- il - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic ele Data Products - Digital Image Products Data Products - Digital Image Products CAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces and GIS. APPLICATIONS OF REMOTE SEN as Management - Land Cover an	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS A s - Spatial - Maps - M ery Building -TIN -DEM SING AND d Land Us	mag Pre-p ervis ANA and Iap p - D GIS se -	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slop	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o patial Anal pe Model - Resources	and Wave the windows-Co h surface - w isual interpre compression d Raster and w of map projec lysis - Overla - Integration	eory - ncept water, 9 tation n and 9 /ector tions- 9 ay of 9 rshed
tefan-Boltzman a Spectral Resp egetation and so Jnit II IMAGE oncept and type eys - Types of nhancement tech Jnit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Jnit IV DATA I put methods - echnique - Topo emote Sensing a Jnit V MAJOF atural Resource anagement - Irr	And Wein's Laws - Atmospheric scatter onse and Spectral Signature - Special - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic electron Data Products - Digital Image Products - Digital Image Products - Digital Image Classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces and GIS. RAPPLICATIONS OF REMOTE SEN as Management - Land Cover an igation and Agriculture - Environmer	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS / s - Spatial a - Maps - M ery Building -TIN -DEM SING AND d Land Us ntal studies	mag Pre-p ervis ANA and fap p - D GIS se - - G	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slop Water round W	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o patial Anal pe Model Resources ater explor	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V of map projec lysis - Overla - Integration s and Water ration - Wast	eory - ncept water, 9 tation n and 9 /ector tions- 9 ay of 9 rshed eland
tefan-Boltzman a Spectral Resp egetation and so Jnit II IMAGE oncept and type eys - Types of nhancement tech Jnit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Jnit IV DATA I put methods - echnique - Topo emote Sensing a Jnit V MAJOF atural Resource anagement - Irr anagement-Fore	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec- il - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic ele Data Products - Digital Image Products Data Products - Digital Image Products CAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces and GIS. APPLICATIONS OF REMOTE SEN as Management - Land Cover an	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS / s - Spatial a - Maps - M ery Building -TIN -DEM SING AND d Land Us ntal studies	mag Pre-p ervis ANA and fap p - D GIS se - - G	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slop Water round W	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o patial Anal pe Model Resources ater explor	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V of map projec lysis - Overla - Integration s and Water ration - Wast	eory - ncept water, 9 tation n and 9 /ector tions- 9 ay of 9 rshed eland
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Unit IV DATA I put methods - echnique - Topo emote Sensing a Unit V MAJOF atural Resource anagement - Irr anagement - Fore arth Quakes	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic ele Data Products - Digital Image Prod oniques - Multispectral Image classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces and GIS. RAPPLICATIONS OF REMOTE SEN as Management - Land Cover an gation and Agriculture - Environments at Resources- Natural Disaster Man	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS / s - Spatial a - Maps - M ery Building -TIN -DEM SING AND d Land Us ntal studies	mag Pre-p ervis ANA and fap p - D GIS se - - G	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slop Water round W	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o patial Anal pe Model Resources ater explor	and Wave the windows-Co h surface - v isual interpre compression ed Raster and V of map projec lysis - Overla - Integration s and Water ration - Wast	eory - ncept water, 9 tation n and 9 /ector tions- 9 ay of 9 rshed eland
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Unit IV DATA I put methods - echnique - Topo emote Sensing a Unit V MAJOF atural Resource anagement - Irr anagement - Irr anagement - Fore arth Quakes REFERENCE(S) 1 M. Anji Rec	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic ele Data Products - Digital Image Prod oniques - Multispectral Image classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces and GIS. RAPPLICATIONS OF REMOTE SEN as Management - Land Cover an gation and Agriculture - Environments at Resources- Natural Disaster Man	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS A s - Spatial - Maps - M ery Building -TIN -DEM SING AND d Land Us tal studies agement- I	mag Pre-p ervis ANA and and fap p - D GIS se - - G Land	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slop Water round W I Slides,	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types o patial Anal pe Model - Resources ater explor Flood Rou	and Wave the windows-Co h surface - w isual interpre compression d Raster and w of map projec lysis - Overla - Integration s and Water ration - Wast iting, Forest I	eory - ncept water, 9 tation and 9 /ector tions- 9 /ector tions- 9 rshed eland Fires,
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Unit IV DATA I put methods - echnique - Topo emote Sensing a Jnit V MAJOF atural Resource anagement - Irr anagement - Irr anagement - Fore arth Quakes REFERENCE(S) 1. M. Anji Red	and Wein's Laws - Atmospheric scatt onse and Spectral Signature - Spec il - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic ele Data Products - Digital Image Products Data Products - Digital Image Products RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type d structure of Raster and Vector data nd its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces and GIS. RAPPLICATIONS OF REMOTE SEN as Management - Land Cover an gation and Agriculture - Environmer st Resources- Natural Disaster Man	ering and a ctral reflects ements of i cessing - F ation - Supe I AND ITS A s - Spatial a - Maps - M ery Building -TIN -DEM SING AND d Land Us tal studies hagement- I al Informati	mag Pre-p ervis ANA and lap p - D GIS se - GIS se - GIS	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slop Water round W I Slides,	- Particle a tmospheric with eart etation - V g - Image nsupervise tial data - s - Types of patial Anal pe Model - Resources ater explor Flood Rou	and Wave the windows-Co h surface - w isual interpre compression ed Raster and W of map projec lysis - Overla - Integration s and Water ration - Wast iting, Forest I on, BS Public	eory - ncept water, 9 tation and 9 /ector tions- 9 ay of 9 ay of 9 rshed eland Fires,
tefan-Boltzman a f Spectral Resp egetation and so Unit II IMAGE oncept and type eys - Types of nhancement tech Unit III GEOG IS definition - B ata - Analysis ar oncept of GPS a Unit IV DATA I put methods - echnique - Topo emote Sensing a Unit V MAJOF atural Resource anagement - Irr anagement - Irr	and Wein's Laws - Atmospheric scatter onse and Spectral Signature - Special - Platforms and Sensors. INTERPRETATION AND ANALYSIS as of image interpretation - Basic electron Data Products - Digital Image Products - Multispectral Image classific RAPHICAL INFORMATION SYSTEM asic components of GIS - Data type and its advantages. NPUT, EDITING AND ANALYSIS Data stream - Data Retrieval - Que logical analysis - Modeling surfaces and GIS. RAPPLICATIONS OF REMOTE SEN as Management - Land Cover and gation and Agriculture - Environmer ast Resources- Natural Disaster Man	ering and a ctral reflects ments of i cessing - F ation - Super AND ITS / s - Spatial - Maps - M ery Building -TIN -DEM SING AND d Land Us nagement- I al Information, nsing and C d, New Delh	mag Pre-p ervis ANA and fap p - D GIS se - - G Land Oxfo Geogni, 20	sensing ption - A of EMR e interpre- processing ed and u LYSIS non-spat projection Simple S TM - Slo Water round W I Slides, Systems, ord Unive graphical 008.	- Particle a tmospheric a with eart etation - V g - Image nsupervise tial data - s - Types of patial Anal pe Model - Resources ater explor Flood Rou Third Edition rsity Press Information	and Wave the windows-Co h surface - v fisual interpre compression ad Raster and V of map projec lysis - Overla - Integration s and Water ration - Wast uting, Forest I on, BS Public , New Delhi, 2 n Systems, K	eory - ncept water, 9 tation n and 9 /ector tions- 9 /ector tions- 9 ay of 9 rshed eland Fires, cations

Department	CIVIL ENGINEERI	NG		1.		R 2019	Semester V	PE
Course Code	Course Name	1.000	lour Wee		Credit	Total	Maximun	n Marks
		L	Т	Ρ	C .	Hours		
19CEX08	AIR POLLUTION AND CONTROL ENGINEERING	3	0	0	3	45	100	
 To impa 	tive (s): The purpose of learning this count int knowledge on the principle and de and its emerging trends	urse i esign	s to of (contr	ol of Ind	oor/ partic	ulate/ gased	ous air
Contraction of the second s	mes: At the end of this course, learners	will b	e ab	ole to	:			
	rstanding of the nature and characterist					se pollution	n and basic o	oncept
of air qua	ality management						1.41	
 Ability to 	identify, formulate and solve air and noi	se po	llutio	on pr	oblems			
 Ability to 	design stacks and particulate air pollution	on co	ntrol	devi	ces to me	et applical	ble standards	3.
Ability to	select control equipments.							
 Ability to 	ensure quality, control and preventive m	neasu	ires.					
Unit I INTR	ODUCTION	-		1.1		ot al a	E	7
Structure and co	omposition of Atmosphere – Definition, S	cope	and	Sca	les of Air	Pollution -	Sources and	k
and visibility- An	air pollutants and their effect on human l nbient Air Quality and Emission standard	nealtl Is –A	n, ve mbie	getat ent a	tion, anim nd stack s	als, proper sampling a	rty, aesthetic nd Analysis c	value of
	Gaseous Pollutants EOROLOGY		-11-				and the second second	6
	prology on Air Pollution - Fundamentals	Atr	nosr	herio	stability	Inversion	Wind profile	
	terns- Atmospheric Diffusion Theories –						, p	
	TROL OF PARTICULATE CONTAMINA					Sec. 1		11
Factors affecting	g Selection of Control Equipment – Gas	Part	icle	Inter	action – \	Norking pr	inciple, Desig	gn and
performance eq	uations of Gravity Separators, Centrifu	igal s	sepa	rator	s Fabric	filters, Par	ticulate Scru	ibbers,
Electrostatic Pre	cipitators – Operational Considerations.			1.2	the second second			11
	TROL OF GASEOUS CONTAMINANTS			-inla	Design	and norfor	manag aguat	1.3.2.5
absorption, Ads	g Selection of Control Equipment – Wor sorption, condensation, Incineration, I erational Considerations.	Ring Bio s	crub	obers	, Bio fil	ters – Pr	ocess contro	ol and
	OR AIR QUALITY MANAGEMENT			9-11-5-				10
Sources, types Sources and Eff	and control of indoor air pollutants, s ects of Noise Pollution – Measurement -	ick b - Stai	uildi ndar	ng s ds –0	yndrome Control ar	and Build nd Preventi	ling related i ve measures	llness-
TEXTBOOKS:								
	K. Wang, Norman C. Pareira, Yung Ts sience + science media LLC,2004	se Hu	ung,	"Air	Pollution	Control E	ngineering",	Tokyo,
2. Noel de Ne	evers, "Air Pollution Control Engineering	", Wa	vela	nd p	ress,Inc 2	017	2020	100
	I. Y, "Air Pollution and Control Technolog	gies"	, Alli	ied P	ublishers	(P) Ltd., Ir	ndia 2002.	
REFERENCE(S					0000			
	Liu, Bela G. Liptak, "Air Pollution", Lew						and the second states	
2. Arthur C.	Stern, "Air Pollution (Vol.I – Vol.VIII)", Ad	cader	nic F	ress	5, 2006.			
	Davis, "Air Pollution Engineering Manual"	24	_	1	100 100 100 100 100 100 100 100 100 100			1.000
	nd HVN Rao, "Air Pollution", Tata Mcgra							Limited
5. C.S.Rao, Publishers,	"Environmental Pollution Control E ,2006	ngin	eerir	ng,	New A	ge interr	national(P)	_imited
						Rul	A	
•						Chairman	Bos	
1-27-05	A MASTA SUGO						igg ESEC	
	and the strate							

Department	CIVIL ENGINEERI	NG				R 2019	Semester V	PE
Course Code	Course Name		lour Wee		Credit	Total	Maxin	
	DAILWAYS AIRPORTS AND	L	Т	Р	С	Hours	Ма	rks
19CEX09	RAILWAYS, AIRPORTS AND HARBOUR ENGINEERING	3	0	0	3	45	100	
	(s): students about Railways planning, de of airport and harbor	esign	, cor	nstru	ction and	maintena	nce and pla	nning
 Understand Constructio Understand Gain an inst 	I the Construction techniques and Mai ight on the planning and site selection	and ntena i of A	des ance irpor	sign of T t Pla	elements rack layin nning and	in Railv g and Rail design.	lway stations	
and the second	d design the elements for orientation of				•			
	I the various features in Harbours and Regulations to be adopted	a Poi	ts, t	neır	constructi	on, coasta	al protection	work
	AY PLANNING AND CONSTRUCTIO	N			1	1.2		9
Elements of perma Track Stress, conir	anent way – Rails, Sleepers, Ballast, ng of wheels, creep in rails, defects in Geometric design of railway, gradier	rail f rails	-R	oute	alignmen	t surveys,	conventiona	iges - al and
	AY CONSTRUCTION AND MAINTEN	ANC	E					9
	zation of track on poor soil - Track dr on and maintenance of tracks – Rai							
	RT PLANNING				2	1422		9
	cteristics - airport classification – ICA dies, parking and Circulation Area.	40 -	airpo	ort pl	lanning: S	Site select	ion typical A	irport
Unit IV AIRPOR	RT DESIGN							9
	rientation, Wind Rose Diagram, Proble way Design – Airport Zones – Passen							
								9
Harbours: Harbour letties, Quays, Sp	Terms: Harbour, Port, Satellite Port, I Layout and Terminal Facilities – C ring Fenders, Dolphins and Floating structures and Coastal Protection Wor	oasta Land	al St ling	ructu Stag	ires: Pier e – Inlan	s, Break v d Water T	waters, Wha ransport – V	arves,
EXTBOOKS:								
^{1.} (India), Chenr							-	
^{2.} Sons, Delhi, 1		1						
o Mialina.o.K.	Arora.M.G and Jain.S.S, Airport Pl 4	annin	iy a		Jesign, N	emachan	u anu bios	•
3 Roorkee,1994					344		1.1.1	
Roorkee, 1994			- 11 - C	OVIC	Airports			
Reference(s): 1. Venkatramaia Bridges and T	h. C., Transportation Engineering-Vo unnels.,Universities Press (India) Priv	vate L	imite	ed, H	lyderabad	l, 2015.		
Reference(s): 1. Venkatramaia Bridges and T		vate L	imite	ed, H	lyderabad	l, 2015. dia) Priva	te Ltd, Nev	
S Roorkee,1994 REFERENCE(S): . 1. Venkatramaia Bridges and T . 2. Mundrey J S Delhi,2013 .	unnels., Universities Press (India) Priv	vate L	imite	ed, H	lyderabad ation (In	l, 2015. dia) Priva		v

Department	CIVIL ENGINEERI	NG				R 2019	Semester V	PE
Course Code	Course Name		Hour Wee	k	Credit C	Total Hours	Maxin Ma	
19CEX10	MUNICIPAL SOLID WASTE MANAGEMENT	L 3	Т 0	P 0	3	45	100	
Course Object	ive (s): The purpose of learning this cou	ırse i	s to					
 Make the 	ng and disposal of municipal solid wast	sourc		gene	ration, sto	orage, col	lection, trans	sport,
	nes: At the end of this course, learners							
	nding of the nature and characterist ents regarding municipal solid waste ma				pal solid	wastes a	and the reg	ulator
 Reduction 	n, reuse and recycling of waste.							
	plan and design systems for storage	e, col	lecti	on, t	ransport,	processir	ng and dispo	osal d
	solid waste.				1000			
	e on the issues on solid waste manage	emen	t fror	n an	integrate	d and holi	stic perspect	tive, a
	the local and international context.							
	nd operation of sanitary landfill	_	8					0
The second se	CES AND CHARACTERISTICS es of municipal solid wastes- Public hea	lth o	ndo	nviro	nmontali	mnacts of	improper di	9
	sampling and characterization of was							
characteristics -	Elements of integrated solid waste ma	anade	emer	nt -	Requirem	ents and	salient featu	ires o
Solid waste man	agement rules (2016) — Role of public	and I	NGC	"s- F	ublic Priv	ate partic	ipation – Ele	ment
	· · · · · ·							
	d Waste Management Plan.							
of Municipal Solid	d Waste Management Plan. CE REDUCTION , WASTE STORAGE	AND	RE					8
of Municipal Solic Unit II SOUR Waste Managem	CE REDUCTION, WASTE STORAGE ent Hierarchy - Reduction, Reuse and	d Re	cycli	CYC ng -	Source re	eduction of	of waste – C	8 Dn-site
of Municipal Solic Unit II SOUR Waste Managem storage methods	CE REDUCTION , WASTE STORAGE ent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for	d Re r con	cycli taine	CYC ng - ers -	Source response	eduction of sol	of waste – C id wastes –	8 Dn-site Public
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ	CE REDUCTION, WASTE STORAGE ent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas	d Re r con	cycli taine	CYC ng - ers -	Source response	eduction of sol	of waste – C id wastes –	8 Dn-site Public
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con	CE REDUCTION, WASTE STORAGE ent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes	d Re r con e stu	cycli taine	CYC ng - ers -	Source response	eduction of sol	of waste – C id wastes –	8 Dn-site Public ling o
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con Unit III COLL	CE REDUCTION, WASTE STORAGE ent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE	d Re r con e stu S	cycli taine udies	CYC ng - ers - s und	LING source re segregat der Indiar	eduction of sol ion of sol n conditio	of waste – C id wastes – ns – Recycl	8 Dn-site Public ling o
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con Unit III COLL Methods of Resi	CE REDUCTION, WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection	d Re r con e stu S on –	cycli taine udies Coll	CYC ng - ers - s und ectic	Source re segregat der Indiar	eduction of ion of sol conditio s – Manp	of waste – C id wastes – ns – Recycl power – Coll	8 Public ing o 8 lectior
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con Unit III COLL Methods of Resi routes – Analysi	CE REDUCTION, WASTE STORAGE ent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE	d Re r con e stu S on – er st	cycli taine udies Coll	CYC ng - ers - s und ectic	Source re segregat der Indiar	eduction of ion of sol conditio s – Manp	of waste – C id wastes – ns – Recycl power – Coll	8 Dn-site Public ling o 8 lection nance
of Municipal SolidUnit IISOURWaste Managemstorage methodshealth and econPlastics and ConUnit IIICOLLMethods of Resiroutes – Analysioptions under IncUnit IVPROC	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES	d Re r con e stu S on – er st g.	cycli taine udies Coll atior	CYC ng - ers – unc ectic	CLING source re segregat der Indiar on vehicle ocation, o	eduction of ion of sol conditio s – Manp operation	of waste – C id wastes – ns – Recycl oower – Coll and mainter	8 Public ing o 8 lection nance
of Municipal SolidUnit IISOURWaste Managemstorage methodshealth and econPlastics and ConUnit IIICOLLMethods of Resiroutes – Analysioptions under IncUnit IVPROCObjectives of wassolid waste com	CE REDUCTION, WASTE STORAGE ent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving	d Re r con e stu 5 on – er st g. echni	cycli taine udies Coll atior	CYC ng - ers - s und ectic ns -l	CLING source re segregat der Indiar on vehicle ocation, o	eduction of ion of sol conditio s – Manp operation ent; Resol	of waste – C id wastes – ns – Recycl power – Coll and mainter urce recover	8 Public ing o 8 lection nance 12 y from
of Municipal SolidUnit IISOURWaste Managemstorage methodshealth and econPlastics and ConUnit IIICOLLMethods of Resiroutes – Analysioptions under IncUnit IVPROCObjectives of wassolid waste comconditions	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal	d Re r con e stu 5 on – er st g. echni	cycli taine udies Coll atior	CYC ng - ers - s und ectic ns -l	CLING source re segregat der Indiar on vehicle ocation, o	eduction of ion of sol conditio s – Manp operation ent; Resol	of waste – C id wastes – ns – Recycl power – Coll and mainter urce recover	8 Public ling o 8 lection nance 12 y from Indiar
of Municipal SolidUnit IISOURWaste Managemstorage methodshealth and econPlastics and ConUnit IIICOLLMethods of Resiroutes – Analysioptions under IncUnit IVPROCObjectives of wassolid waste comconditionsWAST	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal TE DISPOSAL	d Re r con e stu S on – er st g. echni prod	cycli taine udies Coll atior	ections -l	ELING source re segregat der Indiar on vehicle ocation, o d Equipme options –	eduction of ion of sol conditio s – Manp operation ent; Resol case stu	of waste – C id wastes – ns – Recycl oower – Coll and mainter urce recover idies under	8 Public ing o lection nance 12 y from Indian
of Municipal SolidUnit IISOURWaste Managemstorage methodshealth and econPlastics and ConUnit IIICOLLMethods of Resiroutes – Analysioptions under IncUnit IVPROCObjectives of wassolid waste comconditionsUnit VWASTLand disposal of	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal	d Re r con e stu S on – er st g. echni prod	cycli taine udies Coll atior ques cessi	ections –l	ELING source re segregat der Indiar on vehicle ocation, o d Equipme options – n and ope	eduction of ion of sol conditio s – Manp operation ent; Reson case stu	of waste – C id wastes – ns – Recycl oower – Coll and mainter urce recover idies under	8 Public ing o lection nance 12 y from Indian 8 dfills -
of Municipal SolidUnit IISOURWaste Managemstorage methodshealth and econPlastics and ConUnit IIICOLLMethods of Resiroutes – Analysioptions under IncUnit IVPROCObjectives of wassolid waste comconditionsUnit VWASTLand disposal of	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal EDISPOSAL solid waste- Sanitary landfills – site se	d Re r con e stu S on – er st g. echni prod	cycli taine udies Coll atior ques cessi	ections –l	ELING source re segregat der Indiar on vehicle ocation, o d Equipme options – n and ope	eduction of ion of sol conditio s – Manp operation ent; Reson case stu	of waste – C id wastes – ns – Recycl oower – Coll and mainter urce recover idies under	8 Public ing o lection nance 12 y from Indian 8 dfills -
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con Unit III COLL Methods of Resire routes – Analysi options under Inc Unit IV PROC Objectives of was solid waste com conditions Unit V WAST Land disposal of Landfill liners – M TEXTBOOKS: 1. William A. W	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collective s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal EDISPOSAL solid waste- Sanitary landfills – site se lanagement of leachate and landfill gas	d Re r con e stu S on – er st g. echni prod	Coll ation ques cession, co odfill	ections –l s and ing of lesig	ELING source re segregat der Indiar on vehicle ocation, o d Equipme options – n and ope eactor – D	eduction of ion of sol conditio es – Manp operation ent; Reson case stu eration of umpsite F	of waste – C id wastes – ns – Recycl bower – Coll and mainter urce recover idies under sanitary land Rehabilitation	8 Public ing o lection nance 12 y from Indian 8 dfills -
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con Unit III COLL Methods of Resi routes – Analysi options under Inc Unit IV PROC Objectives of was solid waste com conditions Unit V WAST Land disposal of Land fill liners – M TEXTBOOKS: 1. William A. V 2	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal EDISPOSAL solid waste- Sanitary landfills – site se lanagement of leachate and landfill gas	d Re r con e stu S on – er st g. echni prod	Coll ation ques cession, co odfill	ections –l s and ing of lesig	ELING source re segregat der Indiar on vehicle ocation, o d Equipme options – n and ope eactor – D	eduction of ion of sol conditio es – Manp operation ent; Reson case stu eration of umpsite F	of waste – C id wastes – ns – Recycl bower – Coll and mainter urce recover idies under sanitary land Rehabilitation	8 Public ing o lection nance 12 y from Indian 8 dfills -
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con Unit III COLL Methods of Resi routes – Analysi options under Inc Unit IV PROC Objectives of was solid waste com conditions Unit V WAST Land disposal of Landfill liners – N TEXTBOOKS: 1. Villiam A. V 2. John Pitche Press, Tayle REFERENCE(S)	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal EDISPOSAL solid waste- Sanitary landfills – site se lanagement of leachate and landfill gas Vorrell, P. Aarne Vesilind (2012) Solid V el (2014), Waste Management Practi for and Francis, New York):	d Re r con e stu S on – er st g. echni prod electio - Lan Vaste ces-N	cycli taine udies Coll atior ques cessi on, c dfill e Eng	ections –l ections –l s and ing of lesig biore	ELING source re- segregat der Indiar on vehicle ocation, d d Equipme options – n and ope eactor – D ering, Cer , Hazarde	eduction of ion of sol conditio es – Manp operation ent; Resol case stu eration of umpsite F	of waste – C id wastes – ns – Recycl oower – Coll and mainter urce recover idies under sanitary land Rehabilitation	8 Public ing c lection nance 12 y from Indian 8 dfills -
of Municipal Solid Unit II SOUR Waste Managem storage methods health and econ Plastics and Con Unit III COLL Methods of Resi routes – Analysi options under Inc Unit IV PROC Objectives of was solid waste com conditions Unit V WAST Land disposal of Land disposal of Land fill liners – M TEXTBOOKS: 1. Villiam A. V 2. John Pitche Press, Tayle REFERENCE(S) 1. CPHEEO (Environme	CE REDUCTION , WASTE STORAGE nent Hierarchy - Reduction, Reuse and – Effect of storage, materials used for omic aspects of open storage – cas struction/Demolition wastes ECTION AND TRANSFER OF WASTE dential and commercial waste collection s of waste collection systems; Transf lian conditions – Field problems- solving ESSING OF WASTES ste processing – Physical Processing to posting and biomethanation; Thermal EDISPOSAL solid waste- Sanitary landfills – site se lanagement of leachate and landfill gas Vorrell, P. Aarne Vesilind (2012) Solid V el (2014), Waste Management Practi for and Francis, New York	d Re r con e stu S on – er st g. echni prod electio - Lan Vaste ces-N te ma	cycli taine udies Coll atior aques cessi cessi on, c dfill anag	CYC ng - ers - ers - ections - ing of lesig biore ginee cipal eme ndia,	ELING source re- segregat der Indiar on vehicle ocation, of d Equipme options – n and opt eactor – D ering, Cer , Hazarde nt, Centra New Delf	eduction of ion of sol condition is – Manp operation ent; Reson case stu eration of umpsite F ingage Lea bus and al Public H ni.	of waste – C id wastes – ns – Recycl oower – Coll and mainter urce recover idies under sanitary land Rehabilitation mining, 2012. industrial –	8 Public ing o 8 lection nance 12 y from Indiar 8 dfills -

Course Code Course Name Hours/Wee Credit International Maximum Marks 19CEX11 SUSTAINABLE CONSTRUCTION METHODS 3 0 0 3 45 100 Course Objective (s): The purpose of learning this course is to To understand the concept of Energy. To study the building materials and its impact on environment. To study the building materials and its impact on environment. To broyide an insight into various Energy Efficient Materials and Sustainable Construction Technolog Course Outcomes: At the end of this course, learners will be able to: To Insight on environmental impact of building materials. To Understanding of building materials and construction techniques that are sustainable and ener efficient 8 Aleasuring the impact of building materials, ife cycle and analysis (file cycle analysis can be able materials, low energy building and masonry materials, life cycle and analysis (file cycle analysis can be able mobioded energy, case studies and analysis. 10 Unit II RECYCLABLE AND RENEWABLE MATERIALS 10 Soncept of Recyclable materials – Green rating and Building Materials – Concept o isodegradable & Non-Biodegradable Materials – Green rating and Building Materials – Fly sh bricks Zement – Recycled Steel, Bamboo based products 10 Init III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 Indoor environmental quality – issues and causes, components of integrated design – emissions fron suilding materials. Cons	Department	CIVIL ENGINEERI	ING				R 2019	Semester VI	PE
L T P C 19CEX11 SUSTAINABLE CONSTRUCTION METHODS 3 0 3 45 100 Course Objective (s): The purpose of learning this course is to To understand the concept of Energy. 5 100 To study the building materials and its impact on environment. To provide an insight into various Energy Efficient Materials and Sustainable Construction Technolog Course Outcomes: At the end of this course, learners will be able to: To Insight on environmental impact of building materials. 8 To Understandthe concept of Energy. To Outderstandthe concept of Energy. 8 Measuring the impact of building materials; calculating embodied energy, recycling and embodied energy fordiferent building materials. 8 Ounderstandthe concept of Energy. 10 10 10 Concept of Recyclable materials - Sustainable Building Materials - Life Cycle analysis can be attembodied energy. 10 Concept of Recyclable materials - Sustainable Building Materials - Life Cycle Design of Materials - Goncept C 10 Concept of Recyclable materials - Sustainable Building Materials - Fly ash bricks comment al quality resustainable Building Materials - Fly ash bricks comment. 10 Unit II PESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 Unit	Course Code	Course Name	Ho	1115552	Wee	Credit		Maximum I	Marks
INDECKIT METHODS J	oouroe ooue	oouroo numo	L	Т	Р	С	1.1.1		
To understand the concept of Energy. To study the building materials and its impact on environment. To provide an insight into various Energy Efficient Materials and Sustainable Construction Technolog Course Outcomes: At the end of this course, learners will be able to: To Insight on environmental impact of building materials. To Understanding of building materials and construction techniques that are sustainable and ener efficient Unit I ENVIRONMENTAL IMPACT OF BUILDING MATERIALS Subdemating and embodied energy, time and embodied energy, embodied energy of different building materials; calculating embodied energy, embodied energy, forcycling and embodied energy, time and embodied energy, embodied energy, forcessing and embodied energy, time and embodied energy, embodied energy, forcessing and embodied energy, time and embodied energy, embodied energy, forcessing and embodied energy, time and embodied energy, embodied energy, forcessing and embodied energy, time and embodied energy, embodied energy, forcessing and embodied energy, tast studies and analysis. Unit II RECYCLABLE AND RENEWABLE MATERIALS Subdegradable & Non-Biodegradable Materials – Green rating and Building Materials – Concept of Recycled B teal Bamboo based products. Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 ndoor environmental quality – issues and causes, components of integrated design – emissions from uilding materials. Construction operations – site planning, indoor air quality during construction – materials nanagement – Construction and Demolition – waste management – building commissioning – LEED credit or different aspects. Green building constructor. Unit V SUSTAINABLE CONSTRUCTION Sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community building suing self-help technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technologies developed by CBRI raditional Building C	19CEX11		3	0	0	3	45	100	
To Insight on environmental impact of building materials. To Understanding of building materials and construction techniques that are sustainable and ener efficient Unit I ENVIRONMENTAL IMPACT OF BUILDING MATERIALS Aeasuring the impact of building materials; calculating embodied energy, recycling and embodied energy or coessing and embodied energy time and embodied energy, embodied energy of different building materials, life cycle and analysis (life cycle analysis can be atel mbodied energy); Case studies and analysis. Unit II RECYCLABLE AND RENEWABLE MATERIALS 10 Concept of Recyclable materials – Sustainable Building Materials – Life Cycle Design of Materials icodegradable & Non-Biodegradable Materials – Green rating and Building Materials – Concept c seource reuse, Recycled content, Regional materials, Rapidly renewable materials – Fly ash bricks Cement – Recycled Steel, Bamboo based products. Unit II DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 foor environmental quality – issues and causes, components of integrated design – emissions fron uilding materials. Construction operations – site planning, indoor air quality during construction – material: nanagement – Construction and Demolition – waste management – building commissioning – LEED credit rediterint aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. Unit V SUSTAINABLE CONSTRUCTION gesign issues relating to sustainable development including site and ecology, community and culture, health aterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture Unit V SUSTAINABLE CONSTRUCTION flier Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological intervention so save nergy Efficient Construction Technologies – Introduction to other Technological interv	To undeTo study	erstand the concept of Energy. y the building materials and its impact on	envir	onm		d Sustaii	nable Cons	truction Tech	nolog
Measuring the impact of building materials; calculating embodied energy, recycling and embodied energy, rocessing and embodied energy, time and embodied energy, embodied energy of different building and masonry materials, life cycle and analysis (life cycle analysis can be after mbodied energy); Case studies and analysis. 10 Unit II RECYCLABLE AND RENEWABLE MATERIALS 10 Doncept of Recyclable materials - Sustainable Building Materials - Life Cycle Design of Materials - Life Cycle Design of Materials - Concept of esource reuse, Recycled content, Regional materials, Rapidly renewable materials - Fly ash bricks ement - Recycled Rel, Bamboo based products. 10 Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 ndoor environmental quality - issues and causes, components of integrated design - emissions from outiging materials. Construction and Demolition - waste management - building commissioning - LEED credits or different aspects. Green building economics - quantifying benefits. Recent advances in sustainable onstruction. 9 Unit IV SUSTAINABLE CONSTRUCTION 9 resign issues relating to sustainable development including site and ecology, community and culture, health interials, index- portable architecture 9 Unit V INERGY EFFICIENT TECHNOLOGIES 9 nergy Efficient Construction Technology - Filler Slab - Rat trap Bond - Technologies developed by CBRI raditional Building buildings - Introduction to other Technological interventions to save nergy - Intelligent Buildings - Energy Conservation through Technological intervention - Saving Energy sed for	To InsigTo Unc	ht on environmental impact of building m derstanding of building materials and cor	ateria	ls.		niques t	hat are sus	stainable and	energ
rocessing and embodied energy, time and embodied energy, embodied energy of different building naterials, low energy building and masonry materials, life cycle and analysis (life cycle analysis can be after mbodied energy); Case studies and analysis. Unit II RECYCLABLE AND RENEWABLE MATERIALS 10 Concept of Recyclable materials – Sustainable Building Materials – Life Cycle Design of Materials – Sidedgradable & Non-Biodegradable Materials – Green rating and Building Materials – Fly ash bricks zement – Recycled Steel, Bamboo based products. Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 door environmental quality – issues and causes, components of integrated design – emissions fron uilding materials. Construction operations – site planning, indoor air quality during construction – materials nanagement – Construction operations – site planning, indoor air quality during construction – materials nanagement – Construction and Demolition – waste management – building commissioning – LEED credits or different aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. Unit V SUSTAINABLE CONSTRUCTION 9 Pesign issues relating to sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture Unit V ENERGY EFFICIENT TECHNOLOGIES 9 nergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditonal Building Construction Technologies – Introduction to other Technologieal interventions to save nergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 2. Ko	Unit I ENV	IRONMENTAL IMPACT OF BUILDING I	MATE	RIA	LS				8
naterials, low energy building and masonry materials, life cycle and analysis (life cycle analysis can be after mbodied energy); Case studies and analysis. Init I RECYCLABLE AND RENEWABLE MATERIALS IOConcept of Recyclable materials – Sustainable Building Materials – Life Cycle Design of Materials – Biodegradable & Non-Biodegradable Materials – Green rating and Building Materials — Concept of Resource reuse, Recycled content, Regional materials, Rapidly renewable materials – Fly ash bricks Dement – Recycled Steel, Bamboo based products. Init II DESIGN OF FLEXIBLE AND RIGID PAVEMENTS Ion door environmental quality – issues and causes, components of integrated design – emissions fron uilding materials. Construction operations – site planning, indoor air quality during construction – materials nanagement – Construction and Demolition – waste management – building commissioning – LEED credits onstruction. Unit IV SUSTAINABLE CONSTRUCTION 9 Design issues relating to sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community buildings using self-help techniques of construction, daptation, repair and management – portable architecture Unit V ENERGY EFFICIENT TECHNOLOGIES 1 Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(5): 1 Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 3 Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3 Watson Donald, 'Climate and Architecture", Elsevier, Amsterdam, 1986. 3 Watson Donald, 'Climate and Architecture'', Elsevier, Amsterdam, 1986. 3 Watson Donald, 'Climate Design: Energy Efficient Building Principles & Practices'', Mc Graw-Hill Book company, New York, 1993.									
Unit II RECYCLABLE AND RENEWABLE MATERIALS 10 Concept of Recyclable materials – Sustainable Building Materials – Life Cycle Design of Materials Concept of Recyclable materials – Sustainable Building Materials – Concept of Resource reuse, Recycled content, Regional materials, Rapidly renewable materials – Fly ash bricks cement – Recycled Steel, Bamboo based products. 10 Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 ndoor environmental quality – issues and causes, components of integrated design – emissions from uilding materials. Construction operations – site planning, indoor air quality during construction – materials nanagement – Construction and Demolition – waste management – building commissioning – LEED credition offerent aspects. Green building economics – quantifying benefits. Recent advances in sustainable offerent aspects. Green building economics – quantifying benefits. Recent advances in sustainable development including site and ecology, community and culture, health inaterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 inergy Efficient Construction Technologies – Introduction to other Technological interventions to save inergy – Intelligent Buildings – Energy Conservation through Technological intervention - Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1 Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 1 Koe	naterials, low e	energy building and masonry materials, li							
concept of Recyclable materials – Sustainable Building Materials – Life Cycle Design of Materials – Biodegradable & Non-Biodegradable Materials – Green rating and Building Materials – Concept of Resource reuse, Recycled content, Regional materials, Rapidly renewable materials – Fly ash bricks ement – Recycled Steel, Bamboo based products. 10 Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 ndoor environmental quality – issues and causes, components of integrated design – emissions from uilding materials. Construction operations – site planning, indoor air quality during construction – materials construction and Demolition – waste management – building commissioning – LEED credits or different aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. 9 Unit IV SUSTAINABLE CONSTRUCTION 9 Design issues relating to sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and management – portable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 nergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. 9 EXTBOOKS: 1 Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. 10 REFERENCE(S): 1 Koenig			ALS	51					10
biodegradable & Non-Biodegradable Materials – Green rating and Building Materials – Concept of desource reuse, Recycled content, Regional materials, Rapidly renewable materials – Fly ash bricks exement – Recycled Steel, Bamboo based products. 10 Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 Indoor environmental quality – issues and causes, components of integrated design – emissions from uilding materials. Construction operations – site planning, indoor air quality during construction – materials nanagement – Construction and Demolition – waste management – building commissioning – LEED credit provide the present sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 nergy Efficient Construction Technologies – Introduction to other Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save nergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1 Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1 Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2 1 Solonji B., "Man, Climate	STEREO, 1997 10 10 10 10 10 10 10 10 10 10 10 10 10			Nate	rials	– Life	Cycle Des	ign of Mater	1000
Amemet – Recycled Steel, Bamboo based products . 10 Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 Indoor environmental quality – issues and causes, components of integrated design – emissions from uilding materials. Construction and Demolition – waste management – building commissioning – LEED credits anagement – construction and Demolition – waste management – building commissioning – LEED credits or different aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. 9 Unit IV SUSTAINABLE CONSTRUCTION 9 pesign issues relating to sustainable development including site and ecology, community and culture, health materials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 nergy Efficient Construction Technologies – Introduction to other Technological interventions to save nergy – Intelligent Buildings – Energy Conservation through Technological intervention so to save nergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTEDOKS: 1 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1 Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United K	liodegradable	& Non-Biodegradable Materials - Gre	een r	ating	g an	d Buildi	ng Materia	als — Conc	ept of
Unit III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS 10 Iddoor environmental quality – issues and causes, components of integrated design – emissions from uilding materials. Construction operations – site planning, indoor air quality during construction – materials anagement – Construction and Demolition – waste management – building commissioning – LEED credition of different aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. 9 Unit IV SUSTAINABLE CONSTRUCTION 9 esign issues relating to sustainable development including site and ecology, community and culture, health laterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 nergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technological interventions to save nergy – Intelligent Buildings Construction Technologies – Introduction to other Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. 9 EXTBOOKS: 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 1. 3. Watson Donald,			ls, R	apid	ly re	newable	materials	- Fly ash	bricks
adoor environmental quality – issues and causes, components of integrated design – emissions from uilding materials. Construction operations – site planning, indoor air quality during construction – materials anagement – Construction and Demolition – waste management – building commissioning – LEED credits or different aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. Unit IV SUSTAINABLE CONSTRUCTION 9 vesign issues relating to sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 nergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save nergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3.					-				140
puilding materials. Construction operations – site planning, indoor air quality during construction – materials nanagement – Construction and Demolition – waste management – building commissioning – LEED credits or different aspects. Green building economics – quantifying benefits. Recent advances in sustainable Unit IV SUSTAINABLE CONSTRUCTION 9 Design issues relating to sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Intery Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technology – Filler Slab – Rat trap Bond – Technological interventions to save inergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1 1 Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Contorl", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1 1 Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2 Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3 Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993.					c of	integrat	tod design	- emissions	
 nanagement – Construction and Demolition – waste management – building commissioning – LEED credits or different aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. Unit IV SUSTAINABLE CONSTRUCTION 9 Sustainable development including site and ecology, community and culture, health naterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture Unit V ENERGY EFFICIENT TECHNOLOGIES 9 Intergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save inergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: Keenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993. 									
or different aspects. Green building economics – quantifying benefits. Recent advances in sustainable onstruction. 9 Unit IV SUSTAINABLE CONSTRUCTION 9 Design issues relating to sustainable development including site and ecology, community and culture, health haterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 Inergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technological interventions to save inergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. 9 EXTBOOKS: 1 Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. 1 REFERENCE(S): 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 1 3. Watson Donald, 'Climate and Architecture", Elsevier, Amsterdam, 1986. 1 3. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993. 1									
Unit IV SUSTAINABLE CONSTRUCTION 9 Design issues relating to sustainable development including site and ecology, community and culture, health haterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 Inergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save nergy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1. 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw Hill Book company, New York, 1993.	or different as								
 Jesign issues relating to sustainable development including site and ecology, community and culture, health haterials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture Unit V ENERGY EFFICIENT TECHNOLOGIES 9 Inergy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save energy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Craw-Hill Book company, New York, 1993. 					-	-			1.0
 materials, energy, and water- Domestic and Community buildings using self-help techniques of construction; daptation, repair and managementportable architecture Unit V ENERGY EFFICIENT TECHNOLOGIES 9 Energy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save energy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993. 								1 14 1	-
daptation, repair and managementportable architecture 9 Unit V ENERGY EFFICIENT TECHNOLOGIES 9 Energy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save energy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. 9 EXTBOOKS: 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1. 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993.									
Unit V ENERGY EFFICIENT TECHNOLOGIES 9 Energy Efficient Construction Technology – Filler Slab – Rat trap Bond – Technologies developed by CBRI raditional Building Construction Technologies – Introduction to other Technological interventions to save energy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: 1 Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1. 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw Hill Book company, New York, 1993.				nys	using	sell-fie	ip teciniqu	es or construc	Suon,
 Traditional Building Construction Technologies – Introduction to other Technological interventions to save energy – Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. EXTBOOKS: Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993. 							in a cont	1 2 2 2 2 2	9
 Intelligent Buildings – Energy Conservation through Technological intervention – Saving Energy sed for lighting by design innovation – Case studies. TEXTBOOKS: Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993. 	nergy Efficient	Construction Technology - Filler Slab -	Rat tr	ap E	Bond	- Techr	nologies de	veloped by C	BRI
 sed for lighting by design innovation – Case studies. EXTBOOKS: Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Craw Hill Book company, New York, 1993. 									
EXTBOOKS: 1. Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): 1. Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. 2. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. 3. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993. Kongany, New York, 1993. Km Graw-Hill Book	•••••••••••••••••••••••••••••••••••••••		ough	Tech	nolo	gical inte	ervention -	Saving Energy	gу
 Bansal Naveendra K., Hauser Gerd and Minke Gernot, "Passive Buildings Designs : Handbook of Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw Hill Book company, New York, 1993. 	And the second second second	by design innovation – Case studies.		-	-				-
 Natural Climatic Control", Elsevier Science, Amsterdam, 1997. REFERENCE(S): Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw Hill Book company, New York, 1993. 				Dee		Destilation	- Destinger	I landhaali af	
 Koenigsberger O.H, T.G. Inger Soll, "Manual of tropical Housing and Building" Longman Group United Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw Hill Book company, New York, 1993. 	Natural Cl	imatic Control", Elsevier Science, Amster				Building	s Designs :	Handbook of	4
 Kingdom, 2012. Givonji B., "Man, Climate and Architecture", Elsevier, Amsterdam, 1986. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993. 	and the second sec				1.			In the second	
3. Watson Donald, 'Climatic Design: Energy Efficient Building Principles & Practices", Mc Graw-Hill Book company, New York, 1993.			pical I	Hous	sing a	and Build	ding" Longr	man Group U	nited
5. company, New York, 1993.	2. Givonji B.,	"Man, Climate and Architecture", Elsevie	er, Am	ster	dam,	1986.	1121		14
Chairman - Bos			Buildi	ng P	rinci	oles & P	ractices", N	Ac Graw Hill E	3ook
Chairman - BoS	-						Kr	- le	
Chairman - Bos	1	1411						Dec.	
							Chair	man - BOO	EC

Department	CIVIL ENGINEE	RING				R 2019	Semester VI	PE
Course Code	Course Name	Ηοι	ırs/V k	Vee	Credit	Total	Maximu	
		L	Т	Ρ	С	Hours	Mark	S
19CEX12	INDUSTRIAL STRUCTURES	3	0	0	3	45	100	
 To impa To famil To impa Course Outco To impa Demons 	tive (s): The purpose of learning this count is the students on the design of silos is the students on the design of silos is the students on the transmission struct on the transmission struct on the transmission struct on the transmission struct is the student of this course, learners is the structure of the functional requirements for any	ies an s, bun ures s will t ures	d the kers	and	chimney		ents	
 Design I 	of industrial RC and steel structures Foundation for industries the materials in pre-engineered concep	ot						
	NNING		-					7
	Industries and Industrial Structures -Sp	pecific	requ	uiren	nents for	Industries	s like	
ngineering, Te	extiles, Chemicals, steel and cement. Sit	te layo	out a	nd e	xternal fa	cilities rea	quired.	
Unit II FUN	CTIONAL REQUIREMENTS		1		nod III.	53 n. 13	seg not light	8
esign and deta	ISTRIAL BUILDINGS ailing of bunkers, silos, chimneys, Gantr NDATION FOR INDUSTRIAL STRUCT	1 cont	<u> </u>	prind	piples of f	olded plat	tes and she	12
	ne Foundations and their design-Foundation	ations	for	RC a	and steel	chimneys		
	ENGINEERED BUILDINGS		1					8
ntroduction-Adv naterials- meta	vantages and Disadvantages-Primary and I roofing.	nd see	cond	lary s	structural	elements	-foundation	wal
de .								
EXT BOOK(S)								
1. N. Krishna	Raju, Advanced Reinforced Concrete I	Desigi	n, Cl	BS P	ublishers	and Dist	ributors,200	8
1. N. Krishna 2. P. Dayara	Raju, Advanced Reinforced Concrete I tnam, Deign of steel structures, A.H. Wh	Desigi heeler	n, Cl & C	3S P o., L	ublishers td., Allah	and Dist abad, 200	ributors,200 08	8
2. P. Dayara	Raju, Advanced Reinforced Concrete I tnam, Deign of steel structures, A.H. Wh):	heeler	& C	o., L	td., Allah	abad, 200	08	
1. N. Krishna 2. P. Dayara REFERENCE(S IS :4998 ()	Raju, Advanced Reinforced Concrete I tnam, Deign of steel structures, A.H. Wh	heeler	& C Reii	o., L	td., Allah	abad, 200 rete Chim	08 neys IS: 499	95
1. N. Krishna 2. P. Dayara EFERENCE(S IS :4998 (j 1. (part 1 and materials 2. IS: 3483 c	Raju, Advanced Reinforced Concrete I tnam, Deign of steel structures, A.H. Wh): part 1)'Indian Standard Practice for Des d part 2)criteria for design of reinforced ode of practice for noise Reduction in in	ign of concre	& C Rein ete b	o., L nforc oins f	td., Allah eed Conc for storag	abad, 200 rete Chim le of grant	neys IS: 499 ular and pov	95 vde
1. N. Krishna 2. P. Dayara EFERENCE(S IS :4998 ((part 1 and materials 2. IS: 3483 c 3. IS: 6060 c	Raju, Advanced Reinforced Concrete I tnam, Deign of steel structures, A.H. Wh): part 1)'Indian Standard Practice for Des d part 2)criteria for design of reinforced of ode of practice for noise Reduction in in ode of practice for daylighting of factory	ign of concre	& C Rein ete b	o., L nforc oins f	td., Allah eed Conc for storag	abad, 200 rete Chim le of grant	neys IS: 499 ular and pov	95 vde
1. N. Krishna 2. P. Dayara EFERENCE(S IS :4998 ((part 1 and materials 2. IS: 3483 c 3. IS: 6060 c requireme	Raju, Advanced Reinforced Concrete I tnam, Deign of steel structures, A.H. Wh): part 1)'Indian Standard Practice for Des d part 2)criteria for design of reinforced ode of practice for noise Reduction in in	heeler ign of concre ndustri build	& C Rein ete b	o., L nforc oins f	td., Allah eed Conc for storag	abad, 200 rete Chim le of grant	neys IS: 499 ular and pov	95 vde

pressing an Joan

Department	CIVIL ENGINEERI	NG				R 2019	Semester VI	PE
Course Code	Course Name		lour Nee	k	Credit	Total	Maxim	
		L	Т	Р	С	Hours	Mai	KS
19CEX13	PRESTRESSED CONCRETE STRUCTURES	3	0	0	3	45	100	
To intro prestres structur Course Outcor	tive (s): The purpose of learning this cound oduce the need for prestressing as we ssing to the students. Students will be res subjected to flexure and shear. mes: At the end of the course the stud	vell a introc	is th duce vill b	d to e at	the designed	gn of pres derstand	stressed con	cret
	shall have a knowledge on methods of p e structural elements.	restre	essin	ig an	d able to	design va	nous prestre	sse
Unit I INTR	ODUCTION - THEORY AND BEHAVIO	UR						9
Unit II DESI Basic assumption .S.1343 Code Check for streng	Short term and long term deflections – Lo GN FOR FLEXURE AND SHEAR ons for calculating flexural stresses – P – Design of sections of Type I and Typ th limit based on I.S. 1343 Code – Layou	Permis pe II ut of	pos cable	e str t-ten es in	esses in sioned a post-tens	steel and nd pre-ter	concrete as	9 s pe ms -
	sioned beams – Design for shear based o				ode.			9
deflections due anchorage zone - design of anch	ing deflections – Short term deflections to creep and shrinkage – Check for serv stresses in post-tensioned beams by Ma norage zone reinforcement – Check for tra	viceat agnel ansfe	ility s m r bo	limit etho	state of o	deflection. s method	Determination and IS1343	on o code
	POSITE BEAMS AND CONTINUOUS B							9
	esign of composite beams – Methods ondary moments – Concordant cable and vign							
		-	1					9
Design of tensio	n and compression members – Tanks, p eving partial prestressing, merits and den						sing – Defin	<u></u>
EXTBOOKS:		111						
and the structure of the second structure of	aju N., "Prestressed concrete", 5th Editior	1302 352 350				New York Contraction of the Contract of the Co		
2. 2012	and Gupta.S.P., "Prestressed Concre	ete",	CBS	S Pu	Iblishers	and Distr	ibuters Pvt.	Ltd
REFERENCE(S								-
	an.N, "Prestressed Concrete", Narosa Pu							
Lin TV on	m.P., "Prestressed Concrete Structures", d Ned.H.Burns, "Design of prestressed C					nird Editio	n, Wiley India	a
^{3.} Pvt. Ltd., N	lew Delhi, 2013							
4. IS1343:198 2012	80, Code of Practice for Prestressed Con	crete	, Bu	reau	of Indian	Standard	s, New Delhi	,
						S	m	
	and a second						Chairman - E	305
							Chairman - E of Civil Eng	g F
						Dept.	VI T	

No car

Department	CIVIL ENGINEERI	NG				R 2019	Semester VI	PE
Course Code	Course Name		lour Wee		Credit	Total	Maxim	
	CONSTRUCTION PLANNING AND	L	T	P	C	Hours	Mar	ks
19CEX14	SCHEDULING	3	0	0	3	45	100	
 Learn ab quality of 	tive (s): The purpose of learning this courd bout planning of construction projects, control projects and use of project inform	sche ation	dulii as o	decis	ion makir		nniques, cos	t and
 Understa Schedule Forecast Understa Organize 	mes: At the end of this course, learners nd basic concepts of construction planin the construction activities. and control the cost in a construction. nd the quality control and safety during of information in Centralized database Ma STRUCTION PLANNING	ig. const	ructi	on.				6
efining Work 7	in the development of construction plan asks- Work breakdown structure- Defi	nitior	n- Pi	rece	dence rel	ationships	among activ	thod- tities
stimating Activi	ty Durations-Estimating Resource Requinations PROCEDURES AND TECHN	ireme	ents	for w	ork activi	ties-coding	g systems.	12
cheduling-Activ ode and with le riented schedul echniques-Sche	onstruction schedules-Bar charts - The ity float and schedules-Presenting project ads, Lags and Windows-Calculations for ling-Scheduling with resource constrain eduling with uncertain durations- Cr	ct sch r sch ts an rashir	nedu eduli id pr	iles-(ing w recec	Critical pa /ith leads, lences -U	th schedul lags and v lse of Adv	ing for Activit vindows-Rese anced Scheo	y-on ource duling
and the second se	ess – Introduction to application software			-	-	na si sulfa		
	CONTROL MONITORING AND ACCO	I INT	ING					9
ystems and cos	CONTROL MONITORING AND ACCO I problem-The project budget-Forecast at accounts-Control of project cash flow	ing f	or A	ctivit	y cost co ontrol-Sch	ontrol - fin nedule and	ancial accou Budget upd	9 Inting lates
ystems and cost elating cost and	I problem-The project budget-Forecast	ing f s-Sc	or A hedu	ule c	ontrol-Sch	ontrol - fin nedule and	ancial accou d Budget upd	inting
vstems and cost elating cost and Unit IV QUAL Quality and sat pecifications-To	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi otal Quality control-Quality control by s	ing f s-Sc CO zing statis	or A hedu NST for tical	RUC Qua met	ontrol-Sch TION ality and hods -Sta	Safety-W atistical Q	d Budget upd	inting lates 9 ateria
vstems and cost elating cost and Unit IV QUAL Quality and sat pecifications-To ampling by Attr	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi	ing f s-Sc col zing statis pling	or A hedu NST for tical and	RUC RUC Qua met Vari	ontrol-Sch TION ality and hods -Sta ables-Saf	Safety-W atistical Q	d Budget upd	Inting lates- 9 ateria
vstems and cost elating cost and Unit IV QUAL Quality and sat pecifications-To ampling by Attr Unit V ORGA ypes of project formation - Org f Databases-Ce	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi total Quality control-Quality control by s ibutes-Statistical Quality control by Sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation intralized database Management system	ing f s-Sc is CO zing statis pling IFOR form onal r	or A hedu NST for tical and MA ⁻ atior	RUC Qua met Vari TION	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas	Safety-W atistical Q ety. d organiz	d Budget upd ork and Ma uality control ation and us	9 ateria with 9 se o odels
ystems and cost elating cost and Unit IV QUAL quality and sat pecifications-To ampling by Attr Unit V ORGA ypes of project formation - Org f Databases-Ce ansfer and Flow EXTBOOKS:	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi total Quality control-Quality control by s ibutes-Statistical Quality control by Sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation intralized database Management system	ing f s-Scl zing statis pling IFOR form onal r ns-Da	or A hedu for tical and MA ⁻ atior node	RUC Qua met Vari TION D-Con el of ases	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas and appli	Safety-W atistical Q ety. d organiz es-Other o cation pro	d Budget upd ork and Ma uality control ation and us conceptual M grams-Inform	9 ateria with 9 se o odels natior
ystems and cost elating cost and Unit IV QUAL quality and sat pecifications-To ampling by Attr Unit V ORGA ypes of project formation - Org f Databases-Ce ansfer and Flow EXTBOOKS: 1. Chitkara, K Hill Publish	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi otal Quality control-Quality control by s ibutes-Statistical Quality control by Sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation intralized database Management system v	ing f s-Scl zing statis pling IFOR oform onal r ns-Da	or A hedu NST for tical and MA [*] atior mode ataba	RUC Qua met Vari TION ases	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas and appli cheduling	Safety-W atistical Q ety. d organiz es-Other c cation pro-	d Budget upd ork and Ma uality control ation and us conceptual M grams-Inform	9 ateria with 9 se o odels natior
ystems and cost elating cost and Unit IV QUAL Quality and sat pecifications-To ampling by Attr Unit V ORGA ypes of project formation - Org f Databases-Ce ansfer and Flow EXTBOOKS: 1. Chitkara, K Hill Publish 2. Srinath,L.S	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi otal Quality control-Quality control by s ibutes-Statistical Quality control by Sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation intralized database Management system v C.K. "Construction Project Management ing Co., New Delhi, 2009 ., "Pert and CPM Principles and Applica	ing f s-Scl zing statis pling IFOR oform onal r ns-Da	or A hedu NST for tical and MA [*] atior mode ataba	RUC Qua met Vari TION ases	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas and appli cheduling	Safety-W atistical Q ety. d organiz es-Other c cation pro-	d Budget upd ork and Ma uality control ation and us conceptual M grams-Inform	9 ateria with 9 se of odels nation
ystems and cost elating cost and Unit IV QUAL quality and sat pecifications-To ampling by Attr Unit V ORGA ypes of project formation - Org f Databases-Ce ansfer and Flow EXTBOOKS: 1. Chitkara, K Hill Publish 2. Srinath,L.S REFERENCE(S	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi otal Quality control-Quality control by s ibutes-Statistical Quality control by Sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation intralized database Management system v C.K. "Construction Project Management ing Co., New Delhi, 2009 ., "Pert and CPM Principles and Application is:	ing f is-Scl is COI zing statis pling IFOR oform onal r ns-Da Plar tions	or A hedu NST for tical and MA [*] atior mode ataba	RUC Qua met Vari TION D-Cor el of ases g", So filiate	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas and appli cheduling ed East W	Safety-W atistical Q ety. d organiz es-Other o cation pro- and Cont	d Budget upd ork and Ma uality control ation and us conceptual M grams-Inform trol, Tata Mc 2001	9 aterial with 9 se of odels nation
ystems and cost elating cost and Unit IV QUAL Quality and sat pecifications-To ampling by Attr Unit V ORGA ypes of project formation - Org f Databases-Ce ansfer and Flow EXTBOOKS: 1. Chitkara, K Hill Publish 2. Srinath,L.S REFERENCE(S 1. Chris Hend Owners", E	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi otal Quality control-Quality control by s ibutes-Statistical Quality control by Sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation intralized database Management system v C.K. "Construction Project Management ing Co., New Delhi, 2009 ., "Pert and CPM Principles and Applica	ing f is-Scl is COI zing statis pling IFOR form onal r ns-Da Plar tions ment	or A hedu for tical and MA atior mode ataba	RUC Qua met Vari TION D-Col el of ases g", So filiate Pitsl	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas and appli cheduling ed East W struction – ourgh, 200	Safety-W Safety-W atistical Q ety. d organiz es-Other o cation pro and Cont dest Press, Fundame 00.	d Budget upd ork and Ma uality control ation and us conceptual M grams-Inform trol, Tata Mc 2001	9 ateria with 9 se of odels nation
ystems and cos Relating cost and Unit IV QUAL Quality and sat pecifications-To ampling by Attr Unit V ORGA ypes of project formation - Org f Databases-Ce ansfer and Flow EXTBOOKS: 1. Chitkara, K Hill Publish 2. Srinath,L.S REFERENCE(S 1. Chris Hendon Owners", E 2. Moder.J., I Diagramm	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi batal Quality control-Quality control by sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation that information in databases-relation to an additional database Management system of the sys	ing f is-Scl is COI zing statis pling IFOR form onal r ns-Da Plar tions tions	or A hedu for tical and MA atior mode ataba anning ", Aff for (Hall, 198	Cons Pitsl th CF 5.	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas and appli cheduling ed East W struction – ourgh, 200 PM", PER	Safety-W Safety-W atistical Q ety. d organiz es-Other o cation pro and Cont dest Press, Fundame 00. T and Pre	d Budget upd ork and Ma uality control ation and us conceptual M grams-Inform trol, Tata Mc 2001	9 ateria with 9 se o odels nation
vistems and cost Relating cost and Quality QUAL Quality and sat Specifications-To Sampling by Attr Unit V ORGA Specifications-To Specifications-To Specifications-To Specifications-To Specifications-To Specifications-To Specifications-To Specifications-To Tomathasses-Ce Chitkara, K Hill Publish 2. Chris Hendo Owners", E 2. Moder.J., I Diagramm 3.	I problem-The project budget-Forecast at accounts-Control of project cash flow d schedule information. ITY CONTROL AND SAFETY DURING fety Concerns in Construction-Organi otal Quality control-Quality control by s ibutes-Statistical Quality control by Sam ANIZATION AND USE OF PROJECT IN t information-Accuracy and Use of In ganizing information in databases-relation intralized database Management system v C.K. "Construction Project Management ing Co., New Delhi, 2009 ., "Pert and CPM Principles and Applica Dirickson and Tung Au, "Project Management Engineers, Architects and Builders, Pren Phillips. C. and Davis E, "Project Management Phillips. C. Project Management P	ing f is-Scl zing statis pling IFOR ofform onal r onal r onal r onal r ns-Da Plar tions tions ment tice I emer ition, ohn W	or A hedu NST for tical and MA [*] mode ataba ataba ataba ataba ataba ataba yiley	RUC Qua met Vari TION D-Con el of ases g", So filiate Cons Pitsl th Cl 5. and	ontrol-Sch TION ality and hods -Sta ables-Saf mputerize Data bas and appli cheduling ed East W struction – ourgh, 200 PM", PER Sons, 196	Safety-W atistical Q ety. d organiz es-Other o cation pro- and Cont dest Press, Fundame 00. T and Pre 86.	a Budget upd ork and Ma uality control ation and us conceptual M grams-Inform rol, Tata Mc 2001 ntals Concep cedence	9 ateria with 9 se of odels nation Graw

	CIVIL ENGINEER	RING	;			R 2019	Semester VI	PE
Course Code	Course Name	Ho	urs/\ k T	Nee P	Credit C	Total Hours	Maximu Mark	
19CEX15	BUILDING SERVICES	3	0	0	3	45	100	-
To undersand installTo impart	ve (s): The purpose of learning this contained how a building can be made comt ed knowledge on basics of electrical wirin ize the importance of fire detection and	forta g sys	ble a stem		afe with t	he service	es designed	
 Course Outcom Analyze th Identify su building. Identify the Illustrate th 	nes: At the end of this course, learners the features of service machineries requires itable electrical system and accessories e principles of illumination and Artificial the working principle of Refrigerants and the characteristics of fire safety equipment	will ired s to light d Air	be a for a be in t sou	ble to a buil nstall irces ditior	ding led during ning syste	ems		
	INERIES	ins i	ior u	mere	ent type o	r buildings)	9
Generators -Sing Vibrators-Hot wate Unit II ELECT Basics of electricit	ors -Special features required for phy le / Three phase supply- Solar panel er boilers RICAL SYSTEMS IN BUILDINGS ty - Protective devices in electrical insta- cifications - Types of wires, wiring syste	ls the	eir in ons	nstal - Lig	lation and	d applicat	ions- Conve arthing- Typ	9 9 es d
-	pards - Transformers and switch gears				golootilo	ar triinig i	or bananig	inc
	ctors affecting visual tasks - Synthesi							
colour - Luminous MHCP - Laws of actor- Luminous e equired and mini ypes - Specificatio	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou mum level of illumination required fo ons of National Building Code of India	on - L - Art ur rei	Jtilis tificia nder	ation al ligh ing -	factor - I nt sources Element	Depreciati s – LED lig ary idea o	on factor - N ghtings - Day f special fea	ISC yligi ture ildin
colour - Luminous MHCP - Laws of actor- Luminous of equired and mini ypes - Specification Unit IV REFRIC	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colour mum level of illumination required for ons of National Building Code of India GERATION PRINCIPLES	on - l - Art ur rei r phy	Jtilis tificia nder ysica	ation al ligh ing - ally h	factor - I nt sources Elements nandicapp	Depreciati s – LED lig ary idea o bed and e	on factor - N ghtings - Day f special fea elderly in bui	ISC yligł ture ildin 9
colour - Luminous MHCP - Laws of actor- Luminous e equired and mini ypes - Specificatio Unit IV REFRIC Thermodynamics evaporation, subl Refrigerants - Vap backaged air-cond systems for differe	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou mum level of illumination required fo ons of National Building Code of India	on - U - Art ur rei r phy sta Su Su	Utilis tificia nder ysica te - per ndling	ation al ligh ing - ally h Sens hea g uni	ifactor - I Elementa andicapp ible heat ted vapo ts -Water	Depreciati s – LED lig ary idea o bed and e bed and e t - Latent bur - Su piping - N	on factor - M ghtings - Day f special fea elderly in bui t heat of fu bcooled liqu Window type	ISC yligh ture ildin 9 isior uid e an
colour - Luminous MHCP - Laws of actor- Luminous of equired and mini ypes - Specificatio Unit IV REFRIC Thermodynamics evaporation, suble Refrigerants - Vap backaged air-cond systems for different Unit V FIRE S. Causes of fire in noncombustible n eatures required to Fire Fighting pump	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou mum level of illumination required fo ons of National Building Code of India GERATION PRINCIPLES - Heat - Temperature - Change of limation - Saturation temperature - oour compression cycle - Starters - Air ditioners - Chilled water plant- Vapo ent types of buildings	on - L - Art ur rei r phy sta Su Su han ur A BC d lif (in b	Jtilis ifficia nder ysica te -: per ndling bsor - Pla ft lol puild	ation al ligh ing - ally h Sens hea g uni ption annir obies ing t	ible hear ts -Water Machine and capp ible hear ted vapo ts -Water Machine a Machine a fire es ypes - He	Depreciati s – LED lig ary idea o bed and e t - Latent bur - Su piping - V e(VAM) – derations scapes sy eat and sr	on factor - M ghtings - Day f special fea elderly in bui t heat of fu bcooled liqu Window type Air condition in buildings rstems - Sp moke detector	ISC yligh ture ildin 9 sisior uid e an onin 9 lik becia
colour - Luminous MHCP - Laws of actor- Luminous of equired and mini ypes - Specificatio Unit IV REFRIC hermodynamics evaporation, suble refrigerants - Vap backaged air-cond ystems for different Unit V FIRE S. Causes of fire in concombustible n eatures required fire Fighting pump EXT BOOK(S):	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou mum level of illumination required for ons of National Building Code of India GERATION PRINCIPLES - Heat - Temperature - Change of limation - Saturation temperature - oour compression cycle - Starters - Air ditioners - Chilled water plant- Vapor ent types of buildings AFETY INSTALLATION huildings - Safety regulations - Ni naterials, construction, staircases and for physically handicapped and elderly o and water storage - Dry and wet riser	on - U - Art ar rei r phy sta Su han ur A BC d lif rs - A	Jtilis ificia nder ysica te - per ndling bsor - Pla bsor	ation al ligh ing - ally h Sens hea g uni ption annir obies ing t matic	ible hear ted vapo ts -Water Machin ng conside s, fire es ypes - He sprinkler	Depreciati s – LED lig ary idea o bed and e bed and e t - Latent bur - Su piping - V e(VAM) – derations capes sy eat and sr s-Fire figh	on factor - M ghtings - Day f special fea elderly in bui t heat of fu bcooled liqu Window type Air condition in buildings stems - Sp moke detector nting layout	ISC yligh ture ildin 9 sior uid anin 9 1 k becia ors
Colour - Luminous MHCP - Laws of actor- Luminous of equired and mini- ypes - Specification Unit IV REFRIC Thermodynamics evaporation, suble Refrigerants - Vap ackaged air-cond ystems for differe Unit V FIRE S. Causes of fire in oncombustible n eatures required fire Fighting pump EXT BOOK(S): 1. J. Killinger ar	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou mum level of illumination required fo ons of National Building Code of India GERATION PRINCIPLES - Heat - Temperature - Change of limation - Saturation temperature - oour compression cycle - Starters - Air ditioners - Chilled water plant- Vapo ent types of buildings AFETY INSTALLATION buildings - Safety regulations - Ni naterials, construction, staircases an for physically handicapped and elderly	on - L - Art ur rei r phy sta Su han ur A BC d lif y in b s - A sent	Jtilis ifficia nder ysica te -: uper ndling bsor - Pla t lol build Autor ials,	ation al ligh ing - ally h Sens hea g uni ption annir obies ing t matic Goo	ible heart-Water and consider ible heart ted vaports -Water Machine ig consider ypes - He sprinkler	Depreciati s – LED lig ary idea o bed and e bed and e t - Latent bur - Su piping - V e(VAM) – derations scapes sy eat and sr s-Fire figh	on factor - M ghtings - Day f special fea elderly in build t heat of fu bcooled liqu Window type Air condition in buildings rstems - Sp moke detector nting layout	ISC yligi ture ildin 9 sior uid anin 9 lik pecia ors
colour - Luminous MHCP - Laws of actor- Luminous of equired and mini ypes - Specificatio Unit IV REFRIC Thermodynamics evaporation, suble Refrigerants - Vap backaged air-cond systems for differe Unit V FIRE S. Causes of fire in noncombustible in eatures required for Fire Fighting pump EXT BOOK(S): 1. J. Killinger an 2. Electrical Sat H.L.Saluja 3. ASHRAE, Fu	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou mum level of illumination required fo ons of National Building Code of India GERATION PRINCIPLES - Heat - Temperature - Change of limation - Saturation temperature - bour compression cycle - Starters - Air ditioners - Chilled water plant- Vapo ent types of buildings AFETY INSTALLATION buildings - Safety regulations - Ni naterials, construction, staircases an for physically handicapped and elderly b and water storage - Dry and wet riser	BC BC b b b b b b b b b b b b b b b b b	Jtilis ificia nder ysica te - per ndling bsor - Pla t lol build Autor ials, anag	ation al ligh ing - ally h Sens hea g uni ption annir obies ing t matic Goo	ible heart-Water and consider ible heart ted vaports -Water Machine ig consider ypes - He sprinkler	Depreciati s – LED lig ary idea o bed and e bed and e t - Latent bur - Su piping - V e(VAM) – derations scapes sy eat and sr s-Fire figh	on factor - M ghtings - Day f special fea elderly in build t heat of fu bcooled liqu Window type Air condition in buildings rstems - Sp moke detector nting layout	ISC yligh ture ildin 9 sior uid ann onin 9 lik becia ors
colour - Luminous MHCP - Laws of actor- Luminous of equired and mini- ypes - Specification Unit IV REFRIC hermodynamics evaporation, suble Refrigerants - Vap backaged air-cond ystems for differe Unit V FIRE S. Causes of fire in concombustible n eatures required for ire Fighting pump EXT BOOK(S): 1. J. Killinger an 2. Electrical Sat H.L.Saluja 3. ASHRAE, Fu	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou imum level of illumination required fo ons of National Building Code of India GERATION PRINCIPLES - Heat - Temperature - Change of limation - Saturation temperature - bour compression cycle - Starters - Air ditioners - Chilled water plant- Vapo ent types of buildings AFETY INSTALLATION - buildings - Safety regulations - Ni naterials, construction, staircases an for physically handicapped and elderly o and water storage - Dry and wet riser - Ind L. Killinger, Heating and Cooling Es fety, Fire Safety Engineering and Safet - Indamentals and Equipment, ASHRAE	BC BC b b b b b b b b b b b b b b b b b	Jtilis ificia nder ysica te - per ndling bsor - Pla t lol build Autor ials, anag	ation al ligh ing - ally h Sens hea g uni ption annir obies ing t matic Goo	ible heart-Water and consider ible heart ted vaports -Water Machine ig consider ypes - He sprinkler	Depreciati s – LED lig ary idea o bed and e bed and e t - Latent bur - Su piping - V e(VAM) – derations scapes sy eat and sr s-Fire figh	on factor - M ghtings - Day f special fea elderly in build t heat of fu bcooled liqu Window type Air condition in buildings rstems - Sp moke detector nting layout	ISC yligi ture ildin 9 sior uid e an onin 9 lik pecia ors
Colour - Luminous MHCP - Laws of actor- Luminous of equired and mini ypes - Specificatio Unit IV REFRIC Thermodynamics evaporation, suble Refrigerants - Vap backaged air-cond systems for differe Unit V FIRE S. Causes of fire in noncombustible n eatures required for the Fighting pump EXT BOOK(S): 1. J. Killinger an 2. Electrical Sat H.L.Saluja 3. ASHRAE, Fu REFERENCE(S): 1. SP 7 (2005):	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou imum level of illumination required for ons of National Building Code of India GERATION PRINCIPLES - Heat - Temperature - Change of limation - Saturation temperature - oour compression cycle - Starters - Air ditioners - Chilled water plant- Vapo ent types of buildings AFETY INSTALLATION huildings - Safety regulations - Ni naterials, construction, staircases and for physically handicapped and elderly o and water storage - Dry and wet riser and L. Killinger, Heating and Cooling Es fety, Fire Safety Engineering and Safet undamentals and Equipment, ASHRAE National Building Code of India 2005.	on - L - Art r rei r phy sta Su han ur A BC in h BC in h s - A sent ty Ma	Jtilis ificia nder ysica te - per ndling bsor - Pla bsor - Pla t lol build Autor ials, anag	ation al ligh ing - ally h Sens hea g uni ptior annir obies ing t matic Goo geme	a factor - I at sources Elementa andicapp ible heat ted vapo ts -Water Machine ng conside s fire es ypes - He sprinkler dheart-W	Depreciati s – LED lig ary idea o bed and e bed and e t - Latent bur - Su piping - V e(VAM) – derations scapes sy eat and sr s-Fire figh filcox Publ nt, 2016, S	on factor - M ghtings - Day f special fea elderly in build t heat of fu bcooled liqu Window type Air condition in buildings stems - Sp moke detector ting layout ishers, 2003 S.Rao& Prof.	ISC yligi ture ildin 9 sior uid anin 9 lik pecia ors
colour - Luminous MHCP - Laws of actor- Luminous of equired and mini- ypes - Specification Unit IV REFRIC Thermodynamics evaporation, suble Refrigerants - Vap backaged air-come systems for differe Unit V FIRE S. Causes of fire in concombustible in eatures required for Fire Fighting pump EXT BOOK(S): 1. J. Killinger ar 2. Electrical Sat H.L.Saluja 3. ASHRAE, Fu REFERENCE(S): 1. SP 7 (2005): 2. Roger Green 2015.	flux - Candela - Solid angle illumination illumination - Classification of lighting efficiency - Colour temperature - Colou imum level of illumination required fo ons of National Building Code of India GERATION PRINCIPLES - Heat - Temperature - Change of limation - Saturation temperature - bour compression cycle - Starters - Air ditioners - Chilled water plant- Vapo ent types of buildings AFETY INSTALLATION - buildings - Safety regulations - Ni naterials, construction, staircases an for physically handicapped and elderly o and water storage - Dry and wet riser - Ind L. Killinger, Heating and Cooling Es fety, Fire Safety Engineering and Safet - Indamentals and Equipment, ASHRAE	BC sta Su sta Su han ur A BC in I s - A sent ty Ma Inc.	Jtilis ifficia nder ysica te per ndling bsor - Pla t lol build tutor ials, anag , 200	ation al ligh ing - ally h Sens hea g uni ptior annir obies ing t matic Goo geme 05	a factor - I at sources Elementa andicapp ible heat ted vapo ts -Water Machina ng conside sprinkler dheart-W ent, Repring edition), R	Depreciati s – LED lig ary idea o bed and e bed and e t - Latent bur - Su piping - V e(VAM) – derations scapes sy eat and sr s-Fire figh filcox Publ nt, 2016, S	on factor - M ghtings - Day f special fea elderly in build t heat of fu bcooled liqu Window type Air condition in buildings stems - Sp moke detector ting layout ishers, 2003 S.Rao& Prof.	ISC ylig ture ildir 9 sioo uid e an onir 9 i lik oeci ors

Department	CIVIL ENGINEE	RING	1			R 2019	Semester VII	PE
Course	Course Name		lour / Wee		Credit	Total Hours	Maximu Marks	
Code		L	Т	Ρ	С			
19CEX16	SAFETY IN CONSTRUCTION PRACTICES	3	0	0	3	45	100	02
The stud Standard Also app Course Outco Explain t Illustrate Make us Identify t Apply co Unit 1 INTR History of safety njuries- safety p construction safe	licable to the construction Industry. mes: At the end of this course, learners he role of safety in construction site the causes and effects of construction e of site safety programs at construction he hazards in construction projects nstruction safety management at site ODUCTION TO CONSTRUCTION SAF v in construction – Safety thinking and byramid- Accident patterns-theories of a ety.	safety s will accid n site FETY Pract	be a ents	l hea	o: erminolo	gies use	ed in safety-t	9 types c orkers in
	INING FOR SAFETY							9
ntroduction to (OSHA regulations - causes and effec	ts of	acci	dent	s at site	- Safet	y personnel	-safety
	culture –planning for PPE - Role of stak	ehold	lers	in sa	ifety- vvo	rkers co	mpensation	
Unit III SITE	SAFETY PROGRAMS			-	and an a second			9
	rating Procedures) – Construction equinstruction - alteration - demolition work		nt- r	nate	rials han	dling-dis	posal - han	d tools
Unit IV HAZA	ARDS IN CONSTRUCTION PROJECTS	S			C			9
JobSafetyAnalys Prevention Act– Violation–Penalt	sis(JSA)-Jobhazardanalysis(JHA)-–Hea Precautionary Measures-Hazard Mana	althha agem	zard ent-	s-Fa Acci	atalitiesa dent inve	ndInjurie estigatio	es Hazaro n-Accident i	
Unit V CONS	STRUCTION SAFETY MANAGEMENT		T.C.			112.19		9
ntroduction- Sat MSD (Musculos	fety in construction operations -Project keletal Disorders) – Causes and Remed	coord	dinat - pre	ion a vent	and safet ive meth	y procec ods – Ro	lures Ergono ble of BIM in	omics - safety
TEXT BOOK(S)					PR 1111	141	DUU	NI
Delhi,2011	charjee, "Safety Management in Co	nstruc	ction	",1st	Edition,	Khann	a Publisher	s, New
REFERENCE(S				115	the and	Cafatul	det Edition	
¹ . Publications	due &Roland Finch, —BIM for Con s, Philippines,2014			- X.		41.6		
2. Rita Yi Man	Li& Sun Wah Poon, —Construction Sa	aretyll	, ist	Ealt	ion, Sprii	iger, ive	W TOIK,2013	,
						hu	A	

Or Science - Cost

Department	CIVIL ENGINEE	ERING				R 2019	Semester VII	PE
Course	Course Name		our Vee		Credit	Total Hours	Maximu Marks	
Code	HOUSING PLANNING AND	L	Т	Ρ	С			
19CEX17	tive (s): The purpose of learning this co	3	0	0	3	45	100	
To give To train To train Course Outco Plan and Design t Formula Evaluate Perform Jnit I INTR efinition of Ba uildings,Objec rinciple of Sus I basic infrastr Jnit II HOI Basic Concep Neighborhoods communities, Clum improver Projects, Role oricing - Role of	the students to do the planning and deservosure on cost effective construction the students to perform the project appro- mes: At the end of this course, Studens design the housing projects as per reg he various housing programme with sus te and design the housing layouts by co the suitability of various cost-effective the economic analysis-based project ap ODUCTION TO HOUSING asic Terms - House, Home, Househo tives and Strategies of National Hou tainable Housing- Integrated approach ucture consideration - Institutions for House ts, Contents and Standards for Househo to plotted land development programs fownships, Rental Housing, Co- oper nent - Slum redevelopment and Reloc of Public housing agencies, and Prive f Non - Government Organizations in sl INNING AND DESIGN OF HOUSING P	materi raisal c s will b gulation stainab onducti constru- ppraisa Id, Apa using on arr ousing tousing s, Open rative h cation ate se lum ho	als of hc e al bility ng s uctic al of artm Poli iving at N Poli iving - U ctor usin	and r busin ble to cond site a bn ma hous hous hous hous rogra evelo sing se of in s	methods. g project: cepts nalysis aterials. sing proje , Multi s including ding caps ding caps anal, State ammes opment F & Slum f GIS an	s. ects. g Slum acity and e and Lo - Sites Plots, Ap Housing d MIS i	Housing F d density no cal levels. and Server artments, G g Programm n Slum Hou	olicy orms 9 vices Sate nes using
ormulation of ules and De	Housing Projects - Land Use and Sevelopment Control Regulations -	oil suit Site	tabi Ana	lity a Iysis	, Layou		• •	and
Dusing Units	(Design Problems) - Housing Projec ISTRUCTION TECHNIQUES AND CO	ST EFI	nula FEC	TIVE	MATER	RIALS		9
reen building	ions Techniques - Cost Effective Mc concept- Building Centers - Concept,	Funct	ions					ctior 9
valuation of H ash Flow Ar	ISING FINANCE AND PROJECT APP lousing Projects for sustainable prin alysis, Subsidy and Cross Subsid	nciples	s - I Pub		-	and the second sec		ery
	unding - Pricing of Housing Units (Pr ;):			M	leatell C	and D. I	-liaation - D	
Meera Mel Ltd., New I Francis Ch	unding - Pricing of Housing Units (Pr): nta and Dinesh Mehta, "Metropolitan Delhi, 2000. erunilam and Odeyar D Heggade, "I	n Hous	ing					
Meera Mel Ltd., New I Francis Ch House, Bo	unding - Pricing of Housing Units (Pi ta and Dinesh Mehta, "Metropolitan Delhi, 2000. erunilam and Odeyar D Heggade, "I mbay, 2001.	n Hous	ing					
Meera Mel Ltd., New I Francis Ch House, Bo FERENCE(S Wiley- Blac Donald Wa	unding - Pricing of Housing Units (Pi ta and Dinesh Mehta, "Metropolitan Delhi, 2000. erunilam and Odeyar D Heggade, "I mbay, 2001. : kwell, "Neufert Architects" Data, 4th itson and Michael J. Crosbie, "Time	n Hous Housir n ed., E	ng ing Blac	n Inc	lia", Him Il Publis	alaya P	Publishing	Pvt.
Ltd., New I Francis Ch House, Bo FERENCE(S Wiley- Blac Donald Wa 8th ed., Ta	unding - Pricing of Housing Units (Pr ta and Dinesh Mehta, "Metropolitan Delhi, 2000. erunilam and Odeyar D Heggade, "I mbay, 2001. : kwell, "Neufert Architects" Data, 4th	n Hous Housir n ed., E e Save	ing ng ii Blac er S	n Inc kwe tand	lia", Him Il Publis ards for Graw H	hing Lto Archite	Publishing I, 2012 ectural Des	Pvt. ign"

	Development Control Rules for Chennai Metropolitan Area, CMA, Chennai, 2004
5	UNCHS, National Experiences with Shelter Delivery for the Poorest Groups, UNCHS
5.	Habitat, Nairobi, 1994

Km Of

Chairman - BoS Dept. of Civil Engg. - ESEC

1200

Capital Capita

Department	CIVIL ENGINEER	NG				R 2019	Semester VII	PE
Course Code	Course Name	Ho	urs/\ k	Wee	Credit	Total Hours	Maximum M	arks
eeuroe eeue	Course Manie	L	Т	Ρ	С	N N		
19CEX18	PUBLIC TRANSPORTATION SYSTEMS	3	0	0	3	45	100	
	ve (s): The purpose of learning this count knowledge on public transportation system			plar	nning			
 To summa To explain To illustrat To infer th 	es: At the end of this course, learners warize different modes of public transport the types of rail transit system and its te rail transit planning system, routing a e transit management techniques and tet the accordination of public transport of	t and devel and so financ	its c lopm ched ce	hara lent i uling	n India			
	et the coordination of public transport s DUCTION	syster	n an	a ina	ancing		•	8
ansport -Techno erformance – Tra	ansport and comparison - Public trans logy of bus, rail, rapid transit systems - ansit capacity – Quality of service							tem
	RANSIT SYSTEM							10
ail transport – Ty /stem – Growth	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran							
ail transport – Ty stem – Growth	ypes of rail transit - Suburban commute							111111111
ail transport – Ty /stem – Growth Jnit III RAIL T ransittystem ope	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran	nsit sy et tran	sten sit s	n dev yster	velopmei ns – Raj	nt in Indian Did transit s	cities ystems – Estima	ail 10
ail transport – Ty vstem – Growth Jnit III RAIL T ransittystem ope ansit demand - F Jnit IV BUS T	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING Prations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT	et tran	sten sit s op lo	yster	velopmei ns – Raj on and s	nt in Indian bid transit s topping pol	cities ystems – Estima licy – Schedule	ail 10 ition o
ail transport – Ty ystem – Growth Jnit III RAIL T ransittystem ope ansit demand - F Jnit IV BUS TI us transport –Ch rength – Bus rou	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING erations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT maracteristics – Types of buses –Bus tra- ute planning - Expansion/Curtailment of	et tran ing st	sten sit s op lo man	yster ocatio	velopmer ns – Rap on and s nent – E	nt in Indian bid transit s topping pol	cities ystems – Estima licy – Schedule f the required flee	ail 10 Ition o 9 et
ail transport – Ty ystem – Growth Unit III RAIL T ransittystem ope ansit demand - F Unit IV BUS TI us transport –Ch rength – Bus rou Methods of finar	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING erations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT maracteristics – Types of buses –Bus tra- ute planning - Expansion/Curtailment of	et tran ting st ansit i f serv	sten sit s op lo mana ices	yster ocatio agen – Pe	velopmer ns – Rap on and s nent – E	nt in Indian bid transit s topping pol	cities ystems – Estima licy – Schedule f the required flee	ail 10 Ition o 9 et
ail transport – Ty ystem – Growth Unit III RAIL T ransittystem ope ansit demand - F Jnit IV BUS TI us transport –Ch rength – Bus rou Methods of finar Jnit V COORI eed for coordina arketing - Interm	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING erations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT naracteristics – Types of buses –Bus tra- ute planning - Expansion/Curtailment of ncing	et tran ting st ansit r f serv & PA ic tran	sten sit s op lo mana ices RKI	yster ocatio agen – Pe NG	velopmen ns – Rap on and s nent – Es erforman ancing –	nt in Indian bid transit s topping pol stimation of ce indicato Transit far	cities ystems – Estima licy – Schedule f the required flea rs – Fleet manag e structures – Tr	ail 10 Ition o 9 et gemer 9 ansit
ail transport – Ty /stem – Growth Jnit III RAIL T ransittystem ope ansit demand - F Jnit IV BUS TI us transport –Ch rength – Bus rou Methods of finar Jnit V COORI eed for coordina arketing - Interm andards	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING erations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT maracteristics – Types of buses –Bus tra- ute planning - Expansion/Curtailment of ncing DINATION OF PUBLIC TRANSPORT tion – Selection of transit mode – Publi	et tran ting st ansit r f serv & PA ic tran	sten sit s op lo mana ices RKI	yster ocatio agen – Pe NG	velopmen ns – Rap on and s nent – Es erforman ancing –	nt in Indian bid transit s topping pol stimation of ce indicato Transit far	cities ystems – Estima licy – Schedule f the required flea rs – Fleet manag e structures – Tr	ail 10 Ition o 9 et gemer 9 ansit
ail transport – Ty ystem – Growth Jnit III RAIL T ransittystem operation ansit demand - F Jnit IV BUS TI us transport – Ch rength – Bus rou Methods of finar Jnit V COORI eed for coordina arketing - Intermandards EXTBOOKS:	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING erations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT maracteristics – Types of buses –Bus tra- ute planning - Expansion/Curtailment of ncing DINATION OF PUBLIC TRANSPORT tion – Selection of transit mode – Publi	et tran ting st ansit r f serv & PA c tran pact c	sten sit s op k mana ices RKI spoi	n dev yster ocatio agen – Pe NG rt fina rking	velopmen ms – Rap on and s ment – Es ment – Es erforman ancing – ancing – Parkin	nt in Indian bid transit s topping pol stimation of ce indicato Transit far ng space re	cities ystems – Estima licy – Schedule f the required flea rs – Fleet manag e structures – Tr equirements – Pa	ail 10 Ition o 9 et gemer 9 ansit
ail transport – Ty /stem – Growth Jnit III RAIL T ransittystem ope ansit demand - F Jnit IV BUS TI us transport –Ch rength – Bus rou Methods of finar Jnit V COORI eed for coordina arketing - Interm andards EXTBOOKS: 1. L. R. Kadiya	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING erations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT naracteristics – Types of buses –Bus tra- ute planning - Expansion/Curtailment of ncing DINATION OF PUBLIC TRANSPORT tion – Selection of transit mode – Publi nodal transfer – Parking problems – Imp li, "Traffic Engineering and Transport P	et tran ting st ansit r f serv & PA c tran pact c	sten sit s op k mana ices RKI spoi	n dev yster ocatio agen – Pe NG rt fina rking	velopmen ms – Rap on and s ment – Es ment – Es erforman ancing – ancing – Parkin	nt in Indian bid transit s topping pol stimation of ce indicato Transit far ng space re	cities ystems – Estima licy – Schedule f the required flea rs – Fleet manag e structures – Tr equirements – Pa	ail 10 Ition o 9 et gemen 9 ansit
ail transport – Ty ystem – Growth Unit III RAIL T ransittystem ope ansit demand - F Unit IV BUS TI us transport –Ch trength – Bus rou Methods of finar Unit V COORI eed for coordina harketing - Interm andards EXTBOOKS: 1. L. R. Kadiyal REFERENCE(S)	ypes of rail transit - Suburban commute of rail based transit systems – Rail tran RANSIT PLANNING erations – Para-Transit systems – Stree Route development – Properties of rout RANSIT MANAGEMENT naracteristics – Types of buses –Bus tra- ute planning - Expansion/Curtailment of noing DINATION OF PUBLIC TRANSPORT tion – Selection of transit mode – Publi nodal transfer – Parking problems – Imp li, "Traffic Engineering and Transport P : rinciples of Transportation and Highwa	et tran ting st ansit r f serv & PA tic tran pact c	sten sit s op k man ices RKI spoo f pa	n dev yster ocatio agen – Pe NG rking Khar	velopmen ns – Rap on and s nent – Es rforman ancing – ancing – na Parkin	nt in Indian bid transit s topping pol stimation of ce indicato Transit far ng space re	cities ystems – Estima licy – Schedule f the required flea rs – Fleet manag e structures – Tr equirements – Pa Edition, 2018	ail 10 ation o 9 et gemen 9 ansit arking

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGIN	NEERING	;			R 2019	Semester VII	PE
Course Code	Course Name	Но	urs/\ k	Nee	Credit	Total Hours	Maximu Mark	
	A COLORED TO A COL	L	Т	Ρ	С			.5
19CEX19	BRIDGE ENGINEERING	3	0	0	3	45	100	
	ctive (s): The purpose of learning thi							
	the components of bridges, classifi					ce of bridg	les.	-
	omes: At the end of this course, lear					inen entene	aa of bridges	
	miliar with the components of bridge					, importan	ce of bridges	5.
	tify the specification of road bridges,					m bridge	are stressed	
	miliar with various types of bridges						pre-stressed	ξ.
	e bridge, continuous bridge, arch bri ysis the various bridges-piers and at				uge decr			
	exposed to evaluation of sub structur			unda	tions im	nortance o	of bearings	
	from bridge failures.	es, type t	01100	unua	uons, im	portanee c	n bearings,	
and the second se	RODUCTION			113		·//		8
	Bridges - Classification - Importance	e of Brido	100 -	Inve	stigation	for Bridge	s - Selection	
ridge site Ec	onomical span - Location of piers an	d abutme	onte	- Sul	osoil evn	loration - S	Scour depth	-
	n - Choice of bridge type		SIILS	- 00	03011 CAP			
and brolectio	II - Choice of bridge type							
and the second se	CIFICATION OF BRIDGES	The second					C 11	9
Unit II SPE	CIFICATION OF BRIDGES	- loads to	he	cons	idered -	dead load	- IRC stand	-
Unit II SPE pecification of	road bridges - width of carriageway	- loads to	o be	cons	idered -	dead load	– IRC stand	-
Unit II SPE pecification of ve load - Impa	road bridges - width of carriageway ct effect.	- loads to	o be	cons	idered -	dead load	– IRC stand	lard
Unit II SPE pecification of ve load - Impa Unit III DES	road bridges - width of carriageway ct effect. IGN OF BRIDGES				i di Tr			lard
Unit II SPE pecification of ve load - Impa Unit III DES General desig	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des	ign of T-b	beam	n bric	i di Tr			lard
Unit II SPE pecification of ve load - Impa Unit III DES General design bridge - contin	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird	ign of T-b	beam	n bric	i di Tr			lard
Unit II SPE pecification of ve load - Impa Unit III DES General design bridge - contin Unit IV ANA	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES	ign of T-k er bridge	beam dec	n bric ks.	lge - Pre	stressed c	oncrete	lard 1(9
Unit II SPE pecification of ve load - Impa Unit III DES General design bridge - contin Unit IV ANA valuation of su	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c	ign of T-k er bridge	beam dec	n bric ks.	lge - Pre	stressed c	oncrete	10
Unit II SPE pecification of ve load - Impa Unit III DES General desig bridge - contin Unit IV ANA valuation of su Unit V BEA	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES	ign of T-k er bridge aps - Des	beam dec	n bric ks. of pie	lge - Pre er - Abuti	stressed c ments - Ty	oncrete pe of founda	ation
Unit II SPE pecification of ve load - Impa Unit III DES General design bridge - contin Unit IV ANA valuation of su Unit V BEA nportance of E	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges	ign of T-k er bridge aps - Des - Bearings	decisign	n bric ks. of pie	lge - Pre er - Abuti er bridge	stressed c ments - Ty s – Electro	oncrete pe of foundation	ation
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral designbridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eoints - Expans	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten	ign of T-k er bridge aps - Des - Bearings	decisign	n bric ks. of pie	lge - Pre er - Abuti er bridge	stressed c ments - Ty s – Electro	oncrete pe of foundation	lard 1(9 atior 9
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral desigbridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eoints - ExpansOR FURTHE	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING	ign of T-k er bridge aps - Des - Bearings	decisign	n bric ks. of pie	lge - Pre er - Abuti er bridge	stressed c ments - Ty s – Electro	oncrete pe of foundation	lard 1(9 atior 9
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral designbridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eoints - ExpansFOR FURTHEridge failures a	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING and rehabilitation process	ign of T-k er bridge aps - Des - Bearings	decisign	n bric ks. of pie	lge - Pre er - Abuti er bridge	stressed c ments - Ty s – Electro	oncrete pe of foundation	ation
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral desigbridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eoints - ExpansOR FURTHEIridge failures aEXT BOOK(S	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING and rehabilitation process	ign of T-k er bridge aps - Des - Bearings ance of b	beam dect sign s for oridge	of pie girde es - l	lge - Pre er - Abuti er bridge _essons	stressed c ments - Ty s – Electro from bridg	oncrete pe of foundation	lard 1(9 atior 9
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral designoridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eonts - ExpansOR FURTHEIridge failures aEXT BOOK(S1.Ponnuswa	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING and rehabilitation process): amy, S., Bridge Engineering, Tata M	ign of T-k er bridge aps - Des - Bearings ance of b cGraw-Hi	sign sign s for bridge	of pie girde es - I	lge - Pre er - Abuti er bridge _essons	stressed c ments - Ty s – Electro from bridg	oncrete pe of founda ometric beari e failures.	ation 9 ation 9
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral designoridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eoints - ExpansOR FURTHEIridge failures aEXT BOOK(S1.Ponnuswa2.Victor, D.	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING and rehabilitation process): amy, S., Bridge Engineering, Tata M J., Essentials of Bridge Engineering.	ign of T-k er bridge aps - Des - Bearings ance of b cGraw-Hi	sign sign s for bridge	of pie girde es - I	lge - Pre er - Abuti er bridge _essons	stressed c ments - Ty s – Electro from bridg	oncrete pe of founda ometric beari e failures.	ation 9 ation 9
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral designoridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eoints - ExpansOR FURTHEIridge failures aEXT BOOK(S1.Ponnuswa2.Victor, D.EFERENCE(S	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING and rehabilitation process): amy, S., Bridge Engineering, Tata M J., Essentials of Bridge Engineering.	ign of T-k er bridge aps - Des Bearings ance of b cGraw-Hi , Oxford a	beam dec sign s for bridge	of pie girde es - L ew D BH F	lge - Pre er - Abuti er bridge essons pelhi, 199 Publisher	stressed c ments - Ty s – Electro from bridg 17. s Co., Nev	oncrete pe of founda ometric beari e failures. w Delhi, 1980	ard 10 9 atior 9 ing -
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral designbridge - continUnit IVANAvaluation of suUnit VBEAnportance of Ebridge failures aCOR FURTHEIridge failures aEXT BOOK(S1.Ponnuswa2.Victor, D.EFERENCE(S	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING and rehabilitation process): amy, S., Bridge Engineering, Tata M J., Essentials of Bridge Engineering.	ign of T-k er bridge aps - Des Bearings ance of b cGraw-Hi , Oxford a	beam dec sign s for bridge	of pie girde es - L ew D BH F	lge - Pre er - Abuti er bridge essons pelhi, 199 Publisher	stressed c ments - Ty s – Electro from bridg 17. s Co., Nev	oncrete pe of founda ometric beari e failures. w Delhi, 1980	ation 9 ation 9
Unit IISPEpecification ofve load - ImpaUnit IIIDESGeneral designbridge - continUnit IVANAvaluation of suUnit VBEAnportance of Eoints - ExpansOR FURTHEIridge failures aEXT BOOK(S1.Ponnuswa2.Victor, D.EFERENCE(S1.N. Rajago	road bridges - width of carriageway ct effect. IGN OF BRIDGES n considerations - Slab Bridge - Des uous bridge - Arch Bridge - Box gird LYSIS OF BRIDGES ub structures - Pier and abutments c RING AND JOINTS OF BRIDGES Bearings - Bearings for slab bridges - ion joints. Construction and Mainten R READING and rehabilitation process): amy, S., Bridge Engineering, Tata M J., Essentials of Bridge Engineering.	ign of T-k er bridge aps - Des - Bearings ance of b cGraw-Hi , Oxford a	sign s for oridge	of pie girde es - l BH F Hous	lge - Pre er - Abuti er bridge _essons Delhi, 199 Publisher	stressed c ments - Ty s – Electro from bridg 17. s Co., Nev Delhi, 200	oncrete pe of founda ometric beari e failures. w Delhi, 1980	ard 10 9 atior 9 ing -

King

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEER	ING					R 2019	Seme V	1110 T T T T T	PE
Course Code	Course Name	Houi	rs/V k	Vee	Cr	edit	Total	1000	ximu	
		L	Т	Ρ	(C	Hours		Mark	S
19CEX20	DESIGN OF TIMBER, MASONRY AND STEEL ELEMENTS	3	0	0		3	45		100	
 To impa To outli To illust 	ctive (s): The purpose of learning this cou art basic knowledge on the application and ne the design aspects of timber and maso trate the need of timber and masonry struct	l main nry s ctures	nter truc s	cture	S	timbe	er structu	res		
 Identify Estimat Design Analyse Analyse 	omes: At the end of this course, learners the choice of materials for structural elem e the strength and connections of timber k of masonry column and analyse the stabil and Design of different types of masonry and Design of different types of concrete	ents beams ity wall	s		D:					
	ICEPTS OF TIMBER STRUCTURES ors affecting strength of timber - Permis		80.			1				9
ind steel - Typ Timber Structur Unit II DES	of practice - Choice between different s bes of loads - Dead load - Live load - V re. IGN OF TIMBER STRUCTURES ns for strength and stiffness as per BIS c	Vind	loa	d - e	earth	nquak	e load -	Mainte	enanc	
ension membe	ers - Design of compression members of	solid	an	d bo	x se	ection	s - Desi	gn of be	olted	an
ension membe ailed connecti ypes of joints	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts.	solid	an	d bo	x se	ection	s - Desi	gn of be	olted	and
ension member ailed connecti ypes of joints Unit III DES	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN	solid stres	an ses	d bo in te	ox se ensi	ection on, c	s - Desigompress	gn of bo on and	olted flexu	an re 9
ension member ailed connecting ypes of joints Unit III DES Mix proportion masonry units compressive st loading.	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN is - compressive strength of mortars - b - stability of piers and walls - design stresses in masonry - Design of masonr	solid stress asic as p	an ses con er	d bo in te npres	ssive	ection on, co e stre s - E	ess - Design o	gn of bo on and pe fact f permi	olted flexu or fo	and re 9
ension member ailed connecting ypes of joints Unit III DES Mix proportion masonry units compressive so oading. Unit IV DES	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN as - compressive strength of mortars - b a - stability of piers and walls - design stresses in masonry - Design of masonr IGN OF MASONRY WALL	solid stress asic as p y col	an ses con er um	d bo in te npres IS C n su	ensie ssive ode bjec	ection on, co e stre s - E sted t	s - Desig ompress ess - sha Design o o axial a	gn of bo on and pe fact f permi and ecc	olted flexu cor fo ssible centric	9 9
ension member ailed connecting ypes of joints Unit III DES Mix proportion masonry units compressive so oading. Unit IV DES ypes of walls ccentric loads	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN is - compressive strength of mortars - b - stability of piers and walls - design stresses in masonry - Design of masonr	solid stress asic as p y col al loa	an ses con er um	d bo in te npres IS C n su - De	ensie ensie ssive ode bjec	ection on, co e stre s - E sted t	ess - Desig compress ess - sha Design o o axial a olid load	gn of be on and pe fact f permi and ecc bearing	olted flexu cor fo ssible centric	and re 9 9 fo
ension member ailed connection ypes of joints Unit III DES Mix proportion masonry units compressive so loading. Unit IV DES ypes of walls ccentric loads vall	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN is - compressive strength of mortars - b a - stability of piers and walls - design stresses in masonry - Design of masonr IGN OF MASONRY WALL - Design of solid load bearing wall for axi	solid stress asic as p y col al loa cavity	an ses con er um	d bo in te npres IS C n su - De	ensie ensie ssive ode bjec	ection on, co e stre s - E sted t	ess - Desig compress ess - sha Design o o axial a olid load	gn of be on and pe fact f permi and ecc bearing	olted flexu cor fo ssible centric	and re 9 9 fo
ension member ailed connecting ypes of joints Unit III DES Mix proportion masonry units compressive so oading. Jnit IV DES ypes of walls ccentric loads all Jnit V DES aterials Concrete e Hollow block onstruction of	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN is - compressive strength of mortars - b - stability of piers and walls - design stresses in masonry - Design of masonr IGN OF MASONRY WALL - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of wall with opening - Design of IGN OF CONCRETE BLOCK MASONRY rete blocks - Light weight blocks - AAC B ks - Methods of Manufacturing Hollow B Hollow Block Masonry Walls.	solid stress asic as p y col al loa cavity locks	an ses con er um ads / wa	d bo in te npres IS C n su - De all - E	ex se enside ssive code bjec bjec Desig w Bl	ection on, co e stre s - E ted t n of s gn of ocks	s - Desig ompress ess - sha Design o o axial a olid load stiffened as per IS	gn of be on and pe fact f permi and ecc bearing and ur	olted flexu cor fo ssible centric g wal nstiffe	9 9 9 1 fo 9 9 9
ension member ailed connection ypes of joints Unit III DES Mix proportion masonry units compressive so oading. Unit IV DES ypes of walls ccentric loads all Jnit V DES aterials Concrete e Hollow bloc onstruction of EXT BOOK(S)	 Firs - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN Is - compressive strength of mortars - be - stability of piers and walls - design stresses in masonry - Design of masonr IGN OF MASONRY WALL Design of solid load bearing wall for axis - Design of solid load bearing wall for axis - Design of wall with opening - Design of wall with opening - Design of solid load bearing wall for axis - Design of solid load bearing wall for axis - Design of wall with opening - Design of wall was a way wall was a way way was a way was a way was a way was a way was	solid stress asic as p y col al loa cavity locks locks	an ses con er um ads / wa - H	d bo in tr IS C n su - De all - E	x se ensid ssive code bjec esigr Desig w Bl	ection on, co e stre s - E ted t ted t n of s gn of ocks Hollo	s - Desig ompress Design o o axial a olid load stiffened as per IS ow Block	gn of be on and pe fact f permi and ecc bearing and ur 5 2185 (s – De	olted flexu cor fo ssible centric g wal nstiffe – Siz sign	and re 9 9 1 fo nec 9 9
ension member ailed connecting ypes of joints Unit III DES Mix proportion masonry units compressive so oading. Jnit IV DES ypes of walls contric loads all Jnit V DES aterials Concrete e Hollow block onstruction of EXT BOOK(S) 1. A.S. Arya,	 Frs - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN is - compressive strength of mortars - b - stability of piers and walls - design stresses in masonry - Design of masonry - Design of masonry - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing - Design of wall with opening - Design of Walls - Methods of Manufacturing Hollow B Hollow Block Masonry Walls. Design of Masonry and Timber Structure 	solid stress asic as p y col al loa cavity locks locks locks	an ses con er um ads / wa - H ;	d bo in tr IS C IS C n su - De all - E	x seenside ssive code bjec esigr Desig w Bla s on	ection on, co e stre s - E ted t n of s gn of Hollo d Bros	s - Desig ompress Design o o axial a olid load stiffened as per IS ow Block	gn of be on and ppe fact f permi and ecc bearing and ur 6 2185 cs – De	olted flexu cor fo ssible centric g wal nstiffe - Siz sign	9 9 9 1 6 9 9 9 1 6 0 nec
ension member ailed connecting ypes of joints Unit III DES Mix proportion masonry units compressive st oading. Jnit IV DES ypes of walls ccentric loads all Jnit V DES aterials Concrete Hollow bloc onstruction of EXT BOOK(S) 1. A.S. Arya, 2. P. Dayara 3. B. C. Punr	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN as - compressive strength of mortars - b a - stability of piers and walls - design stresses in masonry - Design of masonr IGN OF MASONRY WALL - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of wall with opening - Design of IGN OF CONCRETE BLOCK MASONRY rete blocks - Light weight blocks - AAC B ks - Methods of Manufacturing Hollow B Hollow Block Masonry Walls. : Design of Masonry and Timber Structure tnam, Brick and Reinforced Brick Structur nia, Ashok Kumar Jain and Arun Kumar J	solid stress asic as p y col al loa cavity locks locks locks s, Ne es, O	an ses com er um ads / wa - H ;	d bo in te npree IS C n su - De all - E Iollov Tests	x seenside ssive code bjec esigr Desig w Bl s on I and IBH	ection on, co e strees - E sted t n of s gn of ocks Hollo d Bros Publ	s - Desig ompression ompression oesign oo o axial a olid load stiffened as per IS ow Block s. Publisl ishing Co	ppe fact f permi and ecc bearing and ur s 2185 s – De hing, 20 p. Pvt. L	olted flexu cor fo ssible centric g wal nstiffe - Siz sign	9 9 9 1 6 9 9 9 1 6 0 nec
ension member ailed connection ypes of joints y Unit III DES Mix proportion masonry units compressive so loading. Unit IV DES ypes of walls ccentric loads all Unit V DES laterials Concrete the Hollow block onstruction of EXT BOOK(S) 1. A.S. Arya, 2. P. Dayaration Publication	 Frs - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN is - compressive strength of mortars - b - stability of piers and walls - design stresses in masonry - Design of masonry IGN OF MASONRY WALL Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of Manufacturing Hollow E Hollow Block Amasonry Walls. Design of Masonry and Timber Structure tham, Brick and Reinforced Brick Structure mia, Ashok Kumar Jain and Arun Kumar Jains (P) Ltd, 2007 	solid stress asic as p y col al loa cavity locks locks locks s, Ne es, O	an ses com er um ads / wa - H ;	d bo in te npree IS C n su - De all - E Iollov Tests	x seenside ssive code bjec esigr Desig w Bl s on I and IBH	ection on, co e strees - E sted t n of s gn of ocks Hollo d Bros Publ	s - Desig ompression ompression oesign oo o axial a olid load stiffened as per IS ow Block s. Publisl ishing Co	ppe fact f permi and ecc bearing and ur s 2185 s – De hing, 20 p. Pvt. L	olted flexu cor fo ssible centric g wal nstiffe - Siz sign	9 9 9 1 6 9 9 9 1 6 0 nec
ension member ailed connecting ypes of joints y Unit III DES Mix proportion masonry units compressive st oading. Unit IV DES ypes of walls ccentric loads all Unit V DES laterials Concrete Hollow bloc onstruction of EXT BOOK(S) 1. A.S. Arya, 2. P. Dayara 3. B. C. Punr Publication EFERENCE(S	ers - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN as - compressive strength of mortars - b a - stability of piers and walls - design stresses in masonry - Design of masonr IGN OF MASONRY WALL - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of wall with opening - Design of IGN OF CONCRETE BLOCK MASONRY rete blocks - Light weight blocks - AAC B ks - Methods of Manufacturing Hollow B Hollow Block Masonry Walls. : Design of Masonry and Timber Structure tham, Brick and Reinforced Brick Structur nia, Ashok Kumar Jain and Arun Kumar J ns (P) Ltd, 2007):	solid stress asic as p y col al loa cavity locks locks locks s, Ne es, O ain, I	an ses com er um ads / wa - H s	d bo in te npres IS C n su - De all - E Iollov Tests	x seenside ssive code bjec bjec code sigr Desig s on I and IBH of ste	ection on, co e strees - E sted t n of s gn of ocks Hollo Publ eel str	s - Desig ompression ompression oesign oo o axial a olid load stiffened as per IS ow Block s. Publis ishing Co ructures,	ppe fact f permi and ecc bearing and ur s 2185 s – De hing, 20 p. Pvt. L	olted flexu cor fo ssible centric g wal nstiffe - Siz sign	9 9 9 1 6 9 9 1 6 0 9 9 0 0 0 0 0 0
ension member ailed connection ypes of joints y Unit III DES Mix proportion masonry units compressive states loading. Unit IV DES ypes of walls ccentric loads all Unit V DES taterials Concrete Hollow block construction of EXT BOOK(S) 1. A.S. Arya, 2. P. Dayarat 3. B. C. Punn Publication EFERENCE(S) 1. W.M. C.M 2. IS: 1905 - Walls, Indi	 Frs - Design of compression members of ons - Design of timber joists - Allowable with nails and bolts. IGN OF BRICK MASONRY COLUMN is - compressive strength of mortars - b - stability of piers and walls - design stresses in masonry - Design of masonry IGN OF MASONRY WALL Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of solid load bearing wall for axi - Design of Manufacturing Hollow E Hollow Block Amasonry Walls. Design of Masonry and Timber Structure tham, Brick and Reinforced Brick Structure mia, Ashok Kumar Jain and Arun Kumar Jains (P) Ltd, 2007 	solid stress asic o as p y col al loa cavity locks locks locks locks s, Ne es, O ain, E	an ses con er um ads / wa - H s mcl xfo Des nilla ucto	d bo in tr npree IS C n su - De all - E lollov Tests hanc rd & ign c	x seenside enside ssive code bjec esigr Desig v Bli s on I and IBH of stee Safe	ection on, co e stre s - E ted t n of s gn of ocks Hollo d Bros Publ eel str hers, ety of	s - Design ompression Design o o axial a olid load stiffened as per IS ow Block s. Publisi ishing Co ructures, 2010 Buildings	gn of be on and ppe fact f permi and ecc bearing and ur S 2185 s – De hing, 20 b. Pvt. L Laxmi	olted flexu cor fo ssible centric g wal nstiffe - Siz sign 007 -td, 19	an re 9 fo fo ne 9 e o and

1

Department	CIVIL ENGINEERI	NG				R 2019	Semester VII	PE
Course Code	Course Name		lour Wee	k	Credit	Total Hours	Maxim Mai	
		L	Т	P	C	Tiours	Ivial	N9
19CEX21	INDUSTRIAL WASTEWATER MANAGEMENT	3	0	0	3	45	100	
 To implication 	ctive (s): The purpose of learning this cou art knowledge on sources and characteris vention and control			ariou	s industria	al wastes a	and strategie	es for
 An insig polluta Ability t 	omes: At the end of this course, learners ght into the pollution from major industries ants to plan minimization of industrial wastes to design facilities for the processing and r	inclu	iding	the	sources a			
	RODUCTION	colui	nauc	11 01	induotriai	maotomati	51	8
Sources and cl	haracteristics of various industrial, process ents on streams, sewer, land, sewage trea							s of
	d standards related to prevention and con							
	EANER PRODUCTION						Sec. 19.11	8
and the second se	ion - Strength reduction - Material and pro	cess	mod	lifica	tions - Re	cycle, reus	se and bypro	duct
ecovery – App	blications – Waste minimization							
Unit III TRE	EATMENT TECHNOLOGIES		1					11
oxidation - Ads	Neutralisation - Removal of suspended, flo orption - Removal of dissolved inorganic - ue management - Dewatering – Disposal.	- Con						
	LUTION FROM MAJOR INDUSTRIES		1				-1/	9
Pharmaceutica	racteristics - Waste treatment flow charts f ils - Electroplating industries - Dairy - Suga mal power plants - Wastewater reclamatio	ar - F	ape	r - dis	stilleries -			
	ZARDOUS WASTE MANAGEMENT							9
lazardous was - Secured land	stes – Types – Sources - Collection - Phys Ifills.	sico d	chem	nical	treatment	- Solidific	ation –Incine	eratio
EXTBOOKS:		- 11						
1. M.N. Rac	& A. K.Dutta, "Wastewater Treatment", C	Oxford	d - IE		ublication	1995.		
2. Eckenfeld	der W.W. Jr., "Industrial Water Pollution (Contr	ol", ∣	McG	raw Hill E	Book Com	oany, New D)elhi,
3. Patwardh	an. A.D., Industrial Wastewater Treatmen	nt", Pi	rentio	ce Ha	all of India	a, 2010		
REFERENCE		5.1					1.000	1 dam
	., "Industrial Pollution Prevention", Springe			1.		~	1.00	
	son R.L and .Blackburn J.B, Jr.,"Industrial r, New York, 1998	l Was	stewa	ater S	Systems H	land book	", Lewis	
and the second s	H.M., "Industrial Pollution Prevention Han					CENTRAL CONTRACTOR OF CONTRACT	elhi, 1995.	
the second se	P.L., "Pollution Prevention: Fundamental &					, 2000.	1.7	
	"Environmental Management" Vikas Publ							
	l Wastewater Management, Treatment an Hill, 2008.	nd Dis	spos	al",(V	VEF Man	ual of prac	tice - FD3)	
					1	10	Δ	

for Sp

Department	CIVIL ENGINEERIN	CIVIL ENGINEERING				R 2019	Semester VII	PE
Course Code	Course Name	Но	urs/\ k	Wee	Credit	Total Hours	Maximum I	Marks
		L	Т	Р	С			8 - C - C
19CEX22	PREFABRICATED STRUCTURES	3	0	0	3	45	100	
	t ive (s): urse enhances the knowledge among the ign of various prefabricated structural elen			s to	understa	and the pri	nciples, com	oonen
To illustTo sumiTo apply	mes: ain the principles, manufacture and erection rate the production, erection and loading p marize the behaviour of the components o by the design procedure to prefabricated be by the design procedure to the prefabricate	f pre ams	ess fabr	icate	d structu		fferent joints	
Unit I DES	IGN PRINCIPLES							8
with monolithic modular coordir transportation –		and p lar c	olant	pref	abricatio	n, econom	y of prefabric	ation,
	FABRICATED COMPONENTS AND JOIN mponents of prefabricated structures, Beha					- dha dha dha a		10
structures. Joint provisions for no Unit III PRO Production tech	Construction of roof and floor slabs – Wal ts – joints for different structural connection on-structural fastenings, expansion joints i DUCTION AND FABRICATION nology – Choice of production setup, man uning of production setup, storage of preca	ns, e n pro ufac	effec ecas turin	tive s at cor	sealing on struction ethods, s	f joints for n stationary a	water proofin	g, 10
different types o	ning. Hoisting Technology – equipment for of members like beams, slabs, wall panels							of
	IGN OF PREFABRICATED BEAMS							9
	ad carrying members – Types of beams – ection stresses, elimination of erection stre							ams,
Unit V DESI	GN OF PREFABRICATED ELEMENTS		-	5.11				9
Types of Slabs - design principle	- construction of roof and floor slabs - Des s of column	ign d	of ho	llow	core sla	b. Columns	s – constructio	on and
EXTBOOKS:		-	1.	<	10.00	1.0		
	ndra Murthy D.S., —Design and Construct s OPC Private Limited, Chennai; 2017	ion d	of Pr	ecas	t Concre	ete Structur	esll, 1 st Editio	n,
REFERENCE(1.50	a sa	1996		
1. Kim S. Elli	ott, "Precast Concrete Structures", 2nd Ec	litior	n, CF	RC P	ress, Un	ited States	, 2016.	
2. "PCI Desig	gn Hand Book", 6th Edition, Precast / Pres	tres	sed	Cond	crete Inst	titute, ACI,	Chicago, 200)4.
						k	mllf.	

Chainnan - BoS Dept. of Cityll Engg. - ESEC

and the second s	CIVIL ENGINEEI	RING				R 2019	Semester VII	PE
Course	Course Name		lour Nee		Credit	Total Hours	Maximu	
Code		L	Т	Р	С	nours	Marks	
19CEX23	ECOLOGICALENGINEERING	3	0	0	3	45	100	-
 To impa ecosystem To utili environre 	ctive (s): The purpose of learning this count knowledge on the principles of ecologi ems, restore devastated ecosystems. ze the functions of ecosystems to mental management.	cal er	ngin	eerin				
	dents will be able to determine sustainab	leload	ding	s of e	ecosyster	ms.		
Unit I ECO	SYSTEMS & ECOTECHNOLOGY							9
	applications of ecology – Development a	and e	volu	tion	of ecosys	stems – I	Principles	
and concepts p	ertaining to communities in ecosystem -							
ecosystems – p Unit II SYS	productivity in ecosystems. STEMS APPROACH IN ECOLOGICAL I	ENCI		DIN	~	200	La all'history	9
	nponents and characteristics of systems			167. 199	20 Juli	ome Ct	ructural and	1053
Applications of					ssificatio	n of eco	logical mod	
Self-organizing necological s cosystems. Unit IV ECC Ecological eng ecological eng Wetlands and	f models in ecotechnology – Ecological e DLOGICAL ENGINEERING PROCESSE g design and processes – Multi s systems – Concept of energy – DTECHNOLOGY FOR WASTE TREATM ineering and ecotechnology – Classific gineering. Ecosanitation-Principles at ponds – source separation systems - treatment for solid wastes – Applicatio	conor Seede Dete MENT ation nd o	ed ermi of e	micr natic ecote	ocosms on of s echnolog of so al syster	– Inte sustainal y – Princ il infiltra ns – Ag	rface coup ole loading ciples of ation syste	9 pling g o 9 ms
Self-organizing necological s cosystems. Unit IV ECC Ecological eng ecological eng Vetlands and Detritus based systems.	f models in ecotechnology – Ecological e DLOGICAL ENGINEERING PROCESSE g design and processes – Multi s systems – Concept of energy – DTECHNOLOGY FOR WASTE TREATM ineering and ecotechnology – Classific gineering. Ecosanitation-Principles a ponds – source separation systems -	conor Seede Dete MENT ation nd o	ed ermi of e	micr natic ecote	ocosms on of s echnolog of so al syster	– Inte sustainal y – Princ il infiltra ns – Ag	rface coup ole loading ciples of ation syste	9 pling g o 9 ms
Self-organizing necological s cosystems. Unit IV ECC Ecological eng ecological eng Vetlands and Detritus based systems. Unit V CAS	models in ecotechnology – Ecological e DLOGICAL ENGINEERING PROCESSE g design and processes – Multi s systems – Concept of energy – DTECHNOLOGY FOR WASTE TREATM ineering and ecotechnology – Classific gineering. Ecosanitation-Principles and ponds – source separation systems - treatment for solid wastes – Applicatio	conor Seede Dete MENT ation nd o – Aqu ns of	of e	micr natic ecote ation ultura ologic	echnolog of so of so al syster cal engin	– Inte sustainal y – Prind il infiltra ns – Ag seering fo	ciples of tion syste or marine	9 pling g o 9 ms ems 9
Self-organizing necological s cosystems. Unit IV ECC Ecological eng ecological eng Vetlands and Detritus based systems. Unit V CAS Case studies of	models in ecotechnology – Ecological e DLOGICAL ENGINEERING PROCESSE g design and processes – Multi s systems – Concept of energy – DTECHNOLOGY FOR WASTE TREATM ineering and ecotechnology – Classific gineering. Ecosanitation-Principles at ponds – source separation systems - treatment for solid wastes – Applicatio SE STUDIES of Integrated Ecological Engineering S	conor Seede Dete MENT ation nd o – Aqu ns of	of e	micr natic ecote ation ultura ologic	echnolog of so of so al syster cal engin	– Inte sustainal y – Prind il infiltra ns – Ag seering fo	ciples of tion syste or marine	9 pling g o 9 ms ems 9
Self-organizing necological s cosystems. Unit IV ECC Ecological eng ecological eng Vetlands and Detritus based systems. Unit V CAS Case studies of EXT BOOK(S 1. Jorgensen 2. Mitsch, J.V. REFERENCE(S 1. Mitsch, W. 2. Developm	models in ecotechnology – Ecological e DLOGICAL ENGINEERING PROCESSE g design and processes – Multi s systems – Concept of energy – DTECHNOLOGY FOR WASTE TREATM ineering and ecotechnology – Classific gineering. Ecosanitation-Principles at ponds – source separation systems - treatment for solid wastes – Applicatio SE STUDIES of Integrated Ecological Engineering S S): n, S.E. Ecological Engineering: Princip <i>N</i> . and Jorgensen, S.E. Ecological Er	conor Seede Dete AENT ation nd o - Aqu ns of System oles a ogine stem olitar	of e oper uacu ecc ms and erin Res	micr natic ecote ation ultura ologic and Prace stora rea, (cocosms on of so acchnolog a of so al syster cal engin their cor ctice. CF An Introd ation, Wi CMA, CI	– Inte sustainal y – Prind il infiltra ns – Ag beering fo mmercia RC Press duction for ley 2nd nennai, 2	rface coup ole loading ciples of ation syste ro ecosyste or marine I prospects s, 2003 co Ed., 2003 2004	9 pling g 0 9 ms ems 9 3.

Craintan - Son Craintan - Son Craintan Craint Craint

Department	CIVIL ENGINEE	RING			-	R 2019	Semester VII	PE
Course Code	Course Name		lour Wee		Credit	Total	Maxim	
		L	Т	P	С	Hours	Mai	KS
19CEX24	FUNDAMENTALS OF NANOSCIENCE	3	0	0	3	45	100	
Course Objecti								
	learn about basis of nano material scie						a application	
	nes: At the end of the course the stude				o underst	and		
	I familiarize about the science of nanor I demonstrate the preparation of nanor							
	l develop knowledge in characteristic r			1				
		anoma	lienz	11				9
	nce and Technology- Implications	for Dh	rcion	Ch	omictry	Biology a	and Engine	
	of nanostructured materials- nano p							
	terials. Length Scales involved and e							
	Thermal properties. Introduction to							
	ERAL METHODS OF PREPARATION							9
Bottom-up Syntl	nesis-Top-down Approach: Co-Precip	itation,	Ultra	asoni	cation, N	lechanical	Milling, Coll	oida
outes, Self-ass	embly, Vapour phase deposition, M	IOCVD	, Sp	outter	ring, Eva	poration,	Molecular E	leam
	Layer Epitaxy, MOMBE.					- 110-sent		_
	OMATERIALS		1.122	1.1			1	12
	Carbon - Buckminster fullerene- gra							
	CNT) and Multi wall carbon nanotubes							
	utes, Plasma CVD), structure-property							
	02, NiO, nanoalumina, CaO, AgT antum wires, Quantum dots-preparatio						ionalization	and
	RACTERIZATION TECHNIQUES	n, prope	ertie	5 and	applicat	10115		9
Second and an and the second second	technique, Scanning Electron Micr	000000		muire	nmontal	toobnique	Trancmic	100
Electron Microso	copy including high-resolution imagin							
								, i ivi,
	ICATIONS .					이 이 있는 것이 다.	100 - 201	
JanoInfoTech.	ICATIONS	er mo	lecu	lar	switch	super ch	ip nanocry	7
	Information storage- nanocompute		lecu tech				ip, nanocry s. Targetted	7 /stal,
Nanobiotechlogy	Information storage- nanocompute r: nanoprobes in medical diagnostics	and bio	tech	nolo	gy, Nano	medicines	s, Targetted	7 vstal, drug
lanobiotechlogy lelivery, Bioima	Information storage- nanocompute	and bio stems(tech MEN	nolo /IS),	gy, Nano Nano El	medicines ectro Mec	s, Targetted hanical Syst	7 /stal, drug
Nanobiotechlogy delivery, Bioima NEMS)- Nanose In Photostat, pr	Information storage- nanocompute nanoprobes in medical diagnostics ging - Micro Electro Mechanical Sys	and bio stems(tech MEN	nolo /IS),	gy, Nano Nano El	medicines ectro Mec	s, Targetted hanical Syst	7 /stal, drug
delivery, Bioima NEMS)- Nanose In Photostat, pr FEXTBOOKS:	Information storage- nanocompute c nanoprobes in medical diagnostics ging - Micro Electro Mechanical Sys- ensors, nano crystalline silver for bact inting, solar cell, battery.	and bio stems(erial inh	tech MEN hibiti	nolo /IS), on, N	gy, Nano Nano El Ianopartio	medicines ectro Mec cles for su	s, Targetted hanical Syst nbarrier proc	7 vstal, drug ems lucts
Nanobiotechlogy delivery, Bioima NEMS)- Nanose In Photostat, pr FEXTBOOKS: 1. A.S. Edelst Institute of	Information storage- nanocompute r: nanoprobes in medical diagnostics ging - Micro Electro Mechanical Systemsors, nano crystalline silver for bacto inting, solar cell, battery. tein and R.C. Cammearata, eds., "Nar Physics Publishing, Bristol and Philad	and bio stems (erial inh nomater elphia,	tech MEN hibitio	nolo /IS), on, N Syn 3.	gy, Nano Nano El Ianopartio thesis, Pi	medicines ectro Mec cles for su roperties a	s, Targetted hanical Syst nbarrier proc	7 vstal, drug eems lucts ons",
Anobiotechlogy lelivery, Bioima NEMS)- Nanose In Photostat, pr EXTBOOKS: 1. A.S. Edelst Institute of 2. N John I Cambridge	Information storage- nanocompute c: nanoprobes in medical diagnostics ging - Micro Electro Mechanical Sys- ensors, nano crystalline silver for bact- inting, solar cell, battery. tein and R.C. Cammearata, eds., "Nar Physics Publishing, Bristol and Philad Dinardo, "Nanoscale Charecterisation , Wiley-VCH, 2000.	and bio stems (erial inh nomater elphia,	tech MEN hibitio	nolo /IS), on, N Syn 3.	gy, Nano Nano El Ianopartio thesis, Pi	medicines ectro Mec cles for su roperties a	s, Targetted hanical Syst nbarrier proc	7 vstal, drug eems lucts ons",
Nanobiotechlogy delivery, Bioima NEMS)- Nanose In Photostat, pr EXTBOOKS: 1. A.S. Edelst Institute of 2. N John I Cambridge	Information storage- nanocompute c: nanoprobes in medical diagnostics ging - Micro Electro Mechanical Sys- ensors, nano crystalline silver for bact- inting, solar cell, battery. tein and R.C. Cammearata, eds., "Nar Physics Publishing, Bristol and Philad Dinardo, "Nanoscale Charecterisation , Wiley-VCH, 2000.	and bio stems (erial inh nomater elphia,	tech MEN hibitio	nolo /IS), on, N Syn 3.	gy, Nano Nano El Ianopartio thesis, Pi	medicines ectro Mec cles for su roperties a	s, Targetted hanical Syst nbarrier proc	7 vstal, drug eems lucts ons",
Nanobiotechlogy delivery, Bioima NEMS)- Nanose In Photostat, pr EXTBOOKS: 1. A.S. Edelst Institute of 2. N John I Cambridge REFERENCE(S 1. G Timp, "N	Information storage- nanocompute c: nanoprobes in medical diagnostics ging - Micro Electro Mechanical Sys- ensors, nano crystalline silver for bact- inting, solar cell, battery. tein and R.C. Cammearata, eds., "Nar Physics Publishing, Bristol and Philad Dinardo, "Nanoscale Charecterisation , Wiley-VCH, 2000. 5): anotechnology", AIP press/Springer, 1	and bio stems (erial inh nomater elphia, n of su	rials: 1996	nolo //S), on, N Syn 3. es &	gy, Nano Nano El Ianopartio thesis, Pi Interface	medicines ectro Mec cles for su roperties a es", 2nd e	s, Targetted hanical Syst nbarrier proc and Application dition, Weinl	7 vstal, drug ems lucts ons", neim
Nanobiotechlogy delivery, Bioima NEMS)- Nanose In Photostat, pr EXTBOOKS: 1. A.S. Edelst Institute of 2. N John I Cambridge REFERENCE(S 1. G Timp, "N 2 Akhlesh La	Information storage- nanocompute r: nanoprobes in medical diagnostics ging - Micro Electro Mechanical Systemsors, nano crystalline silver for bactor inting, solar cell, battery. tein and R.C. Cammearata, eds., "Nar Physics Publishing, Bristol and Philad Dinardo, "Nanoscale Charecterisation , Wiley-VCH, 2000. 5):	and bio stems (erial inh nomater elphia, n of su 1999. chnology	tech MEN nibitio 1990 rface	nolog AS), on, N Syn 3. es &	gy, Nano Nano El Ianopartio thesis, Pi Interface	medicines ectro Mec cles for su roperties a es", 2nd e	s, Targetted hanical Syst nbarrier proc and Application dition, Weinl	7 vstal, drug ems lucts ons", neim

Chairman - BoS Dept. of Civil Engg. - ESEC

Department	CIVIL ENGINEERIN	IG				R 2019	Semester VII	PE
Course Code	Course Name	Но	urs/\ k	Wee	Credit	Total Hours	Maximum I	Marks
		L	Т	Р	С			
19CEX25	INTELLIGENT TRANSPORTATION SYSTEM	3	0	0	3	45	100	
	ve (s): urse imparts knowledge about the im ation engineering	port	ance	e of	Intellige	ent Transp	portation Sys	tem ii
 To interp To imple To infer To make 	in the common techniques and benefits or ret the concepts of telecommunication in ment the various advanced ITS methodol various public services and their usage a use of automated highway system	ITS				n system		
Definition of ITS TS - ITS data co	ODUCTION and Identification of ITS objectives – ITS ollection techniques – Detectors – Automa	atic v						
	/I) – Geographic Information Systems (GI COMMUNICATIONS IN ITS	S)						10
								10
mnortance of te	lecommunications in the US system Into	rmat	tion	man	anomont	Traffic ma	anagement co	ntore
	lecommunications in the ITS system, Info - Road side communication – Vehicle pos					, Traffic ma	anagement ce	enters
TMC). Vehicle -	In the ITS system, Info - Road side communication – Vehicle pos UNCTIONAL AREAS					, Traffic ma	anagement ce	enters
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh	- Road side communication – Vehicle pos UNCTIONAL AREAS c Management Systems (ATMS) – Advan- icle operations (CVO) – Advanced vehicle	ced cor	ing s trave	Syste eler i syste	em nformati ems (AV	on systems CS) – Adva	s (ATIS) –	
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advan	ced cor	ing s trave	Syste eler i syste	em nformati ems (AV	on systems CS) – Adva	s (ATIS) –	
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy Unit IV ITS U Travel and traffic	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advan- icle operations (CVO) – Advanced vehicle stems (APTS) – Advanced rural transport	ition ced cor tatio	trave trave ntrol n sys	Syste eler i syste stem	nformati ems (AV s (ARTS Electroni	on systems CS) – Adva s) c Payment	s (ATIS) – anced public	10 9 al
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy Unit IV ITS U Travel and traffic vehicle operation	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advan- icle operations (CVO) – Advanced vehicle stems (APTS) – Advanced rural transport SER NEEDS AND SERVICES management – Public transportation ma	ition ced cor tatio	trave trave ntrol n sys	Syste eler i syste stem	nformati ems (AV s (ARTS Electroni	on systems CS) – Adva s) c Payment	s (ATIS) – anced public	10 9 al
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy Unit IV ITS U Travel and traffic rehicle operation Unit V AUTC Critical ITS Issue	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advan- icle operations (CVO) – Advanced vehicle stems (APTS) – Advanced rural transport SER NEEDS AND SERVICES management – Public transportation ma ns – Emergency management – Advanced	ition ced cor tatio nage d vel	ing strave trave ntrol n sys emen hicle	Syste eler i syste stem nt – I safe ed hig	em nformati ems (AV s (ARTS Electroni ety syste	on systems CS) – Adva) c Payment ms – Inforr /stems – IT	s (ATIS) – anced public – Commercia nation Manag	10 9 al 9 9
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy Unit IV ITS U Travel and traffic rehicle operation Unit V AUTO Critical ITS Issue Overview of ITS	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advan- icle operations (CVO) – Advanced vehicle stems (APTS) – Advanced rural transport SER NEEDS AND SERVICES management – Public transportation mans - Emergency management – Advanced MATED HIGHWAY SYSTEMS es - Vehicles in Platoons – Integration of a	ition ced cor tatio nage d vel	ing strave trave ntrol n sys emen hicle	Syste eler i syste stem nt – I safe ed hig	em nformati ems (AV s (ARTS Electroni ety syste	on systems CS) – Adva) c Payment ms – Inforr /stems – IT	s (ATIS) – anced public – Commercia nation Manag	10 9 al 9 9
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy Unit IV ITS U ravel and traffic rehicle operation Unit V AUTC Critical ITS Issue Overview of ITS oad EXTBOOKS:	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advan- icle operations (CVO) – Advanced vehicle stems (APTS) – Advanced rural transport SER NEEDS AND SERVICES management – Public transportation ma ns – Emergency management – Advanced OMATED HIGHWAY SYSTEMS es - Vehicles in Platoons – Integration of a implementations in developed countries – mar, Amit Kumar Jain, —Intelligent Transp	ition ced cor tatio nage d vel	trave htrol n systeme hicle	Syste eler i syste stem nt – I safe safe devel	em nformati ems (AV s (ARTS Electroni ety syste ghway sy oping co	on systems (CS) – Adva (5) c Payment ms – Inforr vstems – IT ountries – S	s (ATIS) – anced public – Commercia nation Manag S Programs - Smart car – Si	10 9 al leement 9
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy Unit IV ITS U Travel and traffic vehicle operation Unit V AUTC Critical ITS Issue Overview of ITS oad EXTBOOKS: 1 Pradip Kur	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advance icle operations (CVO) – Advanced vehicle stems (APTS) – Advanced rural transport SER NEEDS AND SERVICES management – Public transportation mans – Emergency management – Advanced OMATED HIGHWAY SYSTEMS es - Vehicles in Platoons – Integration of a implementations in developed countries – mar, Amit Kumar Jain, —Intelligent Transp 2017.	ition ced cor tatio nage d vel	trave htrol n systeme hicle	Syste eler i syste stem nt – I safe safe devel	em nformati ems (AV s (ARTS Electroni ety syste ghway sy oping co	on systems (CS) – Adva (5) c Payment ms – Inforr vstems – IT ountries – S	s (ATIS) – anced public – Commercia nation Manag S Programs - Smart car – Si	10 9 al leement 9
TMC). Vehicle - Unit III ITS F Advanced Traffic Commercial veh ransportation sy Unit IV ITS U ravel and traffic rehicle operation Unit V AUTC Critical ITS Issue Overview of ITS oad EXTBOOKS: 1. Pradip Kur New Delhi, REFERENCE(S	- Road side communication – Vehicle pos UNCTIONAL AREAS Management Systems (ATMS) – Advance icle operations (CVO) – Advanced vehicle stems (APTS) – Advanced rural transport SER NEEDS AND SERVICES management – Public transportation mans – Emergency management – Advanced OMATED HIGHWAY SYSTEMS es - Vehicles in Platoons – Integration of a implementations in developed countries – mar, Amit Kumar Jain, —Intelligent Transp 2017.	ition ced cor tatio nage d vel autor - ITS	ing strave htrol n syn hicle mate s in c	Syste eler i syste stem nt – I safe devel devel	em nformati ems (AV s (ARTS Electroni ety syste ghway sy oping co l, 1st Ed	on systems (CS) – Adva (S) c Payment ms – Inforr vstems – IT ountries – S ition ,PHI L	s (ATIS) – anced public – Commercia nation Manag S Programs - Smart car – Si earning Pvt L	10 9 al leement 9 - mart .td,

1

Kmll

Department	CIVIL ENGINEERIN	١G				R 2019	Semester VIII	PE
Course Code	Course Name		lour Wee		Credit	Total	Maxim	
		L	Т	Ρ	С	Hours	Mai	rks
19CEX26	GROUND WATER ENGINEERING	3	0	0	3	45	100	
Course Objecti								
	o introduce the student to the princip	oles	of	Grou	Indwater	governing	g Equations	and
	aracteristics of different aquifers,		841					
	understand the techniques of development						ater	
	nes: At the end of the course the student		be a	ble to	o underst	and		
	derstand aquifer properties and its dynam							
	t an exposure towards well design and pra		cal p	oble	ms			
	velop a model for groundwater manageme							
	dents will be able to understand the impo	rtan	ce o	f artif	ficial rech	arge and	groundwater	
	ality concepts							
	n knowledge on conservation of groundw	ater						
Unit I HYDF	ROGEOLOGICAL PARAMETERS	L					141-11	9
	ater bearing Properties of Rock – Type of							
	ansmissivity and storage coefficient – Met							
- Darcy's Law - C	Groundwater Velocity – Dupuit Forchhein	ner	assu	umpti	ion – Ste	ady Radia	Flow into a	Well
Unit II WELL	L HYDRAULICS							9
Unsteady state f	low - Theis method - Jacob method - Ch	low's	s me	thod	- Law of	f Times –	Theis Recover	ery –
	Slug method - tests - Image well theory -							
	ecific Capacity and Safe yield - Collector	well	and	I Infili	tration ga	llery		10.000
Unit III GROU	UNDWATER MANAGEMENT							9
	ement Model - Database for Groundwat							
	Mathematical model - Model Concept							
Calibration – Val	idation – Future Prediction – Sensitivity A	naly	sis -	- Und	certainty ·	 Develop 	ment of a mo	del.
Unit IV GROU	JNDWATER QUALITY	-				1961		9
Ground water ch	emistry - Origin, movement and quality -	Wate	er qu	uality	standard	ls – Drinki	ng water	
Industrial water	- Irrigation water - Ground water Pollu	ition	and	l leg	islation -	Environm	ental Regula	atory
requirement								
Unit V GROL	JNDWATER CONSERVATION	1011-		We	1.00		1	9
Artificial recharge	e techniques – Reclaimed wastewater re	echa	rae	- So	il aquifer	treatment	(SAT) - Aq	
	overy (ASR)Seawater Intrusion and Rem							
	- Protection zone delineation, Contamina							
TEXTBOOKS:					-	Real Parts		
	H.M., "Ground Water Hydrology", New A	ge I	nterr	natio	nal (P) Li	mited, Nev	v Delhi, 2010)
and the second	"Ground Water Hydrology", John Wiley a	nd S	Sons	, Nev	w York, 2	000.		
REFERENCE(S	5):	-			1.105			
	rles, "Groundwater Science". Elsevier, Ad	cade	mic	Pres	s, 2002.			1
	nan S. Ground Water, K. I. Granh arts, C.						Comments of the second	

km(

Department	CIVIL ENGINEER	RINC	3			R 2019	Semester VIII	PE
Course Code	Course Name	Ho	urs/ ek T	We P	Credi t C	Total Hours	Maximu Marl	
19CEX27	REPAIR AND REHABILITATION OF STRUCTURES	3	0	0	3	45	100	
 To emp 	ctive (s): The purpose of learning this con hasize the importance of maintenance a art fundamental knowledge on various re	and i	n se	ctior strate	n of struc egies	tures		
 Diagnos Investig Identify Select the select the sele	omes: At the end of this course, learner sis the damage of distress structures ate the Corrosion factors and control me the Serviceability and Durability of Cond he proper repair materials and its applic he method to strengthen the distressed	etho crete ation stru	ds e Stri n	uctui		9		
	TENANCE AND REPAIR STRATEGIE							9
Maintenance, roof deterioration structure	epair and rehabilitation -Facets of maint a -inspection- Preventive measures - D	ena Diagi	nce nosis	- Imp s of	distress	Assessm	ent of dam	ageo
Unit II COR	ROSION PROTECTION age of reinforced concrete - Methods							9
Unit III SER Durability of co reezing and th ssurance - Ne Unit IV MAT Expansive cem concrete - Rust concrete - Gun Unit V REP	fflorescence, causes, prevention and pr VICEABILITY AND DURABILITY OF C oncrete in seawater - Thermal propertie hawing - Permeability of concrete - S ed - Components - Conceptual bases for ERIALS AND TECHNIQUES FOR REF nent - Polymer concrete - Sulphur infiltration eliminators and polymer coating for relative ite or shotcrete - Epoxy injection, mortant AIRS TO STRUCTURES AND DEMOL	ON s of Sulpl or qu PAIR ated bars rep ITIO	CRE con hate uality con durin oair fo	TE s crete atta ass crete ng re or cr F ST	e - Fire I ack - Me urance s e - Ferro epair - Fo acks. RUCTU	resistance ethods of schemes. -cement - bamed col RES	control- Q Fibre reinf ncrete – Va	9 orceo cuun 9
emperature, c accelerated str strength, deflect	ts of inspection - structural and ec hemicals, wear and erosion - Special ength gain - Strengthening of existing stion, cracking, chemical disruption, we concrete and steel reinforcement.	cor stru	ncret	es a es -	and mor repairs	tars -Spe to overco	cial cemen me low me	ts fo embe
TEXT BOOK(S			_					-
Centre (S	N,"Learning from Failures, Deficiencies DCPL), Raikar Bhavan, Bombay 1987.							-
2. 2001.	Rehabilitation, Compilation from The Inc					de la composición de	and the second second	
3. Allen .R.T	, and Edwards.S.C, Shaw D.N Repair o	f Co	ncre	ete S	tructures	s, Chapma	an and Hall,	2005
REFERENCE(S								
2. Dension C Repair, Lo	ty, Concrete Technology Theory and Pra Campbell, Allen and Harold Roper, Conc ongman Scientific and Technical Publica mmons, Concrete Repair and Maintena	crete atior	e Str ns, U	uctu K, 1	res, Mate 991	erials, Ma	intenance a	nd
3. Strategy,	Techniques, Galgotia Publication, 2001					km		

Department	CIVIL ENGINEERII	NG				R 2019	Semester VIII	PE
Course Code	Course Name	Ho	urs/ k	Wee	Credit	Total Hours	Maximum	Marks
		L	Т	P	С			
19CEX28	CONSTRUCTION MANAGEMENT	3	0	0	3	45	100	
necessa	ive (s): urse imparts knowledge on Constru ry for execution of projects efficiently in construction industry.							
 To estim To asses To prepared 	nes: oret the importance of planning and sche nate the resource requirement for constru- ss quality elements and its importance for are schedule and budgeted cost associa by the safety codes and standards to importance for	or co ted v	on pronstr onstr with	roject ructio cons	ts on mater struction	ials activities	site	
	INING, SCHEDULING AND ORGANIZI		1	19.5		ine fait		8
Project manage Construction org	nstruction projects – objectives - principl ment through networks – CPM & PERT ganization. DURCE MANAGEMENT	es – - Jol	∙sta b la⊻	ges o y-out-	of planni -Work b	ing, Sched reakdown	uling - Metho structure –T	ods - ypes of
		N / - 1				t Effe ative		
	ces- Estimating resource requirements- reciation of construction equipment -Mar							
	ITY CONTROL	1	200		18.50	in an air an an air		10
standards-Statis QC.	n construction-Importance-Elements-Qua tical methods- Sampling by attributes-Sa	amp	ling	by va				1000
	DULE, COST CONTROL AND MANAG							9
construction – O Cost manageme	ce – Cost variance – Cost and schedule bjectives - Cost control systems - Direct ent Risk Management							off -
	TY MANAGEMENT	-1					1.1.1	9
assessment - Si	uction projects – Importance of safety - E ite accidents – Causes – Classification - Safety codes and OSHA standards.							
TEXTBOOKS:								
••	nan. S, "Construction Engineering and M	lana	gen	nent",	, 5th Ed	ition, Ume	sh Publishing	g, 2019
REFERENCE(S	5):				12.1.5		and states	
CC Charr								
^{1.} Publishing	na, S.V. Deodhar —Construction Engine House, 2017. Oberlender,"Project Management for En	1.	•					01

Department	CIVIL ENGINEER	RING				R 2019	Semester VIII	PE
Course Code	Course Name	Ho	urs/ k	Wee	Credit	Total Hours	Maximum M	/larks
		L	Т	P	С			
19CEX29	ENTREPRENEURSHIP DEVELOPMENT	3	0	0	3	45	100	
	ve (s): an opportunity to assess their own str a successful entrepreneur.	engths	anc	l ider	ntify gap	s that need	d to be addre	ssed t
 Develop a Develop communi Understa entreprer 	nd the DNA of an entrepreneur and eurial perspective.	ng ke Lasse	y sk	ills si	uch as	design, pei		
and the second se	DDUCTION TO ENTREPRENEURSHI					4	L	8
Objectives of Entrepreneurship Entrepreneurship	ncept of Entrepreneur, Entrepreneur, Entrepreneurship Development, Pha o, The Entrepreneurial Mindset, o, Introduction to Entrepreneurship Skil EPRENEURSHIP DEVELOPMENT S	ases Char Is	of I	Entre	preneur	ship Deve	lopment, Ro	le of
A second process and the second se	preneurship skill, Types of Entreprene	1/20016101000	Chi	la: Di	iningga	managama	nt akilla Taar	- STATED -
and leadership s problem-solving management ar	kills, Communication and listening, C skills, Critical thinking skills, Strategi	ustom	er se ing	ervice and	e skills, planning network	Financial s skills, Te	kills, Analytica chnical skills,	al and Time
TEXTBOOKS:	d organizational skills, Branding, m kills, Entrepreneurial skills in the workp			epren	neurial Ir			
				epren	eurial Ir			
		olace,	Entre			magination	And Creativity	
1. Vasant Des	kills, Entrepreneurial skills in the workp sai, Dynamics of Entrepreneurship Dev	olace,	Entre			magination	And Creativity	
1. Vasant Des	kills, Entrepreneurial skills in the workp sai, Dynamics of Entrepreneurship Dev	olace, velopm	Entre	,Hima	alaya Pu	nagination . Iblication ho	And Creativity	
1.Vasant DesREFERENCE(S1.David holt E	kills, Entrepreneurial skills in the workp sai, Dynamics of Entrepreneurship Dev):	velopm	Entre lent ,	,Hima ce Ha	alaya Pu all India.	nagination . Iblication ho	And Creativity	

knof

Department	CIVIL ENGINEERII	NG				R 2019	Semester VIII	PE
Course Code	Course Name	Ho	urs/\ k	Wee	Credit	Total Hours	Maximum	Marks
		L	Т	Р	С			
19CEX30	INSTRUMENTATION AND SENSOR TECHNOLOGIES FOR CIVIL ENGINEERING	3	0	0	3	45	100	
installed • To impa	erstand how a building can be made co rt knowledge on basics of sensor technolognize the importance of fire detection and	ogy					rvices provid	led an
 To Ident To Enun To Explana 	erstand the features and installation of ser ify the functions and properties of smart n herate the applications of strain gauges in ain the methods of crack detection and pro- vze the characteristics of fire safety equip	nater stra even	in m tion	techr	niques.			
Unit I INTR	ODUCTION TO SENSORS							8
sensors: Tempe Structural prope Configuration &	surement and instrumentation- Physical verature sensors, Force and Pressure sensor rties- Electric and magnetic properties of Specification - Permanent installations - RT MATERIALS	sors, sens	Gas sors	sens - Ser	ors, Op sor sele	tical radiation ection - Sen	on sensors-	
ntroduction to S	Smart Materials and Structures-Functions	and	resn	0000	Ormal		and a supervised statement of the local division of the	-
Materials - Piezo of shape memor Fiber Optics - I	pelectric properties - Actuation of structurary alloys -Electro rheological and magneto Fiber characteristics - Fiber optic strain se	al co o rhe	mpo olog	nents icalflu	s - Shap uids - Ap	e Memory applications of	Alloys-Applic	ations R fluids
Materials - Piezo of shape memory Fiber Optics - Unit III STR/ Methods of Mea Mechanical & E	pelectric properties - Actuation of structurary alloys -Electro rheological and magneto Fiber characteristics - Fiber optic strain se AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applica	al co o rhe ensor ustica	mpo olog rs - A al ext s- Sti	nents icalflu Applic tensc rain F	s - Shap uids - Ap cations c meters Rosettes	e Memory / oplications of optical fib -Strain mea - Measurer	Alloys-Applic of ER and Mi ers asurement- nent of loads	ations R fluids 10 using
Materials - Piez of shape memor Fiber Optics - Unit III STR/ Methods of Mea Mechanical & El proving rings - M	Delectric properties - Actuation of structure ry alloys -Electro rheological and magneto Fiber characteristics - Fiber optic strain se AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applica Measurement of deflections by dial gauges	al co o rhe ensor ustica	mpo olog rs - A al ext s- Sti	nents icalflu Applic tensc rain F	s - Shap uids - Ap cations c meters Rosettes	e Memory / oplications of optical fib -Strain mea - Measurer	Alloys-Applic of ER and Mi ers asurement- nent of loads	ations R fluids 10 using
Materials - Piez of shape memor Fiber Optics - Unit III STR/ Methods of Mea Mechanical & E proving rings - M Unit IV DIST	Delectric properties - Actuation of structure ry alloys -Electro rheological and magneto Fiber characteristics - Fiber optic strain se AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applica Measurement of deflections by dial gauges RESS MEASUREMENT	al co o rhe ensor ustica ations s and	mpo olog rs - A al ext s- Str d LV	nents icalflu opplic tenso rain F DT -V	s - Shap uids - Ap cations c meters Rosettes Vheatsto	e Memory / oplications (of optical fib -Strain mea - Measurer one bridge	Alloys-Applic of ER and Mi ers asurement- nent of loads configuration	ations R fluids 10 using
Materials - Piez of shape memor Fiber Optics - Unit III STR/ Methods of Mea Mechanical & El proving rings - M Unit IV DIST Diagnosis of dis neasurement - M nspection - Dye	Delectric properties - Actuation of structure ry alloys -Electro rheological and magnetor Fiber characteristics - Fiber optic strain set AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applica Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermo- penetrant inspection and ultrasound- Co	al co o rhe ensor ustica s and tions s and tion co o gra	mpo olog rs - A al ext s- Str d LV of cra ms- on of	nents icalflu Applic tenso rain F DT -V acks- Ultra f rein	s - Shap uids - Ap cations c meters Rosettes Vheatsto Causes sonic se forceme	e Memory / oplications of optical fib -Strain mea - Measurer one bridge s of cracks- ensors - Ma	Alloys-Applic of ER and Mi ers asurement- nent of loads configuration Crack gnetic particl	ations R fluids 10 using 9 e
Materials - Piez of shape memory Fiber Optics - Unit III STR/ Methods of Mea Mechanical & E proving rings - M Unit IV DIST Diagnosis of dis neasurement- M nspection - Dye using half cell point	Delectric properties - Actuation of structure ry alloys -Electro rheological and magneto Fiber characteristics - Fiber optic strain se AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applica Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermo	al co o rhe ensor ustica s and tion co gra rrosio iissio	mpo olog rs - A al ext s- Str d LV of cra ms- on of	nents icalflu Applic tenso rain F DT -V acks- Ultra f rein	s - Shap uids - Ap cations c meters Rosettes Vheatsto Causes sonic se forceme	e Memory / oplications of optical fib -Strain mea - Measurer one bridge s of cracks- ensors - Ma	Alloys-Applic of ER and Mi ers asurement- nent of loads configuration Crack gnetic particl	ations R fluids 10 using 9 e
Materials - Piez of shape memory Fiber Optics - Unit III STR/ Methods of Mea Mechanical & E proving rings - M Unit IV DIST Diagnosis of dis measurement - M nspection - Dye using half cell per Unit V FIRE Safety Against file eat and smoke Tanks (UGT) an	pelectric properties - Actuation of structure y alloys -Electro rheological and magnetor Fiber characteristics - Fiber optic strain sec AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applicat Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermory penetrant inspection and ultrasound- Co otentiometer- Fibre optic AE (Acoustic em SAFETY INSTALLATIONS IN BUILDING re in buildings- Fire safety considerations detectors-Automatic sprinklers -Fire Exti d Over Head Tanks (OHT) for firefighting PASS device (Personal Alert Safety Syste	al co o rhe ensor ustica stions s and tion o o gra rrosio issio G a in b nguis need	mpo olog s - A al ext s - Str d LVI of cra ms- on o on o s n) se uildin shers	nents icalflu applic tensor ain F DT -V acks- Ultra f rein ensor ng as s - Ca Safet	s - Shap uids - Ap cations c meters Rosettes Vheatsto Causes sonic se forceme per NB apacity c y and se	e Memory / oplications (of optical fib -Strain mea - Measurer one bridge of cracks- ensors - Ma nt in RCC- C - Dry rise determinatio	Alloys-Applic of ER and MI ers asurement- nent of loads configuration Crack gnetic particl Corrosion de ers and wet ri on of Under C ems: FAS (Fi	ations R fluids 10 using 9 etection 9 sers - Ground re
Materials - Piez of shape memory Fiber Optics - Unit III STRA Methods of Mea Mechanical & E proving rings - M Unit IV DIST Diagnosis of dis measurement - M Dising half cell per Unit V FIRE Safety Against fileat and smoke Tanks (UGT) an Narm System);	pelectric properties - Actuation of structure y alloys -Electro rheological and magnetor Fiber characteristics - Fiber optic strain sec AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applicat Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermory penetrant inspection and ultrasound- Co otentiometer- Fibre optic AE (Acoustic em SAFETY INSTALLATIONS IN BUILDING re in buildings- Fire safety considerations detectors-Automatic sprinklers -Fire Exti d Over Head Tanks (OHT) for firefighting PASS device (Personal Alert Safety Syste	al co o rhe ensor ustica stions s and tion o o gra rrosio issio G a in b nguis need	mpo olog s - A al ext s - Str d LVI of cra ms- on o on o s n) se uildin shers	nents icalflu applic tensor ain F DT -V acks- Ultra f rein ensor ng as s - Ca Safet	s - Shap uids - Ap cations c meters Rosettes Vheatsto Causes sonic se forceme per NB apacity c y and se	e Memory / oplications (of optical fib -Strain mea - Measurer one bridge of cracks- ensors - Ma nt in RCC- C - Dry rise determinatio	Alloys-Applic of ER and MI ers asurement- nent of loads configuration Crack gnetic particl Corrosion de ers and wet ri on of Under C ems: FAS (Fi	ations R fluids 10 using 9 etection 9 sers - Ground re
Aaterials - Piez of shape memor Fiber Optics - Unit III STR/ Methods of Mea Mechanical & El Proving rings - M Unit IV DIST Diagnosis of dis neasurement - M Diagnosis of dis Sing half cell po Unit V FIRE Safety Against fileat and smoke Tanks (UGT) an Jarm System), Suilding Manage EXTBOOKS:	pelectric properties - Actuation of structure y alloys -Electro rheological and magnetor Fiber characteristics - Fiber optic strain sec AIN MEASUREMENT surement - Mechanical, Optical and Acou ectrical resistance strain gauges- Applicat Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermory penetrant inspection and ultrasound- Co otentiometer- Fibre optic AE (Acoustic em SAFETY INSTALLATIONS IN BUILDING re in buildings- Fire safety considerations detectors-Automatic sprinklers -Fire Exti d Over Head Tanks (OHT) for firefighting PASS device (Personal Alert Safety Syste	al co o rhe ensor ustica stions s and tion o o gra rrosio issio G a in b nguis need	mpo olog s - A al ext s - Str d LVI of cra ms- on o on o s n) se uildin shers	nents icalflu applic tensor ain F DT -V acks- Ultra f rein ensor ng as s - Ca Safet	s - Shap uids - Ap cations c meters Rosettes Vheatsto Causes sonic se forceme per NB apacity c y and se	e Memory / oplications (of optical fib -Strain mea - Measurer one bridge of cracks- ensors - Ma nt in RCC- C - Dry rise determinatio	Alloys-Applic of ER and MI ers asurement- nent of loads configuration Crack gnetic particl Corrosion de ers and wet ri on of Under C ems: FAS (Fi	ations R fluids 10 using 9 etection 9 sers - Ground re
Materials - Piez of shape memory Fiber Optics - Unit III STRA Methods of Mea Mechanical & Electroning rings - M Unit IV DIST Diagnosis of dist Diagnosis of dist Diagnosis of dist Diagnosis of dist Description - Dye Unit V FIRE Safety Against file Ieat and smoke Tanks (UGT) an Jarm System), Building Manage EXTBOOKS: 1.	pelectric properties - Actuation of structure y alloys -Electro rheological and magnetor Fiber characteristics - Fiber optic strain sec AIN MEASUREMENT surement - Mechanical, Optical and Acou- ectrical resistance strain gauges- Applicat Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermo- penetrant inspection and ultrasound- Co- tentiometer- Fibre optic AE (Acoustic em SAFETY INSTALLATIONS IN BUILDING re in buildings- Fire safety considerations detectors-Automatic sprinklers -Fire Exti d Over Head Tanks (OHT) for firefighting PASS device (Personal Alert Safety Systement System).	al co o rhe ensor ustica stions s and tion o o gra rrosio issio G a in b nguis need	mpo olog s - A al ext s - Str d LVI of cra ms- on o on o s n) se uildin shers	nents icalflu applic tensor ain F DT -V acks- Ultra f rein ensor ng as s - Ca Safet	s - Shap uids - Ap cations c meters Rosettes Vheatsto Causes sonic se forceme per NB apacity c y and se	e Memory / oplications (of optical fib -Strain mea - Measurer one bridge of cracks- ensors - Ma nt in RCC- C - Dry rise determinatio	Alloys-Applic of ER and MI ers asurement- nent of loads configuration Crack gnetic particl Corrosion de ers and wet ri on of Under C ems: FAS (Fi	ations R fluids 10 using 9 etection 9 sers - Ground re
Materials - Piez of shape memory Fiber Optics - Unit III STRA Methods of Mea Mechanical & Electroning rings - M Unit IV DIST Diagnosis of disterement - M Safety Against file Gafety Against file Italiang Manage EXTBOOKS: 1. Jon Wilson REFERENCE(S 1. Fraden, Ja Springer V	belectric properties - Actuation of structure y alloys -Electro rheological and magnetor Fiber characteristics - Fiber optic strain second AIN MEASUREMENT surement - Mechanical, Optical and Acou- ectrical resistance strain gauges- Applical Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermory penetrant inspection and ultrasound- Co- tentiometer- Fibre optic AE (Acoustic em- SAFETY INSTALLATIONS IN BUILDING re in buildings- Fire safety considerations detectors-Automatic sprinklers -Fire Exti d Over Head Tanks (OHT) for firefighting PASS device (Personal Alert Safety Systement System). a Sensor Technology Handbook.,2004 S): acob, "Handbook of modern sensors: physical deriag New York	al co o rhe ensor ustica tions s and tion o gra rrosid issio G s in b nguis need em) -	mpo olog rs - A al ext s- Str d LVI of cra ms- on of n) se uildin sher: ds - S CC	nents icalflu Applic tenso rain F DT -V acks- Ultra f rein enso Safet TV si gns,	s - Shap uids - Ap eations of meters Rosettes Vheatsto Causes sonic se forceme per NB apacity of y and se urveillan	e Memory / oplications of of optical fib -Strain mea - Measurer one bridge - Measurer one bridge - Measurer one bridge - Measurer - Ma - Measurer - Ma - Measurer - Ma - Measurer - Measurer - Ma - Measurer - Ma - Measurer - Measurer	Alloys-Applic of ER and Mi ers asurement- nent of loads configuration Crack gnetic particl Corrosion de ers and wet ri on of Under C ems: FAS (Fi -IBMS (Intelli	ations fluids 10 using 9 etection 9 sers - Ground re gent
Materials - Piez of shape memory Fiber Optics - Unit III STR/ Methods of Mea Mechanical & Electroning rings - M Unit IV DIST Diagnosis of disterement - M Safety Against file Ieat and smoke Tanks (UGT) an Narm System), Building Manage EXTBOOKS: 1. Jon Wilson REFERENCE(\$ 1. Fraden, Ja Springer V	belectric properties - Actuation of structure y alloys -Electro rheological and magnetor Fiber characteristics - Fiber optic strain second AIN MEASUREMENT surement - Mechanical, Optical and Acou- ectrical resistance strain gauges- Applical Measurement of deflections by dial gauges RESS MEASUREMENT tress in structures- Types & Characterizat Monitoring - Crack detection using Thermo- penetrant inspection and ultrasound- Co- otentiometer- Fibre optic AE (Acoustic em- SAFETY INSTALLATIONS IN BUILDING re in buildings- Fire safety considerations detectors-Automatic sprinklers -Fire Exti d Over Head Tanks (OHT) for firefighting PASS device (Personal Alert Safety Systement System). a Sensor Technology Handbook.,2004 S): acob, "Handbook of modern sensors: physical sectors and the sensors: physical and the sensor Structure of the sensors in the sensors: physical and the sensor Structure of the sensors in the sensor in th	al co o rhe ensor ustica tions s and tion o gra rrosid issio G s in b nguis need em) -	mpo olog rs - A al ext s- Str d LVI of cra ms- on of n) se uildin sher: ds - S CC	nents icalflu Applic tenso rain F DT -V acks- Ultra f rein enso Safet TV si gns,	s - Shap uids - Ap eations of meters Rosettes Vheatsto Causes sonic se forceme per NB apacity of y and se urveillan	e Memory / oplications of of optical fib -Strain mea - Measurer one bridge - Measurer one bridge - Measurer one bridge - Measurer - Ma - Measurer - Ma - Measurer - Ma - Measurer - Ma - Measurer - Me	Alloys-Applic of ER and Mi ers asurement- nent of loads configuration Crack gnetic particl Corrosion de ers and wet ri on of Under C ems: FAS (Fi -IBMS (Intelli	ations fluids 10 using 9 etection 9 sers - Ground re gent

Department	CIVIL ENGINEERI	NG				R 2019	Semester VIII	PE
Course Code	Course Name		Hour Wee		Credit	Total	Maxin	
	ooulse nume	L	T	P	С	Hours	Ma	rks
19CEX31	ENVIRONMENTAL IMPACT ASSESSMENT	3	0	0	3	45	100	
	tive (s): The purpose of learning this cou t knowledge on Environmental managen			Envii	ronmenta	I Impact A	ssessment	
 Ca ass Exp 	mes: At the end of this course, learners rry out scoping and screening of develop sessments blain different methodologies for environn n environmental impact assessments an	ment	tal pr al im	ojec pact	ts for env	n and asse	ssment	
	aluate environmental impact assessment	repo	orts			<i></i>	N	
	ODUCTION						1 1 50	9
	opment projects–EIA Notifications-Urba vironmental Impact Assessment(EIA)-En							cts o
and the second design of the second division	HODOLOGIES	VIIOI	men		npact ota	tement(Li	5)	9
	-Checklists-Matrices-Networks-Cost-be	nefit	anal	vsis-	-Analysis	of alterna	tives – Unce	
n EIA					og - og og og og ser en se			
and a state of the								
and a state of the	DICTION ANDASSESSMENT							9
Unit III PREI	DICTION ANDASSESSMENT Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra			vities	and on	flora& Fai	una- Mather	0.000
Unit III PREI	Impact on land, water, air, social & cul			vities	and on	flora& Fau	una- Mather	0.000
Unit III PREI Assessment of models-Public p Unit IV ENVI Plan for mitigatio on flora& fauna-	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro	pid I	EIA.	mitig	ation of ir			natica 9 nd an
Unit IIIPREIAssessment of models-Public pUnit IVENVIPlan for mitigation on flora& fauna-Unit VCASE	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro	ipid I itions ject /	EIA. s for Affec	mitig ted F	ation of ir People.	npact on v	vater, air, lar	natica 9 nd an 9
Unit IIIPREIAssessment of models-Public pUnit IVENVIPlan for mitigation flora& fauna-Unit VCASEEIA for infrastr Projects-Waste	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro	ipid I itions ject /	EIA. s for Affec	mitig ted F	ation of ir People.	npact on v	vater, air, lar	natica 9 nd an 9
Unit IIIPREIAssessment of models-Public pUnit IVENVIPlan for mitigation on flora& fauna-Unit VCASEEIA for infrastr Projects-Waste	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro ESTUDIES ructure projects–Dams–Highways–Multi-	ipid I itions ject /	EIA. s for Affec	mitig ted F	ation of ir People.	npact on v	vater, air, lar	natica 9 nd an 9
Unit III PREI Assessment of models-Public p Unit IV ENVI Plan for mitigatio on flora& fauna- Unit V CASE EIA for infrastr Projects–Waste EXTBOOKS:	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro ESTUDIES ructure projects–Dams–Highways–Multi-	ipid I itions ject /	EIA. s for Affec	mitig ted F Buildi	ation of ir People. Ings–Wat	npact on v er Supply	vater, air, lar	natica 9 nd an
Unit IIIPREIAssessment ofnodels-Public pUnit IVENVIPlan for mitigaticon flora& fauna-Unit VCASECASEIA for infrastrProjects-WasteEXTBOOKS:1.Canter,R.L	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro ESTUDIES ructure projects–Dams–Highways–Multi- water treatment plants, STP	ipid I otions ject / -store	EIA. s for Affec ey E	mitig ted F Buildi	ation of ir People. Ings–Wat	npact on v er Supply elhi,1996.	vater, air, lar and Dra	9 nd an 9 ainag
Unit III PREI Assessment of nodels-Public p Unit IV ENVI Unit IV ENVI Plan for mitigatic on flora& fauna- Unit V CASE EIA for infrastr Projects-Waste EXTBOOKS: 1. Canter,R.L 2. Richard K. 2002 REFERENCE(S	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro ESTUDIES ructure projects–Dams–Highways–Multi- water treatment plants, STP ,"Environmental Impact Assessment", M Morgan., "Environmental Impact Asses	ipid I itions ject / -store	EIA. s for Affec ey E aw-H ent"	mitig ted F Buildi ill Ind Kluw	ation of ir People. Ings–Wat	npact on v er Supply elhi, 1996. emic Public	vater, air, lar and Dra	9 nd an 9 ainag
Unit III PREI Assessment of nodels-Public p Unit IV ENVI Unit IV ENVI Plan for mitigation flora& fauna- Unit V CASE IA for infrastre Projects-Waste EXTBOOKS: 1. Canter,R.L 2. Richard K. 2002 REFERENCE(S) 1 John G. R	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro ESTUDIES ructure projects–Dams–Highways–Multi- water treatment plants, STP	ipid I itions ject / -store	EIA. s for Affec ey E aw-H ent"	mitig ted F Buildi ill Ind Kluw	ation of ir People. Ings–Wat	npact on v er Supply elhi, 1996. emic Public	vater, air, lar and Dra	9 nd an 9 ainag
Unit III PREI Assessment of models-Public p Unit IV ENVI Plan for mitigation flora& fauna- Unit V CASE EIA for infrastre Projects-Waste EXTBOOKS: 1. Canter,R.L 2002 REFERENCE(S 1. John G. R BookCom	Impact on land, water, air, social & cul articipation–SIA Judgment authorities-Ra RONMENTAL MANAGEMENT PLAN on of adverse impact on environment–Op Addressing the issues related to the Pro ESTUDIES fucture projects–Dams–Highways–Multi- water treatment plants, STP ,"Environmental Impact Assessment", M Morgan., "Environmental Impact Asses S): auand David C Hooten (Ed).,"Environme	etions ject / -store lcGra ssme	EIA. s for Affec ey E aw-H ent"	mitig ted F Build ill Ind Kluw	ation of ir People. Ings–Wat c.,New De er Acade	npact on v er Supply elhi, 1996. emic Public	vater, air, lar and Dra cations, Lor McGraw-Hill	9 nd an 9 ainag

Page of Chall Freque 1

Km

Department	CIVIL ENGINEERI	NG				R 2019	Semester VIII	PE
Course Code	Course Name		Hour Wee	k	Credit	Total	Maxin Mai	
1005100		L	T	P	C	Hours		KS
19CEX32	FINITE ELEMENT ANALYSIS	3	0	0	3	45	100	ul.
of	apprise the students about the basics of this theory and its practical applications.			LeL			er implement	atior
• Str	mes: At the end of the course the student udents will be in a position to develop co chniques						roblems usin	g FE
Unit I FOR	ODUCTION TO FINITE ELEMENT		NAL			FINITE	ELEMENT	9
	asic Concepts of Finite Element Analysis al Work and Variational Principle - Galer							
	ness Matrix and Boundary Conditions.	KIITT	vietri	ou- r				emer
Unit II ELEI	MENT PROPERTIES						different in	9
	ates - Triangular Elements - Rectangula - Isoparametric Formulation - Stiffnes							
	, Two and Three Dimensional	S IV	latrix	0	isoparar	netric Ele	ments Num	ierica
	LYSIS OF FRAME STRUCTURES	-		8				9
	ss Members - Analysis of Truss - Stiffnes m - Plane Frame Analysis - Analysis of G					Finite Ele	ement Analys	sis o
	FOR TWO AND THREE DIMENSIONAL	all store and		•		12-31-51-55	- 4 N	9
Constant Strain	Triangle Lines Of the Triangle Desta							
Stiffness -Com Element -Finite	Triangle - Linear Strain Triangle - Rectar outation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry	earit	ty ar	nd S	tatic Cor	ndensation	- Axisymm	netric
Stiffness -Com Element -Finite Dimensional Ele	outation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ements	earit	ty ar	nd S	tatic Cor	ndensation	- Axisymm	or 3
Stiffness -Com Element -Finite Dimensional Ele Unit V APP Plate Bending	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ments LICATIONS OF FEM Problems - Finite Elements for Elastic	earit tric	ty ar Elem	nd S nent	tatic Cor -Finite E	ndensation Element F	ı - Axisymm ormulation f	ietric for 3
Stiffness -Com Element -Finite Dimensional Ele Unit V APP	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ments LICATIONS OF FEM Problems - Finite Elements for Elastic	earit tric	ty ar Elem	nd S nent	tatic Cor -Finite E	ndensation Element F	ı - Axisymm ormulation f	ietric for 3
Stiffness -Com Element -Finite Dimensional Ele Unit V APPI Plate Bending Dynamic Analys EXTBOOKS:	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ments LICATIONS OF FEM Problems - Finite Elements for Elastic	earit tric Stab	ty ar Elem bility	nd S nent - Fir	tatic Cor -Finite E	idensation lement F	i - Axisymm ormulation f luid Mechan	ietric for 3
Stiffness -Com Element -Finite Dimensional Ele Unit V APPI Plate Bending Dynamic Analys EXTBOOKS: 1. Chandrups Edition, Pr 2. Krishnamo Education	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduc entice Hall, India, 2003. porthy C. S. ,"Finite Element Analysis The 1994	earit tric Stab	ty ar Elem bility to Fin	nd S nent - Fir nite E	tatic Cor -Finite E nite Elem Element in ramming"	ndensation lement F ents in Fl n Enginee , Tata McC	i - Axisymm ormulation f luid Mechan ring", Third	ietric for 3
Stiffness -Com Element -Finite Dimensional Ele Unit V APPI Plate Bending Dynamic Analys EXTBOOKS: 1. Chandrups Edition, Pr 2. Krishnamo Education	Contation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduc entice Hall, India, 2003. Forthy C. S., "Finite Element Analysis The	earit tric Stab	ty ar Elem bility to Fin	nd S nent - Fir nite E	tatic Cor -Finite E nite Elem Element in ramming"	ndensation lement F ents in Fl n Enginee , Tata McC	i - Axisymm ormulation f luid Mechan ring", Third	ietric for 3
Stiffness -Com Element -Finite Dimensional Ele Unit V APPI Plate Bending Dynamic Analys EXTBOOKS: 1. Chandrups Edition, Pr 2. Krishnamo Education 3. David V. H	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduc entice Hall, India, 2003. porthy C. S. ,"Finite Element Analysis The 1994	earit tric Stab tion ory a nalys	to Finand F	nd S nent - Fir nite E Progr Tata	tatic Cor -Finite E nite Elem Element in ramming'' McGraw	ndensation lement F nents in Fl n Engineer , Tata McC Hill, 2004	i - Axisymm ormulation f luid Mechan ring", Third	ietric for 3
Stiffness -Com Element -Finite Dimensional Ele Element Unit V APPI Plate Bending Dynamic Analys Analys EXTBOOKS: 1. Chandrups Edition, Pr 2. Krishnamo 3. David V. H 4. Daryl L.Lo	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduc entice Hall, India, 2003. borthy C. S. ,"Finite Element Analysis The 1994 lutton, "Fundamentals of Finite Element A gan, "A First Course in Finite Element Me	earit tric Stab tion ory a nalys	to Finand F	nd S nent - Fir nite E Progr Tata	tatic Cor -Finite E nite Elem Element in ramming'' McGraw	ndensation lement F nents in Fl n Engineer , Tata McC Hill, 2004	i - Axisymm ormulation f luid Mechan ring", Third	ietric for 3
Stiffness -Com Element -Finite Dimensional Ele Unit V Unit V APPI Plate Bending Dynamic Analys EXTBOOKS: 1. Chandrup Edition, Pr 2. Krishnamo 3. David V. F 4. Daryl L.Lo REFERENCE(3) 1. Reddy J.N	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduc entice Hall, India, 2003. borthy C. S. ,"Finite Element Analysis The 1994 lutton, "Fundamentals of Finite Element A gan, "A First Course in Finite Element Met S): ., "An Introduction to Finite Element Meth	earif tric Stak tion ory a nalys thoc od",	to Finand	nd S nent - Fir nite E Progr Tata enga	tatic Cor -Finite E nite Elem Element in ramming'' McGraw ge Learni -Hill, Intl.	ndensation lement F nents in F n Enginee , Tata McC Hill, 2004 ing, 2012 Student Ec	i - Axisymm ormulation f luid Mechan ring", Third Graw Hill dition, 1985.	9 ics -
Stiffness -Com Element -Finite Dimensional Ele Element Unit V APPI Plate Bending Dynamic Analys Analys EXTBOOKS: I. 1. Chandrups Edition, Pr Education 3. David V. H 4. Daryl L.Lo REFERENCE(3) Zienkiewic 1. Reddy J.N 2. Zienkiewic	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetric ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduction entice Hall, India, 2003. Dorthy C. S. ,"Finite Element Analysis The 1994 lutton, "Fundamentals of Finite Element Met gan, "A First Course in Finite Element Met S): ., "An Introduction to Finite Element Meth s, "The finite element method, Basic form iill, Book Co., 1987.	earit tric Stak tion ory a nalys thoc od", ulati	to Finand	- Fir nite E Progr Tata enga Graw- nd lir	tatic Cor -Finite E nite Elem Element i ramming" McGraw ge Learni Hill, Intl. near prob	ndensation lement F nents in F n Enginee , Tata McC Hill, 2004 ing, 2012 Student Ed lems", Vol	i - Axisymm ormulation f luid Mechan ring", Third Graw Hill dition, 1985.	9 ics -
Stiffness -Com Element -Finite Dimensional Ele Unit V APPI Plate Bending Dynamic Analys EXTBOOKS: 1. Chandrup Edition, Pr 2. Krishnamo Education 3. David V. F 4. Daryl L.Lo REFERENCE(1. Reddy J.N 2. Zienkiewic McGraw-F 3. Rao S.S, "	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetry ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduction entice Hall, India, 2003. borthy C. S. ,"Finite Element Analysis The 1994 lutton,"Fundamentals of Finite Element A gan, "A First Course in Finite Element Met S): ., "An Introduction to Finite Element Meth s, "The finite element method, Basic form ill, Book Co., 1987. The Finite Element Method in Engineerin	earif tric Stak tion ory a nalys thoc od", ulati g", P	to Finand	nd S nent - Fir nite E Progr Tata enga Graw- nd lir man	tatic Cor -Finite E nite Elem Element in ramming'' McGraw ge Learni Hill, Intl. near prob Press, 2	ndensation lement F ents in F n Enginee , Tata McC Hill, 2004 ing, 2012 Student Ed lems", Vol	i - Axisymm ormulation f luid Mechan ring", Third Graw Hill dition, 1985. .1, 4≞Edition	9 ics -
Stiffness -Com Element -Finite Dimensional Ele Unit V APPI Plate Bending Dynamic Analys EXTBOOKS: 1. Chandrup Edition, Pr 2. Krishnamo Education, 3. David V. H 4. Daryl L.Lo REFERENCE(1. Reddy J.N 2. Zienkiewio McGraw-H 3. Rao S.S, " 4. Desai C.S 1972.	Dutation of Stresses, Geometric Nonlin Element Formulation of Axis symmetric ICATIONS OF FEM Problems - Finite Elements for Elastic is atla, T.R., and Belegundu, A.D., "Introduction entice Hall, India, 2003. Dorthy C. S. ,"Finite Element Analysis The 1994 lutton, "Fundamentals of Finite Element Met gan, "A First Course in Finite Element Met S): ., "An Introduction to Finite Element Meth s, "The finite element method, Basic form iill, Book Co., 1987.	earif tric Stak tion ory a ethoc od", uulati g", P Elen	bility to Finand F sis", 1", Ce McCo on a Perga nent	- Fir nite E Progr Tata enga Graw- nd lir Meth	tatic Cor -Finite E nite Elem Element in ramming'' McGraw ge Learni Hill, Intl. near prob Press, 2 nod", Affili	Idensation Iement F Iement in F Ients in F Iemsinee , Tata McC Hill, 2004 Ing, 2012 Student Ed Iems", Vol 003 iated East	i - Axisymm ormulation f luid Mechan ring", Third Graw Hill dition, 1985. .1, 4 Edition West Press,	9 ics -

19CEX33 COASTAL ENGINEERING 3 0 0 3 45 100 Course Objective (s): • The main purpose of coastal engineering is to protect harbors and improve navigation. • The students to the diverse topics as wave mechanics, wave climate, shoreline prote methods and laboratory investigations using model studies Course Outcomes: At the end of the course the student will be able to understand • Understand coastal engineering aspects of harbors methods to improve navigation • Understand the wave properties and analysis of wave. • Understand the concepts of sediment transport. • Design of shore defense structures. • Gain knowledge in modeling in coastal engineering. Unit 1 INTRODUCTION TO COASTAL ENGINEERING Indian Scenario - Classification of Harbours. Introduction - wind and waves - Sea and Swell - Introduction to Tsunami Unit 11 Unit II MAVE PROPERTIES AND ANALYSIS Behaviour of waves in shallow waters, Introduction to non-linear waves and their properties - Wave shallow waters - Wave Refraction, Diffraction and Shoaling -Hindcast wave generation models, vihaaling; wave refraction; wave breaking; wave diffraction random and 3D waves- Short term vinalysis - wave spectra and its utilities - Long term wave analysis- Statistics analysis of grouped vitat. Unit VI COASTAL DEFENSE Implementer transport; along shore transport (Littoral transport), sedimovement Unit VI COASTAL DEFENSE Implementering - Numerical modeling - Modeling	Department	CIVIL ENGINEER	NG				R 2019	Semester VIII	PE
19CEX33 COASTAL ENGINEERING 3 0 0 3 45 100 Course Objective (s): • The main purpose of coastal engineering is to protect harbors and improve navigation. • The students to the diverse topics as wave mechanics, wave climate, shoreline prote methods and laboratory investigations using model studies Course Outcomes: At the end of the course the student will be able to understand • Understand the wave properties and analysis of wave. • Understand the concepts of sediment transport. • Design of shore defense structures. • Gain knowledge in modeling in coastal engineering. Unit1 INTRODUCTION TO COASTAL ENGINEERING • Gain knowledge in modeling in coastal engineering. Unit1 INTRODUCTION TO COASTAL ENGINEERING ndian Scenario - Classification of Harbours. Introduction - wind and waves - Sea and Swell - Introduction to Tsunami Unit1 WAVE PROPERTIES AND ANALYSIS 3ehaviour of waves in shallow waters, Introduction to non-linear waves and their properties - Wave shallow waters - Wave Refraction, Diffraction and Shoaling -Hindcast wave generation models, vihaaling; wave refraction; wave breaking; wave diffraction random and 3D waves- Short term vinalysis - wave spectra and its utilities - Long term wave analysis- Statistics analysis of grouped vitata. Unit 11 COASTAL SEDIMENT TRANSPORT Dynamic beach profile; cross-shore transport; along shore transport (Littoral transport), sedir novement	Course Code	Course Name				Credit	and the second se	Maxim	num
Course Objective (s): • The main purpose of coastal engineering is to protect harbors and improve navigation. • The students to the diverse topics as wave mechanics, wave climate, shoreline prote methods and laboratory investigations using model studies Course Outcomes: At the end of the course the student will be able to understand • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and analysis of wave: • Understand the wave properties and studies Course Objective (s): • Unit II INTRODUCTION TO COASTAL ENGINEERING Initial INAVE PROPERTIES AND ANALYSIS Behaviour of waves in shallow waters, Introduction to non-linear waves and their properties - Wave shallow waters - Wave Refraction, Diffraction and Shoaling -Hindcast wave generation models, vishalling; wave effraction, Diffraction and Shoaling -H			L	Т	Ρ	С	Hours	Marks	
The main purpose of coastal engineering is to protect harbors and improve navigation. The students to the diverse topics as wave mechanics, wave climate, shoreline prote methods and laboratory investigations using model studies Course Outcomes: At the end of the course the student will be able to understand Understand coastal engineering aspects of harbors methods to improve navigation Understand the wave properties and analysis of wave. Understand the concepts of sediment transport. Design of shore defense structures. Gain knowledge in modeling in coastal engineering. Unit I INTRODUCTION TO COASTAL ENGINEERING INTRODUCTION TO COASTAL ENGINEERING INTRODUCTION TO COASTAL SUBJECTION - wind and waves - Sea and Swell - Introducto osmall amplitude wave theory - use of wave tables- Mechanics of water waves - Linear (Airy) wheory, Introduction to Tsunami Unit II MAVE PROPERTIES AND ANALYSIS Dehaviour of waves in shallow waters, Introduction to non-linear waves and their properties - Wave hallow waters - Wave Refraction, Diffraction and Shoaling -Hindcast wave generation models, whoaling; wave spectra and its utilities - Long term wave analysis- Statistics analysis of grouped v intal. Unit III COASTAL SEDIMENT TRANSPORT Dynamic beach profile; cross-shore transport; along shore transport (Littoral transport), sedir novement Unit IV MODELING IN COASTAL ENGINEERING Inversent Unit V MODELING IN COASTAL ENGINEERING Inversent Unit V MODELING IN COASTAL ENGINEERING Inversent Unit V MODELING IN COASTAL ENGINEERING Inversent Deagle in Coastal Engineering - Limitations and advantages - Role of physical modeling aspects - limitations - Tsunami mitigation measure reference(S): I Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. I Ppen, A.T., Estuary and Coastilne Hydrodynamics, McGraw-Hill, Inc., New York, 1978. I Ppen, A.T., Estuary and Coastal Engineeri			3	0	0	3	45	100	5.01
 b small amplitude wave theory - use of wave tables- Mechanics of water waves - Linear (Airy) value or the properties of summi Unit II WAVE PROPERTIES AND ANALYSIS Wehaviour of waves in shallow waters, Introduction to non-linear waves and their properties - Wave hallow waters - Wave Refraction, Diffraction and Shoaling -Hindcast wave generation models, waters - Wave spectra and its utilities - Long term wave analysis- Statistics analysis of grouped vata. Unit II COASTAL SEDIMENT TRANSPORT Vynamic beach profile; cross-shore transport; along shore transport (Littoral transport), sedimovement Unit IV COASTAL DEFENSE ield measurement; models, groins, sea walls, offshore breakwaters, artificial nourishment - plannin boast protection works - Design of shore defense structures Unit V MODELING IN COASTAL ENGINEERING hysical modeling in Coastal Engineering - Limitations and advantages - Role of physical modeling bastal engineering - Numerical modeling - Modeling aspects - limitations - Tsunami mitigation measure REFERENCE(S): Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 	 The The The me Course Outcon Und Und Und Und Oes Gai Unit I INTR 	e main purpose of coastal engineering is e students to the diverse topics as wa thods and laboratory investigations using nes: At the end of the course the stud derstand coastal engineering aspects of derstand the wave properties and analys derstand the concepts of sediment trans- sign of shore defense structures. In knowledge in modeling in coastal engine ODUCTION TO COASTAL ENGINEER	ve m g mod lent v harbo is of port. neeri	echa del s will b ors n wave ng.	anics tudie be at netho e.	, wave c s ole to uno ods to imp	limate, sho derstand prove navig	preline prote	9
 behaviour of waves in shallow waters, Introduction to non-linear waves and their properties - Wave hallow waters - Wave Refraction, Diffraction and Shoaling -Hindcast wave generation models, w hoaling; wave refraction; wave breaking; wave diffraction random and 3D waves- Short term w nalysis - wave spectra and its utilities - Long term wave analysis- Statistics analysis of grouped v ata. Unit III COASTAL SEDIMENT TRANSPORT Wynamic beach profile; cross-shore transport; along shore transport (Littoral transport), sedimovement Unit IV COASTAL DEFENSE ield measurement; models, groins, sea walls, offshore breakwaters, artificial nourishment - plannin boast protection works - Design of shore defense structures Unit V MODELING IN COASTAL ENGINEERING hysical modeling in Coastal Engineering - Limitations and advantages - Role of physical modelin boastal engineering - Numerical modeling - Modeling aspects - limitations - Tsunami mitigation measure REFERENCE(S): 1. Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. 2. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. 3. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. 4. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 	small amplitu	de wave theory - use of wave tables-							
 Behaviour of waves in shallow waters, Introduction to non-linear waves and their properties - Wave hallow waters - Wave Refraction, Diffraction and Shoaling -Hindcast wave generation models, whoaling; wave refraction; wave breaking; wave diffraction random and 3D waves- Short term with hallow waters - wave spectra and its utilities - Long term wave analysis- Statistics analysis of grouped vata. Unit III COASTAL SEDIMENT TRANSPORT Dynamic beach profile; cross-shore transport; along shore transport (Littoral transport), sedimovement Unit IV COASTAL DEFENSE Tield measurement; models, groins, sea walls, offshore breakwaters, artificial nourishment - plannin oast protection works - Design of shore defense structures Unit V MODELING IN COASTAL ENGINEERING Thysical modeling in Coastal Engineering - Limitations and advantages - Role of physical modelin oastal engineering - Numerical modeling - Modeling aspects - limitations - Tsunami mitigation measure REFERENCE(S): Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 	Unit II WAV	E PROPERTIES AND ANALYSIS					and the second	A	9
Unit IV COASTAL DEFENSE ield measurement; models, groins, sea walls, offshore breakwaters, artificial nourishment - plannin oast protection works - Design of shore defense structures Unit V MODELING IN COASTAL ENGINEERING Physical modeling in Coastal Engineering - Limitations and advantages - Role of physical modelin oastal engineering - Numerical modeling - Modeling aspects - limitations - Tsunami mitigation measure REFERENCE(S): 1. Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. 2. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. 3. Ippen, A.T., Estuary and Coastal Engineering, A Wiley-Interscience Pub. New York, 1978.	Unit III COAS		g sho	ore	trans	port (Lit	toral trans	sport), sedir	9 nent
 Tield measurement; models, groins, sea walls, offshore breakwaters, artificial nourishment - plannin oast protection works - Design of shore defense structures Unit V MODELING IN COASTAL ENGINEERING Physical modeling in Coastal Engineering - Limitations and advantages - Role of physical modelin oastal engineering - Numerical modeling - Modeling aspects - limitations - Tsunami mitigation measure REFERENCE(S): Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 				2	-	-			9
 Physical modeling in Coastal Engineering - Limitations and advantages - Role of physical modeling coastal engineering - Numerical modeling - Modeling aspects - limitations - Tsunami mitigation measure REFERENCE(S): Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 	Field measurem	ent; models, groins, sea walls, offshore works - Design of shore defense structu	e brea res	akwa	aters,	artificial	nourishme	ent - plannir	
 oastal engineering - Numerical modeling - Modeling aspects - limitations - Tsunami mitigation measure REFERENCE(S): Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 	Unit V MODE	ELING IN COASTAL ENGINEERING	1.1		the second				9
 Mani J.S., Coastal Hydrodynamics. PHI Pvt. Ltd. New Delhi - 2012. Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 	oastal engineer	ing - Numerical modeling - Modeling asp	and ects	adv - limi	anta itatio	ges - Ro ns - Tsur	le of phys ami mitiga	ical modelin tion measur	ig in es
 Dean, R.G. and Dalrymple, R.A., Water wave mechanics for Engineers and Scientists, Prentice-Inc., Englewood Cliffs, New Jersey, 1994. Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 			ew De	elhi -	201	2 .	5		-
 Ippen, A.T., Estuary and Coastline Hydrodynamics, McGraw-Hill, Inc., New York, 1978. Sorenson, R.M., Basic Coastal Engineering, A Wiley-Interscience Pub. New York, 1978. 	2 Dean, R.G.	and Dalrymple, R.A., Water wave mec	CATALOR SPACE	Ster 233-10	10.000	10/22	nd Scientis	ts, Prentice-	Hall.
	3. Ippen, A.T.	NOOD CHIIS, New Jersey, 1994.		row	Hill	Inc New	Vork 197	0	,
Constal Engine aning Manual Val IV/I Occurate Engine and Data Data State		, Estuary and Coastline Hydrodynamics,							,
 Coastal Engineering Manual, Vol. I-VI, Coastal Engineering Research Centre, Dept. of the Army, Army Corps of Engineers, Washington DC, 2006. 	Coastal En	, Estuary and Coastline Hydrodynamics, R.M., Basic Coastal Engineering, A Wile	y-Inte	ersci	ence	Pub. Net	w York, 19	78.	

South Contraction - 80

Department		CIVIL ENGINEERIN	G		1.40	an i	R 2019	Semester VIII	PE
Course Code		Course Name		Hours/ Week		Credit	Total	Maximu	
-			L	Т	P	С	Hours	Mai	rks
1.67.65	CEX34	GEOENVIRONMENTAL ENGINEERING	3	0	0	3	45	100	
	To impa safe d	ctive (s): The purpose of learning this cour art knowledge on the Geotechnical enginee isposal of waste and remediate the con ting environment	ring	pro					
Cou		omes: At the end of this course, learners w	ill b	e ab	le to			11125 L 1	B
•	Identify	the soil-pollutant interaction and assess the	e m	odifi	catio	n of soil p	roperties		
•	Categor	ize the process of contaminant transport a	nd c	chara	acter	ize the co	ntaminate	d sites	
•	Classify	different techniques for the remediation of	cor	ntam	inate	d Sites			
•	Design	the cover system by identifying the suitable	co	mpo	nent	s of landfi	1		
•	Analyze	the possible utilization of waste based on	thei	r cha	aract	eristics			
Unit	I SOIL	POLLUTANT INTERACTION			24.10				8
onse	quences	nvironmental Engineering - sources, gen of soil pollution -factors influencing soil-p ngineering properties							
Unit		ITAMINANT TRANSPORT AND SITE CH	ARA	ACTI	ERIS	ATION	-10-145	and the line	9
orpti iolog	on, deso ical proce	ntaminant in subsurface - advection, diffus rption, precipitation, dissolution, oxidations ss in subsurface - characterization of contains	on,	con	plex	ation, io			
Unit	III IVVAS						DSITES		27
n situ emec	i containm diation, so	TE CONTAINMENT AND REMEDIATION ent - vertical and horizontal barrier - soil re il heating, vitrification, bioremediation, physi u flushing, permeable reacting barrier	l OF	diati	on -	MINATE	ur extractio		9 netic
n situ emec ind tr	i containm diation, so eat, In situ	TE CONTAINMENT AND REMEDIATION nent - vertical and horizontal barrier - soil re il heating, vitrification, bioremediation, physi	eme to re	diati	on -	MINATE	ur extractio		9 netic
emed and tr Unit Site s jeoco	i containm diation, so eat, In situ IV LAN election fo mposite li	TE CONTAINMENT AND REMEDIATION nent - vertical and horizontal barrier - soil re- il heating, vitrification, bioremediation, phy a flushing, permeable reacting barrier D FILLS AND SURFACE IMPOUNDMENT or landfills - Components of landfills - line iner system - leachate collection-construct	r sy	diati emec sten	on - diatic	MINATEI soil vapou on - groun oil, geom	ur extractio d water re embrane,	mediation -p geosynthetio	9 netic bump 9 c clay
n situ emec and tr Unit Site s jeoco	i containm diation, so eat, In situ IV LAN election fo mposite li rry waste i	TE CONTAINMENT AND REMEDIATION nent - vertical and horizontal barrier - soil re il heating, vitrification, bioremediation, physic a flushing, permeable reacting barrier D FILLS AND SURFACE IMPOUNDMENT or landfills - Components of landfills - line iner system - leachate collection-construct n ponds and impoundments	r sy	diati emec sten	on - diatic	MINATEI soil vapou on - groun oil, geom	ur extractio d water re embrane,	mediation -p geosynthetio	9 netic bump 9 c clay sposa
n situ emec ind tr Unit Site s leoco f slur Unit Evalua hemi	i containm diation, so eat, In situ IV LAN election for mposite li ry waste i V UTIL ation of w cal and bi	TE CONTAINMENT AND REMEDIATION ment - vertical and horizontal barrier - soil re- il heating, vitrification, bioremediation, phyto a flushing, permeable reacting barrier D FILLS AND SURFACE IMPOUNDMENT or landfills - Components of landfills - line iner system - leachate collection-construct n ponds and impoundments IZATION OF WASTE vaste materials- flyash, municipal sludge, ological characteristics-geotechnical reuse	r sy ion	stics	n - s oper	MINATEI soil vapou on - groun oil, geom ation of la ap tire, b	ur extractio d water re embrane, andfill-land	mediation -p geosynthetio fill cover -di	9 netic pump 9 c clay spose
n situ emed and tr Unit Site s jeoco of slur Unit Valua hemi REFI	i containm diation, so eat, In situ IV LAN election for mposite li ry waste i V UTIL ation of w cal and bi ERENCE	TE CONTAINMENT AND REMEDIATION ment - vertical and horizontal barrier - soil re- il heating, vitrification, bioremediation, phyto a flushing, permeable reacting barrier D FILLS AND SURFACE IMPOUNDMENT or landfills - Components of landfills - line iner system - leachate collection-construct in ponds and impoundments IZATION OF WASTE vaste materials- flyash, municipal sludge, ological characteristics-geotechnical reuse S):	I OF eme to re TS r sy ion	stics	n - s oper , scr e ma	MINATEI soil vapou on - groun oil, geom ation of la ap tire, b iterials	ur extractio d water re embrane, andfill-land last furnad	mediation -p geosynthetio fill cover -dis ce slag - ph	9 netic pump 9 c clay sposa 9
n situ emec ind tr Unit Site s leoco f slur Unit Evalua hemi	i containm diation, so eat, In situ IV LAN election for mposite li ry waste i V UTIL ation of w cal and bi ERENCE(Daniel B. Hari D. S USA, 200	TE CONTAINMENT AND REMEDIATION ment - vertical and horizontal barrier - soil re- il heating, vitrification, bioremediation, phyto a flushing, permeable reacting barrier D FILLS AND SURFACE IMPOUNDMENT or landfills - Components of landfills - line iner system - leachate collection-construct n ponds and impoundments IZATION OF WASTE vaste materials- flyash, municipal sludge, ological characteristics-geotechnical reuse S): E, Geotechnical Practice for waste disposa harma and Krishna R.Reddy, Geo-Environ 04.	I OF eme to re TS r sy ion plas of v	CO diati emec esten and stics wast	n - s oper , scr e ma Engir	MINATEI soil vapou on - groun oil, geom ation of la ap tire, b aterials & Hall, Lo neering	ur extractio d water re embrane, andfill-land last furnad ondon, 201 John Wiley	mediation -p geosynthetic fill cover -dis ce slag - ph	9 netic pump 9 c clay spos spos 9 ysica
n situ emed and tr Unit Site s eoco f slur Unit valua hemi REFI 1.	i containm diation, so eat, In situ IV LAN election for mposite li ry waste i V UTIL ation of w cal and bi ERENCE(Daniel B. Hari D. S USA, 200 Sharma h	TE CONTAINMENT AND REMEDIATION ment - vertical and horizontal barrier - soil re- il heating, vitrification, bioremediation, phyto a flushing, permeable reacting barrier D FILLS AND SURFACE IMPOUNDMENT or landfills - Components of landfills - line iner system - leachate collection-construct in ponds and impoundments IZATION OF WASTE vaste materials- flyash, municipal sludge, ological characteristics-geotechnical reuse S): E, Geotechnical Practice for waste disposa harma and Krishna R.Reddy, Geo-Environ	I OF eme to re TS r sy ion plas of to al, C mer gine	 CO diati emed vstem and stics wast thap thap that I eerin 	n - s oper , scr e ma Engir g: Si	MINATEI soil vapou on - groun oil, geom ation of la ap tire, b terials & Hall, Lo neering - , te remedi	ur extractio d water re embrane, andfill-land last furnad ondon, 201 John Wiley ation, Was	mediation -p geosynthetio fill cover -dis ce slag - ph 2 v and Sons, ste containm	9 netic pump 9 c clay spose 9 ysica INC, ent
n situ emec and tr Unit Site s eoco f slur Unit Valua hemi REF 1. 2.	i containm diation, so eat, In situ IV LAN election for mposite li ry waste i V UTIL ation of w cal and bi ERENCE(Daniel B. Hari D. S USA, 200 Sharma H and Eme 2004.	TE CONTAINMENT AND REMEDIATION nent - vertical and horizontal barrier - soil re- il heating, vitrification, bioremediation, phyto a flushing, permeable reacting barrier D FILLS AND SURFACE IMPOUNDMENT or landfills - Components of landfills - line iner system - leachate collection-construction n ponds and impoundments IZATION OF WASTE vaste materials- flyash, municipal sludge, ological characteristics-geotechnical reuse S): E, Geotechnical Practice for waste disposa harma and Krishna R.Reddy, Geo-Environ 04.	I OF eme to re TS r sy ion plas of v al, C mer gine ohn	CO diati emec sten and stics wast chap htal I eerin Wile	n - s oper , scr e ma Engir g: Si ey &	MINATEI soil vapou on - groun oil, geom ation of la ap tire, b terials & Hall, Lo neering - , te remedi Sons, Inc	ur extractio d water re embrane, andfill-land last furnad ondon, 201 John Wiley ation, Was . Hoboken	mediation -p geosynthetio fill cover -dis ce slag - ph 2 v and Sons, ste containm	9 netic pump 9 c clay sposa 9 ysica INC, ent

Finley

Department	CIVIL ENGINEERIN	G				F	R 2019	Semester VIII	PE
Course Code	Course Name		our Vee T		Credit C		Total Hours	Maxin Ma	num rks
19CEX35	CONCEPTS OF ENGINEERING DESIGN	3	0	0	3		45	100	
	ctive (s): The purpose of learning this cour	1	120			-			
 To attai To crea To development 	n knowledge on design process n knowledge on tools used in design metho te an understanding on the process of mate elop in depth knowledge on engineering sta te awareness on legal and ethical issues in	erial itistic	an	d rel	iability				
Course Outco	omes: At the end of this course, learners w	vill be	e ab	le to	:				
 Get clear 	ar understanding on CAE / concurrent engi	neeri	ing a	and	system e	engi	neering		
 Attain p 	roblem solving skills through modeling /sim	ulati	on a	and o	optimize	des	ign		
 Ability t 	o do material selection based on econon	ny ar	nd v	value	e analys	is. c	develop	understand	ling o
DFM/DF	FA								
Have a	good understanding on DOE, reliability the	ory a	and	relia	bility cer	tere	ed main	tenance	
 Expose 	d to law, codes of ethics, quality concepts a	and F	ME	A				*	
Unit I DES	IGN PROCESS								9
he design pr	ocess - Morphology of Design - Desi	gn E	Drav	ving	s – Cor	npu	ter Aid	ed Enginee	ring
Designing of s	tandards - Concurrent Engineering - Pro	duct	t life	э су	cle – Te	chn	ologica	I Foreca	sting
Aarket Identific	ation- Competition Bench marking - Sy	stem	is E	Indir	eering -	- L i	Fo Cu	ala Engina	win a
					looning		le Cy	cle Enginee	ering
	in Design – Industrial Design.		4		leening		ie Cy		
Unit II DES	in Design – Industrial Design. IGN METHODS		4						9
Unit II DES Creativity and	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif	icatio	ons-	- Co	nceptua	l de	sign –	Decision Th	9 eory
Unit II DES Decision Tree	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design –	icatio Math	ons- nem	- Co	nceptua al Modeli	l de	sign – – Simul	Decision Th lation – Geo	9 eory ometri
Unit II DES Creativity and I Decision Tree Decision Tree I Modeling -	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – nite Element Modeling – Optimization –	icatio Math	ons- nem	- Co	nceptua al Modeli	l de	sign – – Simul	Decision Th lation – Geo	9 eory ometri
Unit II DES Creativity and Decision Tree Modeling – Fin Structural and S	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – nite Element Modeling – Optimization – Shape Optimization.	icatic Math Sea	ons- nem arch	- Co atica n Me	nceptua al Modeli	l de	sign – – Simul	Decision Th lation – Geo	9 eory ometri ning
Unit IIDESCreativity and IDecision TreeModeling - FinStructural and SUnit IIIMAT	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND	icatic Math Sea	ons- nem arch	- Co atica n Me	nceptua al Modeli ethods -	l de ing - G	sign – – Simul eometri	Decision Th lation – Geo c Programr	9 eory ometri ning 9
Unit IIDESCreativity and IDecision TreeAodeling - FinStructural and SUnit IIIMATAaterial Select	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P	icatic Math Sea DES erfor	ons- nem arch IGN	- Co atica n Me I nce	nceptua al Modeli ethods - – Weigł	I de ing - - G	sign – – Simul eometri	Decision Th lation – Geo c Programr rty Index –	9 eory ometri ning 9 Valu
Unit IIDESCreativity and IDecision TreeModeling - FinStructural and SUnit IIIMATMaterial SelectAnalysis - Role	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification o	icatic Math Sea DES erfor f Mar	ons- nem arch IGN mar nufa	- Co atica n Me I nce actur	nceptua al Modeli ethods - – Weigl ing Proc	I de ing - G	sign – – Simul eometri propei – Desig	Decision Th lation – Geo c Programr rty Index – gn for Manut	9 eory ometri ning 9 Valu factur
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for As	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P	icatic Math Sea DES erfor f Mar	ons- nem arch IGN mar nufa	- Co atica n Me I nce actur	nceptua al Modeli ethods - – Weigl ing Proc	I de ing - G	sign – – Simul eometri propei – Desig	Decision Th lation – Geo c Programr rty Index – gn for Manut	9 eory ometri ning 9 Valu factur
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – Fatig	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification o sembly –Designing for castings, Forging, M	icatic Math Sea DES erfor f Man Metal	ons- nem arch IGN mar nufa	- Co atica n Me I nce actur	nceptua al Modeli ethods - – Weigl ing Proc	I de ing - G	sign – – Simul eometri propei – Desig	Decision Th lation – Geo c Programr rty Index – gn for Manut	9 eory ometri ning 9 Valu factur
Unit IIDESCreativity and IDecision TreeAodeling – FinStructural and SUnit IIIMATAaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVENG	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification o sembly –Designing for castings, Forging, M gue, Fracture and Failure.	icatic Math Sea DES erfor f Mar Aetal	ins- iem arch IGN mar nufa	- Co atica n Me I nce actur rmin	nceptua al Modeli ethods - – Weigł ing Proc g, Machi	I de ing - G	sign – – Simul eometri – proper – Desig g and W	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re	9 eory ometri ning 9 Valu factur esidua
Unit IIDESCreativity and IDecision TreeAodeling - FinAodeling - FinStructural and SUnit IIIMATAaterial SelectAnalysis - RoleDesign for AsStresses - FatigUnit IVENGProbability - Di	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – nite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI	icatic Math Sea DES erfor f Mar Aetal	ins- iem arch IGN mar nufa	- Co atica n Me I nce actur rmin	nceptua al Modeli ethods - – Weigł ing Proc g, Machi	I de ing - G	sign – – Simul eometri – proper – Desig g and W	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re	9 eory ometri ning 9 Valu factur esidua
Unit IIDESCreativity and IDecision TreeModeling – FinModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVEndProbability – DiReliability – Rel	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design	icatic Math Sea erfor f Man Aetal TY of E	international In	- Co atica n Me nce actur rmin	nceptua al Modeli ethods - - Weigł ing Proc g, Machi ents - R	I de ing - - G nted esss ining	sign – – Simul eometri – Desig g and W bility Th	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re	9 eory ometri ning 9 Valu actur esidua
Unit IIDESCreativity and IDecision TreeModeling – FinModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVEnclability – DiReliability – RelUnit VLEGntroduction – T	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AI the origin of laws – Contracts – Liability –	icatic Math Sea erfor f Man Aetal TY of E	IGN IGN march IGN mar nufa I Fol	- Co atica n Me I nce actur rmin erime ALIT - P	nceptua al Modeli ethods - - Weigł ing Proc g, Machi ents – R Y ENGIN roduct lia	I de ing - - G nted ess ining eelia	sign – – Simul eometri – Desig g and W bility Th bility Th RING ty – Pro	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des	9 eory metri ining 9 Value factur esidua 9 ign fo 9 lectua
Unit IIDESCreativity and Decision TreeModeling – FinModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVEndProbability – DiReliability – RelUnit VLegIntroduction – Toroperty – Leg	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AI the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s –	IGN march march mar nufa I For Expe QUA	- Co atica n Me I nce actur rmin erime - P	nceptua al Modeli ethods - — Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical	I de ing - - G nted ess ining eelia IEE abili	sign – – Simul eometri – Desig g and W bility Th bility Th RING flicts– c	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des	9 eory ometri ning 9 Value acture esidua 9 ign fo 9 lectua 5 Tota
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVENGProbability – DiReliability – RelUnit VLEGIntroduction – Tproperty – LegQuality Concep	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AN the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s –	IGN march march mar nufa I For Expe QUA	- Co atica n Me I nce actur rmin erime - P	nceptua al Modeli ethods - — Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical	I de ing - - G nted ess ining eelia IEE abili	sign – – Simul eometri – Desig g and W bility Th bility Th RING flicts– c	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des	9 eory ometri ning 9 Value acture esidua 9 ign fo 9 lectua 5 Tota
Unit IIDESCreativity and IDecision TreeModeling – FinModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVEnclability – DiReliability – RelUnit VLEGntroduction – Tproperty – LegQuality ConcepFailure Model E	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AN the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s –	IGN march march mar nufa I For Expe QUA	- Co atica n Me I nce actur rmin erime - P	nceptua al Modeli ethods - — Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical	I de ing - - G nted ess ining eelia IEE abili	sign – – Simul eometri – Desig g and W bility Th bility Th RING flicts– c	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des	9 eory ometri ning 9 Valu factur esidua 9 ign fc 9 lectua 5 Tota
Unit IIDESCreativity and IDecision TreeModeling – FinModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVEnclability – DiReliability – RelUnit VLEGIntroduction – Toroperty – LegQuality ConcepGailure Model E	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AN the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s –	IGN march march mar nufa I For Expe QUA	- Co atica n Me I nce actur rmin erime - P	nceptua al Modeli ethods - — Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical	I de ing - - G nted ess ining eelia IEE abili	sign – – Simul eometri – Desig g and W bility Th bility Th RING flicts– c	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des	9 eory ometri ning 9 Valu factur esidua 9 ign fo 9 lectua 5 Tota
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVEnclability – DiReliability – RelUnit VLegIntroduction – Tproperty – LegQuality Concepailure Model EEXTBOOKS:1Dieter, Ge	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AN the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces	icatic Math Sea erfor f Mar Aetal TY of E ND C Tort s – s Co	IGN IGN march march mar nufa I For Expe QUA Iaw Solv	- Co atica n Me Ince actur rmin erime kLIT ¹ - Pi ving bl -	nceptua al Modeli ethods - - Weigl ing Proc g, Machi ents – R Y ENGIN roduct lia ethical Taguchi	I de ing - G nted esss ining elia abili con Me	sign – – Simul eometri – Desig g and W bility Th bility Th RING flicts– c thods –	Decision Th lation – Geo c Programm rty Index – gn for Manuf /elding – Re neory – Des neory – Des	9 eory ometri ning 9 Valu factur esidua ign fo 9 lectua sign
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVENGProbability – DiReliability – RelUnit VLEGIntroduction – TProperty – LegQuality Concepailure Model EEXTBOOKS:1.Dieter, GoInternation2.Karl T. UIedition 20	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification o sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AI the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces ffect Analysis. eorge E., Engineering Design - "A Matenal Editions, Singapore,3rd Edition, 2000. rich and Steven D. Eppinger "Product De 09.	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s Co	IGN march march mar nufa I Fol Expe QUA law Solv Solv Solv	- Co atica n Me I nce actur rmin erime NLIT - Po ving bl –	- Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical Taguchi	I de ing - - G - Inted eess ining eelia VEE abili con Me	sign – – Simul eometri – Desig g and W bility Th bility Th RING ty – Pro flicts– o thods –	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des neory – Des neory – Des	9 eory ometri ning 9 Valu actur esidua 9 ign fo 9 lectua sign
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVENGProbability – DiReliability – RelUnit VLEGAntroduction – Troperty – LegQuality Concepailure Model EEXTBOOKS:1.Dieter, GoInternation2.Karl T. UIedition 20	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification o sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AI the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces ffect Analysis. eorge E., Engineering Design - "A Matenal Editions, Singapore,3rd Edition, 2000. rich and Steven D. Eppinger "Product De 09.	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s Co	IGN march march mar nufa I Fol Expe QUA law Solv Solv Solv	- Co atica n Me I nce actur rmin erime NLIT - Po ving bl –	- Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical Taguchi	I de ing - - G - Inted eess ining eelia VEE abili con Me	sign – – Simul eometri – Desig g and W bility Th bility Th RING ty – Pro flicts– o thods –	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des neory – Des neory – Des	9 eory ometri ning 9 Valu actur esidua 9 ign fo 9 lectua sign
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVENGProbability – DiReliability – RelUnit VLEGIntroduction – Tproperty – LegQuality Concepailure Model EEXTBOOKS:1.Dieter, GeInternation2.Karl T. UIedition 20REFERENCE(1.Pahl, G, a	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification of sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AN The origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces ffect Analysis. eorge E., Engineering Design - "A Mate hal Editions, Singapore,3rd Edition, 2000. rich and Steven D. Eppinger "Product De D9. S): and Beitz, W.," Engineering Design", Spring	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s – s Co erials sign	IGN march march IGN mar nufa I Fo Iaw Solv ontro	- Co atica n Me Ince actur rmin erime ving bl - nd P i De	nceptua al Modeli ethods - - Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical Taguchi Processir velopme	I de ing - G hted esss ining celia ielia ielia ielia delia mg / Me mg /	sign – – Simul eometri – Desig g and W bility Th bility Th RING ty – Pro flicts– o thods –	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des neory – Des neory – Des neory – Des neory – Des	9 eory metri ning 9 Valu actur esidua ign fo 9 lectua sign -
Unit IIDESCreativity and IDecision TreeModeling – FinStructural and SUnit IIIMATMaterial SelectAnalysis – RoleDesign for AsStresses – FatigUnit IVENGProbability – DiReliability – RelUnit VLEGIntroduction – Tproperty – LegQuality Concepailure Model EEXTBOOKS:1.Dieter, GoInternation2.Karl T. UIedition 20REFERENCE(1.Pahl, G, a2Ray, M.S	in Design – Industrial Design. IGN METHODS Problem Solving – Product Design Specif – Embodiment Design – Detail Design – hite Element Modeling – Optimization – Shape Optimization. ERIAL SELECTION PROCESSING AND ion Process – Economics – Cost Vs P of Processing in Design – Classification o sembly –Designing for castings, Forging, M gue, Fracture and Failure. INEERING STATISTICS AND RELIABILI stributions – Test of Hypothesis – Design iability centered Maintenance AL AND ETHICAL ISSUES IN DESIGN AI the origin of laws – Contracts – Liability – al and ethical domains – Codes of ethic t – Quality Assurance – Statistics Proces ffect Analysis. eorge E., Engineering Design - "A Mate hal Editions, Singapore,3rd Edition, 2000. rich and Steven D. Eppinger "Product De D9. S):	icatic Math Sea erfor f Man Aetal TY of E ND C Tort s – s Co erials sign	IGN march march IGN mar nufa I Fo Iaw Solv ontro	- Co atica n Me Ince actur rmin erime ving bl - nd P i De	nceptua al Modeli ethods - - Weigh ing Proc g, Machi ents – R Y ENGIN roduct lia ethical Taguchi Processir velopme	I de ing - G hted esss ining celia ielia ielia ielia delia mg / Me mg /	sign – – Simul eometri – Desig g and W bility Th bility Th RING ty – Pro flicts– o thods –	Decision Th lation – Geo c Programm rty Index – gn for Manut /elding – Re neory – Des neory – Des neory – Des neory – Des neory – Des	9 eory ometri ning 9 Valu actur esidua ign fo 9 lectua sign -

10 12 .).... Chairman - BoS Dept. of Civil Engg. - ESEC