RV Educational Institutions[®] RV College of Engineering[®]



Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi Approved by AICTE, New Delhi



Scheme and Syllabus of I – IV semester (Autonomous System of 2022 Scheme)

Master of Technology (M. Tech.)

in

STRUCTURAL ENGINEERING (MSE)

DEPARTMENT OF CIVIL ENGINEERING

Academic Year 2022-23

RV COLLEGE OF ENGINEERING®

(Autonomous Institution Affiliated to VTU, Belagavi)

R.V. Vidyaniketan Post, Mysore Road, Bengaluru – 560 059



Scheme and Syllabus of I – IV semester (Autonomous System of 2022 Scheme)

Master of Technology (M. Tech.)

in

STRUCTURAL ENGINEERING (MSE)

DEPARTMENT OF CIVIL ENGINEERING



VISION

Leadership in Quality Technical Education, Interdisciplinary Research & Innovation, with a Focus on Sustainable and Inclusive Technology.

MISSION

- To deliver outcome-based Quality education, emphasizing on experiential learning with the state-of-the-art infrastructure.
- To create a conducive environment for interdisciplinary research and innovation.
- To develop professionals through holistic education focusing on individual growth, discipline, integrity, ethics and social sensitivity.
- To nurture industry-institution collaboration leading to competency enhancement and entrepreneurship.
- To focus on technologies that are sustainable and inclusive, benefiting all sections of the society.

QUALITY POLICY

Achieving Excellence in Technical Education, Research and Consulting through an Outcome Based Curriculum focusing on Continuous Improvement and Innovation by Benchmarking against the global Best Practices.

CORE VALUES

Professionalism, Commitment, Integrity, Team Work, Innovation



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Glossary of Abbreviations

1.	AS	Aerospace Engineering
2.	BS	Basic Sciences
3.	BT	Biotechnology
4.	СН	Chemical Engineering
5.	CHY	Chemistry
6.	CIE	Continuous Internal Evaluation
7.	CS	Computer Science & Engineering
8.	CV	Civil Engineering
9.	EC	Electronics & Communication Engineering
10.	EE	Electrical & Electronics Engineering
11.	EI	Electronics & Instrumentation Engineering
12.	ET	Electronics & Telecommunication Engineering
13.	GE	Global Elective
14.	HSS	Humanities and Social Sciences
15.	IM	Industrial Engineering & Management
16.	IS	Information Science & Engineering
17.	L	Laboratory
18.	MA	Mathematics
19.	MBT	M. Tech in Biotechnology
20.	MCE	M. Tech. in Computer Science & Engineering
21.	MCN	M. Tech. in Computer Network Engineering
22.	MCS	M. Tech. in Communication Systems
23.	MDC	M. Tech. in Digital Communication
24.	ME	Mechanical Engineering
25.	MHT	M. Tech. in Highway Technology
26.	MIT	M. Tech. in Information Technology
27.	MMD	M. Tech. in Machine Design
28.	MPD	M. Tech in Product Design & Manufacturing
29.	MPE	M. Tech. in Power Electronics
30.	MSE	M. Tech. in Software Engineering
31.	MST	M. Tech. in Structural Engineering
32.	MVE	M. Tech. in VLSI Design & Embedded Systems
33.	N	Internship
34.	Р	Projects (Minor / Major)
35.	PHY	Physics
36.	SDA	Skill Development Activity
37.	SEE	Semester End Examination
38.	Т	Theory
39.	TL	Theory Integrated with Laboratory
40.	VTU	Visvesvaraya Technological University



POSTGRADUATE PROGRAMS

Sl. No	Core Department	Program	Code
1.	BT	M. Tech in Biotechnology	MBT
2.	CS	M. Tech in Computer Science & Engineering	MCE
3.	CS	M. Tech in Computer Network Engineering	MCN
4.	CV	M. Tech in Structural Engineering	MST
5.	CV	M. Tech in Highway Technology	MHT
6.	EC	M. Tech in VLSI Design & Embedded Systems	MVE
7.	EC	M. Tech in Communication Systems	MCS
8.	EE	M. Tech in Power Electronics	MPE
9.	ET	M. Tech in Digital Communication	MDC
10.	IS	M. Tech in Software Engineering	MSE
11.	IS	M. Tech in Information Technology	MIT
12.	ME	M. Tech in Product Design & Manufacturing	MPD
13.	ME	M. Tech in Machine Design	MMD



DEPARTMENT OF CIVIL ENGINEERING

VISION

Excel in Education, Research and Consultancy in Civil Engineering with emphasis on Sustainable development

MISSION

- 1. Disseminating and integrating the knowledge of civil engineering and allied fields.
- 2. Enhancing industry-institute interaction leading to interdisciplinary research
- 3. Imbibing wide-range of skills in cutting-edge technology for sustainable development
- 4. Motivate entrepreneurship and professional ethics to serve the society.

PROGRAMME OUTCOMES (PO)

- M. Tech in **Structural Engineering** graduates will be able to:
- PO1: Independently carry out research / investigation and development work to solve practical problems in Structural Engineering.
- PO2: Write and present a substantial technical report/document in the area of Structural Engineering
- PO3: Demonstrate a degree of mastery in use of materials, analysis and design for structural components.
- PO4: Use modern tools for analysis and design of structural systems.
- PO5: Adopt safety and ethical practices in structural design for a sustainable environment.
- PO6: Exhibit multidisciplinary and managerial skills, with a commitment to lifelong learning.

Go, change the world

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S1. No.	Course Code	Course Title	Page No.
1.	22MAT11AT	Computational Mathematics	
2.	22MST12TL	Computational Structural Mechanics	
3.	22MST13T	Advanced Design of Reinforced Concrete Structures	
4.	22MST14L	Analysis and Design of Structures using STAADPRO	
		Elective A (Professional Elective)	
5.	22MST1A1T	Finite Element Method of Analysis	
6.	22MST1A2T	Forensic Engineering and Rehabilitation of Structures	
7.	22MST1A3T	High Rise Structures	
		Elective B (Professional Elective)	
8.	22MST1B1T	Advanced Structural Analysis	
9.	22MST1B2T	Mechanics of Deformable Bodies	
10.	22MST1B3T	Design of Masonary Structures	
11.	22IM21T	Research Methodology	
12.	22MST22TL	Structural Dynamics	
13.	22MST23T	Advanced Design of Steel Structures	
		Elective C (Professional Elective)	
14.	22MST2C1T	Design of Concrete Bridges	
15.	22MST2C2T	Design for Safety	
16.	22MST2C3T	Precast Concrete structures	
		Elective D (Global Elective)	
17.	22MST2C4T	Sustainable Construction Practices	
18.	22BT2D01T	Bioinspired Engineering	
19.	22BT2D02T	Health Informatics	
20.	22CS2D03T	Business Analytics	
21.	22CV2D04T	Industrial and Occupational Health and Safety	
22.	22CV2D05T	Intelligent Transportation Systems	
23.	22EC2D06T	Electronic System Design	
24.	22EC2D07T	Evolution of Wireless Technologies	
25.	22ET2D08T	Tracking and Navigation Systems	
26.	22IM2D09T	Project Management	
27.	22IS2D10T	Database and Information Systems	
28.	22IS2D11T	Management Information Systems	
29.	22MAT2D12T	Statistical and Optimization Methods	
30.	22ME2D13T	Industry 4.0	
31.	22MST24L	Analysis and Design of Structures using ETabs	
32.	22HSS25T	Professional Skills Development-I	
33.	22MST31T	Advanced Construction Materials	
34.	22MST32N	Internship	
35.	22MST33P	Minor Project	



	to Visvesvaraya Technological University, Belagavi	New Denit	
		Elective E (Professional Elective)	
36.	22MST3E1T	Structural Reliability	
37.	22MST3E2T	Earthquake Resistant Structures	
38.	22MST3E3T	Stability of Structures	
39.	22MST41P	Major Project	
40.	22HSS42	Professional Skills Development-II	

University, B	elaga	vi					
			SEMESTER: I				
Course Code	:	22MAT11AT	COMPLICATIONAL MACHIEMACIOS	C	CIE Marks	:	100
Credits L-T-P	:	3 - 1 - 0	COMPUTATIONAL MATHEMATICS	S	SEE Marks	:	100
Hours	:	42L+28T	Common Course (MPD, MMD, MPE, MBT, MST, MH1	T) S	SEE Durations	1:	3 Hrs
Fac		ty Coordinator:	Dr. A Sujatha	-/ -			0 1110
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	511		UNIT - II				09 Hrs
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Galerkin metho	Ja	. Finite differen	ce methods for parabolic, emplic and hyperbolic par	1118	u differential ec	ļu	ations.
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After soing the		es:	he student will be able to				
After going three	5u	gn this course	ne student will be able to:	. 1	· cc		1
CO1	:	illustrate the it	indamental concepts of distributions, linear algebra	a, a	illerential equa	tt1	ons and
	$\left \right $	optimization an					
COD		Derive the solu	tion by applying the acquired knowledge and skills	0I	a ha hilitar diatai	h -	tiona
02	ŀ	lineer electro	ad differential equations	пр	robability distri	.DI	luons,
	\vdash	Eveluate the ev	hid differential equations.	1			mination
CO3	:	Evaluate the so	ha real world problems arising in many practical ait	1 IIU	tiona	JU	mzation
	\square	Commile the eve	ne lear world problems arising in many practical su	lua	tions.		tion
CO4	:	Complie the ov	tan knowledge of probability distributions, intear a	aige	ebra and optimi	Ze	111011
		methous game	i to engage in me – long learning.				
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Reference Boo		S					
1. Richard A Jo	bh	nson and Dean	W Wichern, "Applied Multivariate Statistical Analys	'S1S"	, Pearson Pren	tic	e Hall,
oth Edition, 20	007	(, , ISBN-13: 97	8-0-13-187715-3, ISBN-10: 0-13-187715-1.		2006 10		
2. Gilbert Stra	ng	, "Linear Algebr	a and its Applications", Cengage Learning, 4th Edit	tion	, 2006, ISBN		
97809802327.							-
3. Edgar G. Go	od	laire "Linear Alg	ebra: Pure & Applied Kindle Edition", World Scient	tific	, 1st Edition, 2	01	3,
ISBN-13: 978-9	98	14508360.					
4. M K Jain, S.	R	. K. Iyengar, R.	K. Jain; Numerical methods for scientific and engir	nee	ring computation	or	i; New Age
International P	սե	olishers; 6th ed	tion; 2012; ISBN-13: 978-81-224-2001-2.				

5. Singiresu S. Rao, Engineering Optimization Theory and Practice, New Age International (P)Ltd., 3rd edition, ISBN: 81-224-1149-5.



QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

	Rubri	ic for C	IE & 8	SEE Theory courses	
	RUBRIC for CIE	1		RUBRIC for SEE	1
SLNo	Content	Marks	Q. No	Contents	Marks
1	Quizzes - Q1 & Q2	20	Each u	nit consists of TWO questions of 20 Marks each. Answ	ver FIVE
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).	
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20
			5&6	Unit-3: Question 5 or 6	20
			7&8	Unit-4: Question 7 or 8	20
			9 & 10	Unit-5: Question 9 or 10	20
				Total Marks	100



	2 2 2 4 4 7 2 	SEMESTER: I		
Course Code	: 22MST12TL	COMPUTATIONAL STRUCTURAL MECHANICS	CIE Marks :	100
Credits L-T-P	: 3-0-1	(Theory & Practice)	SEE Marks :	100
Hours	: 42L + 28P	(Professional Core - 1)	SEE Durations :	3 Hrs
Fac	ulty Coordinator:	DR.Ravindra.R		
	5	UNIT - I		8 Hrs
Static and Kine flexibility, Prop matrix.	ematic indetermin erties of stiffness	acy of rigid jointed frames, trusses and grids. Conce and flexibility matrix. Relationship between stiffness	epts of stiffness and s matrix and flexibil	ity
		UNIT - II		8 Hrs
Development of approach, deve	f structure stiffne lopment of flexibi	ss matrices for two dimensional rigid jointed structu lity matrix for two dimensional determinate rigid joi	ares using basic fun nted structures.	damental
		UNIT - III		9 Hrs
Displacement-t continuous bea stiffness matrix not more than temperature, li	ransformation mathemation mathematics ams, plane trusses () ,Analysis of con 3 degrees of freed near and rotation	atrix using Stiffness Method, Development of global s and rigid plane frames (having not more than six o tinuous beams, plane trusses and rigid plane frame om – 3x3 stiffness matrix).Analysis considering effec al springs.	stiffness matrix for legrees of freedom – is by stiffness metho of sinking of supp	6x6 od (having orts,
		UNIT - IV		9 Hrs
Development of beams, frames continuous bea degrees of freed	f element stiffness and trusses (havi ams, plane trusses lom – 3x3 stiffnes	s matrix, global stiffness matrix by direct stiffness m ng not more than six degrees of freedom – 6x6 stiffn s and rigid plane frames by direct stiffness method (s matrix).(Note- matrix of order 6 x 6 to be supplied	ethod for two dimer less matrix), Analysi having not more tha)	nsional is of an 3
		UNIT - V		8 Hrs
Principles of an development of matrix of order	halysis of three dir structure stiffnes 6 x 6 to be suppl	nensional space truss, grid structures using direct s as matrix. Numerical problems restricted to three de ied)	stiffness method- grees of freedom.(No	ote-
		LABORATORY		28 Hrs
Analysis using 1) Analysis of 2 2) Analysis of 2 3) Analysis of 2 4) Analysis 2D 5) Analysis of g 6) Analysis of t	MATLAB Softward D plane trusses h D rigid plane fran D plane trusses h rigid plane frame rid beams. hree dimensional	e(Note- matrix of order 6 x 6 to be supplied) by displacement transformation stiffness method. nes by displacement transformation stiffness metho by direct stiffness method. s by direct stiffness method. pin jointed structures	d.	
Course Outcon	mes:			
After going thro CO1 CO2	 Demonstrate the beams, and fram Apply knowledge matrices and static structures and st	he student will be able to: he concepts of matrix methods to develop co-ordinate nes and to develop stiffness and flexibility matrix by ge of local and global coordinate system to develop d cructure stiffness matrix. d three dimensional structures using matrix method	e system for trusses elementary approad isplacement transfo	, ch. rmation hods and
CO3	software tools v	vith different degrees of freedom.	onditions	
0.04	1. 1. Junuare respon	ise of structural elements under uncreat support c		
Reference Boo	oks			
1. Computation	al Structural Me	chanics, S.Rajasekaran, G. Sankarasubramanian, 7	th Edition	
2015,Prentice-	Hall of India Pvt L	td, , NewDelhi-110092.ISBN-13: 978-8120317345.I	SBN-10:812031734	3.
2. Computer An ISBN-13: 978-8	nalysis of Framed 3189866198.	Structures, Damodar Maity, 2007, I K Internationa	l Publishing House	Pvt. Ltd.,
3. Getting start	ed with MatLab	Rudra Pratap, 2010, Oxford University Press, ISBN: ·	-13:978-0-19-80691	9-5
4. Matlab An ir	ntroduction with a	pplications, Amos Gilat, 4th edition 2012, Wiley Pub	olications, ISBN-13:	

978-8126537204.



QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The average of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 30 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (10), Video based seminar /presentation /demonstration (20) adding upto 30 marks.

Laboratory: Conduction of laboratory exercises, Lab report & observation & analysis (30 Marks), Lab Test (10 Marks) & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks. The final marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks: Each unit consists of TWO Questions of 16 Marks each. Answer FIVE full questions selecting one from each unit (from 1 to 5). Question No. 11 is compulsory (Laboratory component) for 20 Marks.

	RUBRIC of CIE	1		RUBRIC of SEE	
SLNo	Content	Marks	Q. No	Contents	Marks
1	Quizzes - Q1 & Q2	10	Each u	nit consists of TWO questions of 16 Marks each. Answ	er FIVE
2	Tests - T1 & T2	30	Questic	full questions selecting ONE from each unit (1 to 5). on No. 11 is compulsory (Laboratory component) for 20	Marks.
3	Experiential Learning - EL1 & EL2	30	1&2	Unit-1: Question 1 or 2	16
4	Laboratory	30	3&4	Unit-2: Question 3 or 4	16
	Total Marks	100	5&6	Unit-3: Question 5 or 6	16
			78.8	Unit-4: Question 7 or 8	16
	NO SPE for Laboratory		9 & 10	Unit-5: Question 9 or 10	16
	NO SEE IOI LABORALOTY		11	Laboratory Component (Compulsory)	20
				Total Marks	10

University, B	al Belagavi			
		SEMESTER: I		
Course Code	: 22MST13T	ADVANCED DESIGN OF REINFORCED	CIE Marks	: 100
Credits L-T-P	: 3 - 1 - 0	CONCRETE STRUCTURES	SEE Marks	: 100
Hours	: 42L+28T	(Professional Core - 1)	SEE Durations	: 3 Hrs
Fac	culty Coordinator:	Dr.B.C.Udayashankar		
	5	UNIT - I		8 Hrs
Slabs: Yield lin	ne theory for analy	sis of slabs: Equilibrium and virtual work method	s of analysis, Rectar	ngular
slabs and triar	ngular slabs with	various edge conditions – yield line patterns, Circu	ılar slabs.	U
	-	UNIT - II		8 Hrs
Grid floors and of grid floors. I	l Flat slabs: Gene Design and detaili	ral features, Rigorous and approximate methods o ng of flat slabs including unbalanced column mon	f analysis, Design a nents.	nd detailing
)	0	UNIT - III		9 Hrs
Elevated Water	r tanks: Design ar	nd detailing of overhead water tanks with circular	shell shaped and cy	lindrical
shaft .	C		1 0	
		UNIT - IV		9 Hrs
Silos (circular) and Jansen th	and bunkers: and eory need to be su	alysis, design and detailing of side walls, hopper be applied)	ottoms.(Expression	for Airy's
		UNIT - V		8 Hrs
Deep Beams:G	eneral features, pa	arameters influencing design, strut and tie model,	flexible bending stre	ss.Design
of brackets and	d corbels:Introduc	ction,load transfer, Dimensioning , Analysis and de	esign	0
Course Outco	mes:			
After going thr	ough this course	the student will be able to:		
CO1	: Apply principle	s of RCC to design slabs and walls		
CO2	: Estimate the lo	ads to assess critical bending moments, shear for	ces and torsion	
CO3	: Design RCC wa	alls and slabs subjected to various loading combin	ations	
CO4	: Detailing of rei	nforcement for RCC structures		
Reference Bo	oks			
1. Reinforced (Concrete Structur	es. R Park and T Paulay, 2nd Edition, 2013, John	Wiley & Sons.	
USA,ISBN:978	0471659174.			
2. Design of Re	einforced concrete	Structures, S. Ramamrutham, 2nd Edition, 2015	Dhanpat Rai Publis	shing Co
Pvt Ltd., ISBN	978-9384559984	.2.	1	8
3. Advanced R	einforced Concret	e Design, P. C. Varghese, PHI Learning Pvt. Ltd., 2	nd Edition, 2009, IS	SBN:
812032787X, 9	9788120327870.3	3.		
4. Advanced R	einforced concrete	e structures ,Dr N.Krishna Raju 2018, CBS Publis	hers and	
distributors,IS	BN:81239-1225-0).4.		
Scheme of Co	ntinuous Interna	al Evaluation (CIE): 20 + 40 + 40 = 100		
QUIZZES: Qui	zzes will be condu	acted in online/offline mode. Two quizzes will be co	onducted & Each Qu	iz will be
evaluated for 1	l0 Marks. The sur	n of two quizzes will be the Final Quiz marks.	c	
TESTS: Stude:	nts will be evalua	ted in test, descriptive questions with different con	nplexity levels (Revis	sed Bloom's
Taxonomy Lev	els: Remembering	, Understanding, Applying, Analyzing, Evaluating,	and Creating). Two	tests will
be conducted.	Each test will be	evaluated for 50 Marks, adding upto 100 Marks. F	'inal test marks will	be reduced
to 40 Marks.				

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.



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Rubric for CIE & SEE Theory courses

	RUBRIC for CIE	1	RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	nit consists of TWO questions of 20 Marks each. Answ	er FIVE	
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).		
3	Experiential Learning - EL1 & EL2	40	18:2	Unit-1: Question 1 or 2	20	
	Total Marks	100	38⊾4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			78.8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	

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				SEMES'	TER· I			
Course Code	1.12	2MST14L	ANALYSIS AND	DESICI	N OF STUCTURES USING	CIE Mar	ks	. 50
Credits L-T-I	$-\frac{1}{2}$	- 0 - 1		STAA	AD PRO	SEE Mar	rks	: 50
Hours	· · 1	$\frac{1}{4L + 28P}$	(Cod	lina / Sk	cill Laboratory)	SEE Du	rations	\cdot 3 Hrs
E		<u>v Coordinator</u>	Prof Dhanush S/	Prof Asl	hwin Thammigh /Prof Shrit	i Badami		. 0 1113
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5. Analysis c 7. Analysis c 11. Analysis 12. Analysis	f Space f Grid and I and I	ce Frames 6. A Plates 8. Ana Design of Build Design of Build	analysis of Retaining lysis and Design of lings subjected to lings subjected to	ng Walls of Multi- Earthqu Wind Lo	s s Storey RCC Building 9. An lake Loads (Response Spec oads	alysis and etrum)	1 Design	of Multi
Course Out	comes	;:						
After going the	nroug	h this course t	the student will be	e able to	:			
CC	01 : A P	pply knowledg ro.	ge of Structural Ar	nalysis a	and Design to model and a	nalyze str	uctures	on Staad
CC	02 : A	nalyze a build	ling component su	ubjected	to various loads using Sta	ad Pro.		
CC)3 : E	esign various	building compone	ents as p	per Codal Provisions using	Staad Pro).	
CC)4 : E	vistinguish bet	ween the various	static a	nd dynamics types of analy	vses perfo	rmed on	structur
Deferrer	a . 1							
Reference B	OOKS	1 Due 1/0: fem	Denimeran Witth L	- 1:		Duran O	014 101	
1. T.S.Sarma 978-938438	i, Staa 1684	id Pro V81 for	Beginners: With Ir	ndian Ex	xamples, 1st edition, Notio	n Press, 2	014, ISI	3N
2. Sham Ticl	κοο, Ε	xploring Bentl	ley STAAD.Pro CO	NNECT	Edition, 1st Edition, Cado	im Techn	ologies,	2018, IS
978-194268	9744			OUNTE	DESIGNANT DESIGN OF S			
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THIRD REVI	SION,	BUREAU OF	INDIAN STANDAR	2DS, 201	15	5111051111	2 5110	oronab
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0 - 1	Contin	uous Interna i is held everv	l Evaluation (CIF	E- Labor imetable	Exactory) : Only LAB Course and the performance of the	30 + 10 + ne student	+ 10 = 5 t is evalu	0. The
Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S	n. The b Rep in the larks.	average of ma port, Observati e lab (10 mark	week as per the t arks over number ion & Analysis). Th s). At the end of th 	of experime stude	iments conducted over the ents are encouraged to imp ster a test is conducted for ry) : Only LAB Course 40	weeks is lement ad 10 Marks + 10 =50.	conside ditional s (Lab To Studen	red for 3(innovati est). This
Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S evaluated for	n. The lb Rep in the larks. Semes	average of ma oort, Observati e lab (10 mark ster End Exan e-up, Experim	week as per the t arks over number ion & Analysis). Th s). At the end of th nination (SEE- La ental Setup, Expe	of exper ne stude ne seme borator	iments conducted over the ents are encouraged to imp ster a test is conducted for ry) : Only LAB Course 40 Conduction with Results, A	weeks is lement ad 10 Marks + 10 =50. .nalysis &	conside ditional s (Lab To Student Discuss	red for 3(innovati est). This ts will be sions for
Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S evaluated for Marks and V	n. The ib Rep in the larks. Semes Write 'iva wi	average of ma oort, Observati lab (10 mark ter End Exan e-up, Experim 11 be conducte	week as per the t arks over number ion & Analysis). The s). At the end of the nination (SEE- La ental Setup, Expendent	of exper ne stude ne seme borator riment (lding to	ry) : Only LAB Course 40 Conduction with Results, A 50 Marks.	weeks is lement ad 10 Marks + 10 =50. .nalysis &	conside ditional s (Lab To Studen Discus	tated in red for 3(innovati est). This ts will be sions for
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Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S evaluated for Marks and V	a. The b Rep in the larks. Semes Write	average of ma oort, Observati e lab (10 mark ster End Exan e-up, Experim 11 be conducte	week as per the t arks over number ion & Analysis). The s). At the end of the nination (SEE- La ental Setup, Expen- ed for 10 Marks ad Only LAB IBRIC FOR CIE	of exper ne stude ne seme iborator riment (lding to Courses	iments conducted over the ents are encouraged to imp ster a test is conducted for ry) : Only LAB Course 40 - Conduction with Results, A 50 Marks. s with 50 Marks RUBRIC F	weeks is lement ad 10 Marks + 10 =50. .nalysis & OR SEE	conside ditional s (Lab To Studen Discuss	tated in red for 3(innovati est). This ts will be sions for
Scheme of C Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S evaluated for Marks and V	n. The b Rep in the larks. Semes Write iva wi	average of ma port, Observati e lab (10 mark ster End Exan e-up, Experim 11 be conducte RU	week as per the t arks over number ion & Analysis). The s). At the end of the nination (SEE- La ental Setup, Expended of 10 Marks ad Only LAB IBRIC FOR CIE ontent	of exper ne stude ne seme iborator riment (lding to Courses Marks	ry) : Only LAB Course 40 Conduction with Results, A 50 Marks. s with 50 Marks RUBRIC F Content	weeks is lement ad 10 Marks + 10 =50. .nalysis & OR SEE	conside ditional s (Lab To Studen Discuss Marks	ts will be
Scheme of C Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S evaluated for Marks and V	n. The ib Rep in the larks. Semes Write iva with Sl.No 1	average of ma port, Observati e lab (10 mark ster End Exan e-up, Experim 11 be conducte RU RU Write Up, Setu Results, Analy	week as per the t arks over number ion & Analysis). Th s). At the end of th nination (SEE- La ental Setup, Expendent only LAB IBRIC FOR CIE ontent up, Conduction vsis & Discussions	of exper ne stude ne seme iborator riment (Iding to Courses Marks 30	iments conducted over the ents are encouraged to imp ster a test is conducted for ry) : Only LAB Course 40 - Conduction with Results, A 50 Marks. s with 50 Marks RUBRIC F Content 1. Write Up, Setup, Conduct	weeks is lement ad 10 Marks + 10 =50. .nalysis & OR SEE	conside ditional s (Lab To Studen Discuss Marks	ts will be
Scheme of C Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S evaluated for Marks and V	n. The b Rep in the larks. Semes Write iva wi Sl.No 1	average of ma oort, Observati e lab (10 mark ster End Exan e-up, Experim ill be conducte RU RU Write Up, Setu Results, Analy Innovative Ex Design & Impl	week as per the t arks over number ion & Analysis). The s). At the end of the nination (SEE- La ental Setup, Expe- ed for 10 Marks action Only LAB UBRIC FOR CIE ontent up, Conduction vsis & Discussions periment/Concept lementation	of experime stude ne seme iborator riment (Iding to Courses Marks 30 10	iments conducted over the ents are encouraged to imp ster a test is conducted for ry) : Only LAB Course 40 Conduction with Results, A 50 Marks. s with 50 Marks RUBRIC F Content 1. Write Up, Setup, Conduct 2. Results, Analysis & Discu	weeks is lement ad 10 Marks + 10 =50. .nalysis & OR SEE tion	conside ditional s (Lab To Studen Discuss Marks 40	ts will be
Scheme of C Laboratory s every session Marks i.e (La experiments adds to 50 M Scheme of S evaluated for Marks and V	n. The b Rep in the larks. Semes Write iva wi Sl.No 1 2 3	average of ma port, Observati e lab (10 mark ster End Exan e-up, Experim ill be conducte RU Write Up, Setu Results, Analy Innovative Ex Design & Impl Laboratory Int	week as per the t arks over number ion & Analysis). The s). At the end of the nination (SEE- La ental Setup, Expended only LAB UBRIC FOR CIE ontent up, Conduction vsis & Discussions periment/Concept lementation	Marks 10 10 10 10 10 10 10 10 10 10	iments conducted over the ents are encouraged to imp ster a test is conducted for ry) : Only LAB Course 40 Conduction with Results, A 50 Marks. s with 50 Marks RUBRIC F Content 1. Write Up, Setup, Conduct 2. Results, Analysis & Discu Viva Voce	weeks is lement ad 10 Marks + 10 =50. .nalysis & OR SEE	Conside ditional s (Lab To Studen Discuss Marks 40 10	ts will be



Technologica University, B	iya il elag	avi					
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			SEMESTER: I		· · · · · · · · ·		
Course Code	:	22MST1A1T			CIE Marks	:]	100
Credits L-T-P	:	3 - 0 - 0	FINITE ELEMENT METHOD OF ANA	LYSIS	SEE Marks	:]	100
Hours	:	42L	Elective A (Professional Elective)	SEE Durations	: :	3 Hrs
Fac	u	lty Coordinator:	Dr.T.Raghavendra		L	_	
		5	UNIT - I			9) Hrs
Basic concepts approximate m and Finite Eler principles of fin both first and s	ne ne ni se	of elasticity – kin thod of structura ent Method – var te element metho cond order elem	ematics and static variables for various ty al analysis – Rayleigh-Ritz method – Differ iational method and minimization of ener od – advantages & disadvantages – finite e ents used for one, two and three dimensio	pes of stru rence betwe gy approac element pro onal proble	ctural problems – een Finite Differen h for element forn ocedure – finite ele ms.	.ce nu em	Method lation – ents
			UNIT - II			8	3 Hrs
Nodal displace: shape function interpolation fu	m i – ir	ent parameters - - polynomial form action.	- convergence criteria – compatibility requ n of displacement function – generalized a	irements – nd natural	geometric invaria coordinates – Laş	ind gra	ce – Ingian
			UNIT - III			9) Hrs
Serendipity an second order e variables using using Lagrangi	d le g s lai	Lagrangian fami ments – Hermite shape function. I n shape function	ly of elements – shape functions for one, for shape function for beam formulation – N Formulation of one-dimensional bar element and – numerical analysis of simple bars an	two and thi umerical p ent, two- ar d plane tru	ree dimensional fi roblems to interpo nd three-noded ele asses	rst ola em	: and .te nodal .ents
			UNIT - IV				3 Hrs
strain-displace integration – n super-paramet	n u ri	aent matrix – stif merical analysis c elements – For	fness matrix – consistent load vector – Ga of simple beams. Iso-parametric elements mulation of two-dimensional three-noded	uss quadra s – sub-para triangular	ature for numerica ametric and (CST) element	al	
			UNIT - V			8	3 Hrs
Formulation of axis-symmetric Element aspec static condense examples.	1 2 1 1 1 1	our-noded quad problems – appli ratio – mesh refin ion technique –	rilateral element, and its application to pla cation of Gauss quadrature for numerical nement vs. higher order elements – numb introduction to non-linear analysis – geom	ane stress, integratior ering of no netric and 1	plane strain and - Numerical pro- des to minimize b naterial non-linea	ble an ırit	ems. .dwidth – ty with
Course Outco	m	es:					
After going three	οι	ugh this course t	he student will be able to:				
CO1	:	Apply the princ	iples of approximate numerical methods a	and identify	non-linearity of s	str	uctures
CO2	:	Use Finite Elem truss, three not	ent Method for formulation of stiffness m led and four noded elements	atrix and lo	bad vector for bar,	b	eam,
CO3	:	Solve continuu	n problems using finite element analysis				
CO4	:	Illustrate the co and mesh refine	ncept of condensation and minimization ement	of matrix b	andwidth, gauss o	าน 	adrature
Doforonce Dec	1-	26					
1 CS Vrichnor) K	southr Finite Fl	mont Analysia Theory and Drogrammin	a Ond oditi	on Macrow Hill	<u></u>	lucation
2017, ISBN: 97	78	-0074622100	ement Analysis – Theory and Programmin			<u>-</u>	ucation,
2. RD Cook, DS edition, Wiley,	5 20	Malkus, ME Ples	ana and RJ Witt, Concepts and Application 3126513369	ns ot Finite	Elements Analys	18,	Fourth

3. OC Zienkiewicz, RL Taylor and JZ Zhu, The Finite Element Method: Its Basis and Fundamentals, 7th edition, Butterworth-Heinemann, 2013, ASIN: B00FH1FRXM

4. KJ Bathe, Finite Element Procedures, Second edition, Klaus-Jürgen Bathe, 2014, ISBN: 978-0979004957



QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

Rubric for CIE & SEE Theory courses							
RUBRIC for CIE		RUBRIC for SEE					
SLNo	Content	Marks	Q. No	Contents	Marks		
1	Quizzes - Q1 & Q2	20	Each unit consists of TWO questions of 20 Marks each. Answer F		ver FIVE		
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).				
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20		
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	20		
			7 & 8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		



			SEMESTER: I		
Course Code	: 22MST1A	.2T F	ORENSIC ENGINEERING AND	CIE Marks	: 100
Credits L-T-P	: 3- 0- 0	REH	IABILITATION OF STRUCTURES	SEE Marks	: 100
Hours	: 42L	I	Elective A (Professional Elective)	SEE Durations	: 3 Hrs
Fac	culty Coordin	nator: Dr.B.G.Ana	andkumar	ł	
		ł	UNIT - I		8 Hrs
Deterioration: Preliminary In Drilling, Other	Introduction vestigation, H Instrumenta	, Cause of Deteri Experimental Inve al Methods.	oration of Concrete Structures, Dia estigations Using NDT, Load Testin	agnostic Methods and ag, Corrosion Mapping	Analysis, , Core
0,			UNIT - II		9 Hrs
Influence on se Design and Co Corrosion Prot	erviceability a nstruction E ection, Corro	and durability: E Crrors, Corrosion osion Inhibitors, (ffects Due To Climate, Temperatur Mechanism, Effects Of Cover, Thic Corrosion Resistant Steels, Coating	e, Chemicals, Wear ar kness and Cracking, I gs, Cathodic Protection	nd Erosion, Methods of 1.
			UNIT - III		8 Hrs
Maintenance a Importance Of Assessment Pr Techniques Of Mortar and Dr Underpinning	Maintenance ocedure for l Repair: Russ y Pack, Guni	t Eliminators, Political	Is, Maintenance, Repair And Rena isures on Various Aspects, Inspect <u>laged Structures, Causes of Deteri</u> UNIT - IV lymers Coating for Rebar during Re , Epoxy Injection Mortar, Repair fo	epair, Foamed Concre r Cracks, Shoring and	niques. 8 Hrs te,.
			UNIT - V		9 Hrs
Case Studies. Course Outco After going thr CO1 CO2 CO3 CO4	mes: ough this cou : Identify th : Analyze fa : Evaluate o : Develop si	urse the student ne causes of failus ailures in concret causes for failure imple and compre	will be able to: re in concrete structures e structures s in deteriorated concrete structur ehensive solutions to rehabilitate c	es leteriorated structures	3
Deference De	-1				
1. Repair of co 2. Learning for (SDCPL),.ISBN 3. Rehabilitatio 978-81801411 4. Distress and Series in Civil	ncrete struct failure from :12657-764- on of Concret 02 1 Repair of C and Structur	tures ,R T Allen a deficiencies in d -853-2318 te Structures, B Concrete Structure ral Engineering,W	nd SC Edwards, Blakie and Sons I esign construction and service , Ra Vedivelli, ,2013, Standard publishe es, Norb Dellate Failure,Nov9,2009 Voodhead Publishing.	SBN 1352, 2009 aikar R.N, 2008, R & I ers and distributors, IS 9,Ist Edition,Woodhead) Center SBN: 1 Publishing
Scheme of Co QUIZZES: Qui evaluated for 1 TESTS: Stude: Taxonomy Leve be conducted. to 40 Marks.	ntinuous In zzes will be c .0 Marks. Th nts will be ev els: Rememb Each test wi	ternal Evaluation conducted in online are sum of two quiz valuated in test, of pering, Understan ill be evaluated fo	n (CIE): 20 + 40 + 40 = 100 ne/offline mode. Two quizzes will b zzes will be the Final Quiz marks. lescriptive questions with different ding, Applying, Analyzing, Evaluat or 50 Marks, adding upto 100 Mark	be conducted & Each (complexity levels (Rev ing, and Creating). Tw cs. Final test marks wi	Quiz will be rised Bloom's ro tests will ll be reduced

seminar/presentation/demonstration (25) adding upto 40 marks.



Rubric for CIE & SEE Theory courses								
	RUBRIC for CIE			RUBRIC for SEE				
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	20	Each unit consists of TWO questions of 20 Marks each. Answer FI		er FIVE			
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).					
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20			
	Total Marks	100	3 & 4	Unit-2: Question 3 or 4	20			
			5&6	Unit-3: Question 5 or 6	20			
			7 & 8	Unit-4: Question 7 or 8	20			
			9 & 10	Unit-5: Question 9 or 10	20			
				Total Marks	100			

University, E	Belag	avi			
		1	SEMESTER: I		
Course Code	:	22MST1A3T		CIE Marks	: 100
Credits L-T-P	:	3 - 0 - 0	HIGH RISE STRUCTURES	SEE Marks	: 100
Hours	:	42L	Elective A (Professional Elective)	SEE Durations	: 3 Hrs
Fac	cu	lty Coordinator:	Prof.Dhanush S	-	_ !
		5	UNIT - I		8 Hrs
Introduction to	o t	all structures, H	istorical Background, Review of High-Rise Architec	ture, Functional	
Requirements, Relative Struct	, D	Definition of Tall	Buildings, Lateral Load Design Philosophy, Concept for Reduction in the Weight of Structural Frame	t of Premium for He	eight,
			UNIT - II		8 Hrs
Structural For	m	s: Braced Frame	s, Rigid Frames, Infilled Frames, Shear Walls, Cour	oled Shear Walls.	
Classification,	ty	pes, behaviour,	advantages, disadvantages for all the above mention	ned systems.	
		• • • • •	UNIT - III		8 Hrs
Structural For	m	s: Tubular struc	tures, Core structures, Outrigger structures. Classi	fication, types, beh	aviour,
advantages, di	sa	dvantages for al	l the above mentioned systems.		~
			UNIT - IV		9 Hrs
Modeling for A	na	alysis, Assumpti	ons, Approaches, High Rise Behaviour, Modelling fo	r Approximate Ana	lysis,
Modelling for A	Aco	curate Analysis,	Reduction Techniques.		
			UNIT - V		9 Hrs
Case Studies:	Er	npire State Buil	ling -New York City, Petronas Towers - Malaysia, B	urj Al Arab - Dubai	, Burj
Khalifa - Duba	ui,	Shanghai Tower	- China. And Future of Tall Buildings		
Course Outco	m	es:			
After going thr	υ	igh this course t	he student will be able to:		
C01	:	Understand the	importance and relevance of high rise structures in	n modern construc	tion.
CO2	:	Illustrate the va	rious structural forms using in high rise structures	3	
CO3	:	Apply modelling	g techniques to predict the behaviour of high rise st	ructures	
CO4	:	Compare and in	ifer the challenges in design of High Rise Buildings	of real life example	es.
Reference Bo	ok	S			
1. Taranath B. 978-00706287	.S. 786	, "Structural An 6	alysis and Design of Tall Buildings", McGraw Hill, 1	988. ISBN-13 :	
2. Bryan Staffe Inc., 2005. ISE	oro 3N	d Smith and Ale: -13 : 978-0471	coull, "Tall Building Structures - Analysis and Des 512370	ign", John Wiley ar	nd Sons,
3. Beedle.L.S., 978-04422159	4" 996	Advances in Tall 6	Buildings", CBS Publishers and Distributors, Delhi	., 1986. ISBN-13 :	
4. Lin T.Y and	St	totes Burry D, "S	Structural Concepts and systems for Architects and		
Engineers", Jo	hr	n Wiley, 1988. IS	BN-13 : 978-0471085386		
Scheme of Co	nt	tinuous Interna	l Evaluation (CIE): $20 + 40 + 40 = 100$		
QUIZZES: Qui	ZZ	es will be condu	cted in online/offline mode. Two quizzes will be con	ducted & Each Qu	iz will be
evaluated for	1U	Marks. The sun	of two quizzes will be the Final Quiz marks.	lorritry lorrola (Da	d Dicerc'
Tayonomy I or	111 مام	s will be evaluat	Lunderstanding Applying Applying Evolution	nd Creating) Two	tests will
he conducted	EIS F	ach test will be e	valuated for 50 Marks, adding unto 100 Marks, Fin	na Cicauligi. 100 l	icsis WIII ne reduced
to 40 Marks	ەت		valuated for 50 marks, adding upto 100 marks. Fill	a ust marks will t	
EXPERIENTIA	۱L	LEARNING: Stu	idents will be evaluated for their creativity and prac	tical implementation	on of the
problem. Case	st	tudy-based teacl	ning learning and Program specific requirements (15	5), Video based	
seminar/prese	nt	tation/demonstr	ation (25) adding upto 40 marks	,,	

seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.



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Rubric	for CIE	& SEE	Theory	courses
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	RUBRIC for CIE			RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks		
1	Quizzes - Q1 & Q2	20	Each u	nit consists of TWO questions of 20 Marks each. Answ	er FIVE		
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).				
3	Experiential Learning - EL1 & EL2	40	1 & 2	Unit-1: Question 1 or 2	20		
	Total Marks	100	38⊾4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	20		
			7&8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		

		SEMESTER: I	
Course Code	: 22MST1B1T		CIE Marks : 100
Credits L-T-P	: 3-0-0	ADVANCED STRUCTURAL ANALYSIS	SEE Marks : 100
Hours	: 42L	Elective B (Professional Elective)	SEE Durations : 3 Hrs
Fac	ulty Coordinator:	Dr.M.V Renuka Devi	
		UNIT - I	8 Hrs
Curved Beams	Curved beams, In	ntroduction, assumptions, derivation of WINKLER E	BACH equation, Radius to the
neutral surface	e of simple geome	tric figures, Limitation, Stress distribution in open of	curved members such as
Hooks and cha	in links, Stress d	istribution in closed rings and chain links. Deforma	tions of open and closed
rings.			
		UNIT - II	9 Hrs
Beams on Elas	tic Foundations (Governing differential equation for elastic line, Inter	pretation of constants, Infinite
beam with poir	nt load, moment &	& UDL with problems. Semi-infinite beams with poin	nt load and moment UDL with
problems over	fixed and hinged	support conditions.	
		UNIT - III	8 Hrs
Shear Centre C	Concept of shear o	center in torsion induced bending of beams, express	sion to the Shear Centre for
Symmetrical an	nd Unsymmetrica	1 Sections, Derivation of shear centre for angles, ch	annel, semicircular and
built-up section	ns with numerica	l problems	
		UNIT - IV	8 Hrs
Unsymmetrical	l Bending (Asymn	netrical Bending) Theory behind unsymmetrical ben	ding, Assumptions, obtaining
the stresses in	beams, simply su	ipported and cantilever unsymmetrical beams subje	ected to inclined loading,
Deflections of i	unsymmetrical sir	nply supported and cantilever beams with numerica	al problems.
		UNIT - V	9 Hrs
1 5 1 1 2 2 3 5			61 11: 0 :
Buckling of No	n Prismatic Colur	nns and Beam-Column Principle behind Euler's the	eory of buckling, Governing
Buckling of No. differential equ	n Prismatic Colur ation applied to b	nns and Beam-Column Principle behind Euler's the buckling of columns and evaluation of constants for	eory of buckling, Governing various boundary conditions,
Buckling of No differential equ Obtaining the o	n Prismatic Colur lation applied to b characteristic equ	nns and Beam-Column Principle behind Euler's the puckling of columns and evaluation of constants for ation for the buckling load of non-prismatic compo-	eory of buckling, Governing various boundary conditions, und columns, Analysis of poted to avial and different
Buckling of No differential equ Obtaining the o Beam- column	n Prismatic Colur lation applied to b characteristic equ , conceptual theo loads with pume	nns and Beam-Column Principle behind Euler's the puckling of columns and evaluation of constants for ation for the buckling load of non-prismatic compo- ry of magnification stresses and deformations subje- rical problems	eory of buckling, Governing various boundary conditions, und columns, Analysis of ected to axial and different
Buckling of No differential equ Obtaining the o Beam- column types of lateral	n Prismatic Colur lation applied to b characteristic equ , conceptual theor loads with nume	nns and Beam-Column Principle behind Euler's the buckling of columns and evaluation of constants for lation for the buckling load of non-prismatic compo- ry of magnification stresses and deformations subje- rical problems.	eory of buckling, Governing various boundary conditions, und columns, Analysis of ected to axial and different
Buckling of No differential equ Obtaining the o Beam- column types of lateral	n Prismatic Colur lation applied to b characteristic equ , conceptual theor loads with nume	nns and Beam-Column Principle behind Euler's the buckling of columns and evaluation of constants for lation for the buckling load of non-prismatic compo- ry of magnification stresses and deformations subje- rical problems.	eory of buckling, Governing various boundary conditions, und columns, Analysis of ected to axial and different
Buckling of No differential equ Obtaining the o Beam- column types of lateral Course Outcon After going thr	n Prismatic Colur lation applied to b characteristic equ , conceptual theor loads with nume mes:	nns and Beam-Column Principle behind Euler's the buckling of columns and evaluation of constants for action for the buckling load of non-prismatic compo- ry of magnification stresses and deformations subje- rical problems.	eory of buckling, Governing various boundary conditions, und columns, Analysis of ected to axial and different
Buckling of No differential equ Obtaining the o Beam- column types of lateral Course Outcon After going thro	n Prismatic Colur lation applied to h characteristic equ , conceptual theo: loads with nume mes: ough this course to Explain concer	nns and Beam-Column Principle behind Euler's the buckling of columns and evaluation of constants for action for the buckling load of non-prismatic compo- ry of magnification stresses and deformations subje- rical problems.	eory of buckling, Governing various boundary conditions, und columns, Analysis of ected to axial and different
Buckling of No differential equ Obtaining the o Beam- column types of lateral Course Outcon After going thre CO1	n Prismatic Colur lation applied to b characteristic equ , conceptual theor loads with nume mes: ough this course : Explain concep	nns and Beam-Column Principle behind Euler's the buckling of columns and evaluation of constants for action for the buckling load of non-prismatic compo- ry of magnification stresses and deformations subje- rical problems. the student will be able to: the stresses, moments, deformation and pressure fluence of stresses, moments, deformation and pressure	eory of buckling, Governing various boundary conditions, und columns, Analysis of ected to axial and different in beams and columns
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QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

	Rubri	ic for C	IE & 8	SEE Theory courses		
RUBRIC for CIE			RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each unit consists of TWO questions of 20 Marks each. Answer FI		ver FIVE	
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7&8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	



		SEMESTER: I	
Course Code	: 22MST1B2T	MEGUANICS OF DEPODMANE PODIES	CIE Marks : 100
Credits L-T-P	: 3- 0- 0	MECHANICS OF DEFORMABLE BODIES	SEE Marks : 100
Hours	: 42L	Elective B (Professional Elective)	SEE Durations : 3 Hrs
Fac	ulty Coordinator:	Dr.K.Madhavi	
		UNIT - I	9 Hrs
Analysis of stre	ess: Introduction,	stress, components of stress at a point in Cartesia	n coordinates (2D & 3D),
plane stress pr	oblems, equilibri	um equations, stresses on inclined plane, stress tra	insformation, principal
stresses, maxir	num shear stress	s, stress invariants hydrostatic and deviatoric stress	ses, octahedral stresses,
boundary cond	itions. Stress cor	nponents (2D & 3D) in polar coordinates, equilibriu	m equations.
		UNIT - II	8 Hrs
Analysis of stra	ain: Strain, comp	onents of strain at a point in Cartesian coordinate's	, strain transformation,
principal strair	is,Maximum shea	ar strain and octahedral strain. Strain Components	in Polar Coordinate System.
	1 1		8 Hrs
Stress strain re	elations and comp	patibility equations: Generalized Hooke's law, const	itutive equations, lame's
constants, com	ipliance matrix, S	saint vaint's principle of superposition, compatibility	y equations for 3 dimensional
stress compone	riesian coordinal	ations, boundary value problem, stress compatibility	ne strain problems in terms of
coordinate syst	tem Constitutive	Relations in Polar Coordinate System	ly equations in polar
coordinate syst		IINIT - IV	8 Hrs
Two - Dimensi	nal Problems in	Cartesian and Polar Coordinates: Biharmonic equa	tion in Cartesian coordinates
Airv's stress fil	nctions polynom	ials as stress functions. Stress functions for plane	stress and plane strain
bending of can	tilever and simply	v supported beams. Biharmonic equations in polar	coordinates. Axisymmetric
problems, thick	walled cylinder	subjected to internal and external pressures. Effect	of circular hole on stress
distribution.	i wanda oyiniadi	susjected to internal and enternal pressures, zneed	
		UNIT-V	9 Hrs
Torsion of Pris	matic Bars: Saint	UNIT-V 2 Venant's Method, Prandtl's Membrane Analogy, To	9 Hrs
Torsion of Priss Rectangular Ba	matic Bars: Saint ar, Torsion of Thi	UNIT-V Venant's Method, Prandtl's Membrane Analogy, To n Tubes.	rsion of
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Torsion of Prist Rectangular Ba Introduction to Linear work – H Yield Criteria, w through Wester Course Outcon After going thro CO1 CO2 CO3 CO4 Reference Boo 1.Timoshenko 0070702608, I 2.Advanced Me	matic Bars: Saint ar, Torsion of Thin Plasticity: Stress nardening, Elastic yon Mises Yield C rgard stress spac mes: ough this course : Explain the ba : Analyse the be : Evaluate the st : Formulate equ bks & Goodier, Theor SBN-13: 978-007 cchanics of Solids	UNIT-V Venant's Method, Prandtl's Membrane Analogy, To n Tubes. s – strain diagram in simpletension, perfectly elastic c Perfectly plastic, Elastic Linear work hardening m criterion, Tresca Yield Criterion, stress – space repre- e. the student will be able to: sic principles of Elasticity and plasticity havior of objects under two and three dimensional stress tress and strain in two and three dimensional probl ations governing the behavior of two and three dime y of Elasticity, 3rd edition, Tata McGraw-Hill Publis 20070268 s, Srinath L.S, 3rd edition, 2010, TataMcGraw Hill Pa	9 Hrs rsion of c, Rigid – Perfectly plastic, aterials, Failure theories , esentation of yield criteria state of stress ems. ensional solids. shing Company,ISBN-10: ublishing company ISBN-10:
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Torsion of Prist Rectangular Ba Introduction to Linear work – H Yield Criteria, w through Wester Course Outcon After going thro CO1 CO2 CO3 CO4 Reference Boo 1.Timoshenko 0070702608, I 2.Advanced Me 0070858055 IS 3.T G Sitaram	matic Bars: Saint ar, Torsion of Thin Plasticity: Stress hardening, Elastic yon Mises Yield C rgard stress space mes: bugh this course : Explain the ba : Analyse the be : Evaluate the st : Formulate equ bks & Goodier, Theor SBN-13: 978-007 echanics of Solids SBN-13: 978-0070 and L Govindaraj	UNIT-V Venant's Method, Prandtl's Membrane Analogy, To n Tubes. s – strain diagram in simpletension, perfectly elastic c Perfectly plastic, Elastic Linear work hardening m criterion, Tresca Yield Criterion, stress – space repre- e. the student will be able to: sic principles of Elasticity and plasticity havior of objects under two and three dimensional st tress and strain in two and three dimensional probl ations governing the behavior of two and three dime tress and strain in two and three dimensional probl ations governing the dition, Tata McGraw-Hill Publis 70070268 s, Srinath L.S, 3rd edition,2010, TataMcGraw Hill Pu 0858053 ju,Elasticity for Engineers,1st edition,2016, I K Inte	9 Hrs rsion of c, Rigid – Perfectly plastic, aterials, Failure theories , esentation of yield criteria state of stress ems. ensional solids. shing Company,ISBN-10: ublishing company ISBN-10: rnational Pvt Ltd, ISBN –
Torsion of Prist Rectangular Ba Introduction to Linear work – H Yield Criteria, w through Wester Course Outcon After going thro CO1 CO2 CO3 CO4 Reference Boo 1.Timoshenko 0070702608, I 2.Advanced Me 0070858055 IS 3.T G Sitaram 978-93-85909-	matic Bars: Saint ar, Torsion of Thin Plasticity: Stress hardening, Elastic yon Mises Yield C rgard stress space mes: bugh this course : Explain the ba : Analyse the be : Evaluate the st : Formulate equ bks & Goodier, Theor SBN-13: 978-007 chanics of Solids SBN-13: 978-0070 and L Govindaraj -34-4	UNIT-V Venant's Method, Prandtl's Membrane Analogy, To n Tubes. s – strain diagram in simpletension, perfectly elastic c Perfectly plastic, Elastic Linear work hardening m criterion, Tresca Yield Criterion, stress – space repre- e. the student will be able to: sic principles of Elasticity and plasticity havior of objects under two and three dimensional stress tress and strain in two and three dimensional probl- ations governing the behavior of two and three dime- y of Elasticity, 3rd edition, Tata McGraw-Hill Publis 70070268 s, Srinath L.S, 3rd edition,2010, TataMcGraw Hill Publis 9 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	9 Hrs rsion of c, Rigid – Perfectly plastic, aterials, Failure theories , esentation of yield criteria state of stress ems. ensional solids. shing Company,ISBN-10: ublishing company ISBN-10: rnational Pvt Ltd, ISBN –
Torsion of Prisi Rectangular Ba Introduction to Linear work – H Yield Criteria, w through Wester Course Outcon After going thro CO1 CO2 CO3 CO4 Reference Boo 1.Timoshenko 0070702608, I 2.Advanced Me 0070858055 IS 3.T G Sitaram 978-93-85909- 4.Chakrabarth	matic Bars: Saint ar, Torsion of Thir Plasticity: Stress hardening, Elastic yon Mises Yield C rgard stress spac mes: bugh this course : Explain the ba : Analyse the be : Evaluate the st : Formulate equ bks & Goodier, Theor SBN-13: 978-0070 and L Govindaraj :34-4 y.T, Theory of Pla	UNIT-V Venant's Method, Prandtl's Membrane Analogy, To n Tubes. s – strain diagram in simpletension, perfectly elastic c Perfectly plastic, Elastic Linear work hardening m criterion, Tresca Yield Criterion, stress – space repre- e. the student will be able to: sic principles of Elasticity and plasticity havior of objects under two and three dimensional stress and strain in two and three dimensional probl ations governing the behavior of two and three dime- stress and strain in two and three dimensional probl ations governing the behavior of two and three dimensional ry of Elasticity, 3rd edition, Tata McGraw-Hill Publiss 70070268 s, Srinath L.S, 3rd edition,2010, TataMcGraw Hill Publiss ju,Elasticity for Engineers,1st edition,2016, I K Inte asticity, 3rd Edition, Tata Mc.Graw Hill Book Co,ISE	9 Hrs rsion of c, Rigid – Perfectly plastic, aterials, Failure theories , esentation of yield criteria state of stress ems. ensional solids. ching Company,ISBN-10: ublishing company ISBN-10: rnational Pvt Ltd, ISBN – BN-10:9380931719 ISBN-13:



QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

	Rubri	ic for C	IE & 8	SEE Theory courses		
RUBRIC for CIE		RUBRIC for SEE				
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each unit consists of TWO questions of 20 Marks each. Answer F		ver FIVE	
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7 & 8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	



SEMESTER: I						
Course Code	:	22MST1B3T	DESIGN OF MASONDY STRUCTURES	CIE Marks	:	100
Credits L-T-P	:	3-0-0	DESIGN OF MASONRI SIRUCIURES	SEE Marks	:	100
Hours	:	42L	Elective B (Professional Elective)	SEE Durations	:	3 Hrs
Fac	ul	ty Coordinator:	Dr.Somanath Basutkar			
			UNIT - I			8 Hrs
Introduction, M	/la	sonry units, ma	terials and types: History of masonry, historical buil	dings, Masonry a	irc	hes,
domes and vau	lts	s: Components,	classification and construction procedure			
			UNIT - II			8 Hrs
Characteristics	0	f masonry cons	ituents: Types of masonry units such as stone, bric	ks, concrete bloch	XS.	, clay
blocks and stal	bil	ized mud block	s. Properties of masonry units like strength, modulu	s of elasticity and	l w	vater
absorption. Ma	ISO	nry mortars – C	lassification and properties of mortars, selection of	mortars	_	0.11
Other wether of Ma						8 Hrs
Strength of Ma	so sir	nry in Compres	sion: Benaviour of Masonry under compression, stre	ength and elastic	pr	operties,
curing ageing	211. 211	d workmanshir	on compressive strength Prediction of strength of t	nasonry in Indiar	n c	n puon,
curing, ageing	an	u workinansing	IINIT - IV	masonny ni mulai	Ť	9 Hrs
Shear and Flex	111	e Behavior of M	asonry : Bond between masonry unit and mortar. te	est methods for de	_⊥ et∉	rmining
flexural and sh	lea	r bond strength	s. test procedures for evaluating flexural and shear	strength, factors	af	fecting
bond strength,	ef	fect of bond str	ength on compressive strength, flexure and shear str	rength of masonry	y.	Concept
of Earthquake	re	sistant masonry	buildings	-		_
			UNIT - V			9 Hrs
Design of load	be	aring masonry	ouildings: concept of basic compressive stress, Perm	issible compressi	ive	stress,
reduction facto	rs	. Increase in pe	missible stresses for eccentric vertical and lateral lo	ads, permissible	te	nsile and
shear stresses,	E	ffective height c	f walls and columns, opening in walls, effective leng	th, effective thick	ne	ess,
slenderness rat	tio	, eccentricity, lo	ad dispersion, arching action, lintels; Wall carrying	axial load, eccent	tri	c load
with different e	CC	entricity ratios,	wall with openings, freestanding wall; Design of load	d bearing masonr	У	for
buildings up to) 3	to 8 storeys us	ng BIS codal provisions			
Course Outoor						
After going thr		s. gh this course t	he student will be able to:			
CO1		Choose approp	iate masonry unit and mortar mixes for masonry co	nstruction		
CO2	:	Distinguish wid	e range of materials for their suitability to arrive at t	feasible and optin	na	1
		solutions for m	asonry constructions	····· · ····		
CO3	:	Appraise knowl	edge of structural masonry for advanced research a	nd construction p	oro	cedures
CO4	:	Design masonr	v buildings for sustainable development			
Reference Boo	k	8				
1. Structural M	las	sonry ,Hendry A	.W, 2nd edition, Palgrave Macmillan, Macmillan Edu	cation Ltd. ,ISBN	[1	0:
0333733096 IS	SB	N 13:97803337	33097			
2. Masonry str	uc	tures- Behavior	and Design, Robert G Drysdale, Ahmad A Hamid, 3	rd edition ,2008 I	Bo	ulder,
CO : Masonry S	So	ciety, , ISBN 19	29081332 9781929081332			
3. Structural M ISBN 13: 978-9	1a: 938	sonry, Jagadish 84588663	K S, 2015, I K International Publishing House Pvt L	td, ISBN – 10: 93	-84	1588660,
4. Code Books:						
IS 1905: 1987,	Ir	dian standard	Specification for Code of Practice for Structural Use	of Unreinforced		



QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

Rubric for CIE & SEE Theory courses							
	RUBRIC for CIE	1		RUBRIC for SEE	1		
SLNo	Content	Marks	Q. No	Contents	Marks		
1	1 Quizzes - Q1 & Q2 20 Each unit consists of TWO questions of 20 Marks each. Answer FIVE						
2	Tests - T1 & T2	full questions selecting ONE from each unit (1 to 5).					
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20		
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	20		
			7 & 8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		

RV Educat RV Colucion Institutor Affi to Visvesvara Technologica University, Be	ional Institutions [©] ege of Engineering [®] liated ya lagavi		Go, chang	e the world
		SEMESTER: I		
Course Code	· 22IM21T		CIE Marks	· 100
Credits L-T-P	: 3-0-0	RESEARCH METHODOLOGY	SEE Marks	: 100
Hours	: 42L	Common Course to all M.Tech Programs	SEE Durations	: 3 Hrs
Facul	ty Coordinator:	Dr. Rajeswara Rao K V S	•	•
	<u> </u>	UNIT - I		8 Hrs
Research Probl Creative Appro- Problems – App Generation and	em: Problem So ach, Group Prob proaches to Rese l Formulation o	lving – General Problem Solving, Logical App olem Solving Techniques for Idea Generation earch Problem, Exploration for Problem Iden f the problem.	proach, Soft Syste . Formulation of l tification, Hypoth	m Approach, Research esis
		UNIT - II		9 Hrs
Research Desig Design, Quasi I Experiments. E Field Studies, S	n: Experimenta Experimental D X Post Facto Re Survey Research	l Design – Principles of Experiment, Laborat esign, Action. Research, Validity and Reliabi esearch – Exploratory Research, Historical Re n, Qualitative Research Methods.	ory Experiment, H lity of Experiment esearch, Descripti	Experimental and Quasi ve Research,
		UNIT - III		8 Hrs
Validity and Re Data Collection Reliability of da	eliability Measur Procedures – S ata collection pr	rement, Sample Design – Non-Probability Sar Sources of secondary data, Primary data colle ocedures. UNIT - IV	mpling, Probabilit ection methods, V	y Sampling. alidity and 9 Hrs
Data Analysis:	Exploratory Dat	ta Analysis, Statistical Estimation, Hypothes	is Testing, Param	etric Tests,
Non-Parametrie	e Tests, Multiple	e Regression, Factor Analysis, Cluster Analys	sis	
		UNIT - V		8 Hrs
Research Propo	osal: Purpose, T	ypes, Development of Proposal, Evaluation o	f Research Propos	sal.
Report Writing:	Pre-writing cor	nsideration, Format of Reporting, Briefing, Be	est practices for J	ournal writing.
Course Outcon	nes:	no the student will be able to.		
Aiter going th	Popognizo the	rse the student will be able to:	late trace and en	
	: procedures.	principles and concepts of research types, c	iata types and an	alysis
CO2	Apply approp: : principles.	riate method for data collection and analyze	the data using sta	atistical
CO3	Express reseat: standards.	rch output in a structured report as per the	technical and eth	nical
CO4	: Develop a res	earch design for the given engineering and n	nanagement probl	em context.
Reference Boo	oks:			
1. Krishnaswar Integration of F Pvt. Ltd, 2018.	ni, K.N., Sivaku Principles, Metho ISBN: 978-81-7	mar, A. I. and Mathirajan, M., Management ods and Techniques, 17th Impression, Pears 7758-563-6	Research Method on India Educatio	ology, on Services
Dog Publishing	. 2006. ISBN 9	78-1592602919	neuge Dase, SIU E	
3. Kothari C R	Research Meth	nodology Methods and Techniques 4th Edition	on. New Age Inter	national
Publishers. 20	19. ISBN: 978-9	3-86649-22-5.		national
4. Levin, R.I. a 2017, ISBN-13	nd Rubin, D.S., - 978-81849574	Statistics for Management, 8th Edition, Pear 195.	rson Education: N	lew Delhi,

RV	RV Educational In RV College of	istitutions [©] f Engineering [∞]	Go, change the world
STITUTO"	Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi	Approved by AICTE, New Dethi	

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

RUBRIC for CIE				RUBRIC for SEE				
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	20	Each u	nit consists of TWO questions of 20 Marks each. Answ	er FIVE			
2	Tests - T1 & T2	40	40 full questions selecting ONE from each unit (1 to 5).					
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20			
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20			
			5&6	Unit-3: Question 5 or 6	20			
			7&8	Unit-4: Question 7 or 8	20			
			9 & 10	Unit-5: Question 9 or 10	20			
				Total Marks	100			



	de acordo d Antes de acordo de aco	SEMESTER: II						
Course Code	: 22MST22TL	STRUCTURAL DYNAMICS	CIE Marks	: 100				
Credits L-T-P	: 3-0-1	(Theory & Practice)	SEE Marks	: 100				
Hours	: 42L + 28P	(Professional Core - 3)	SEE Durations	: 3 Hrs				
Fac	ulty Coordinator:	Dr.M.V.Renuka Devi						
		UNIT - I		8 Hrs				
Introduction: In	ntroduction to dyn	namic problems of Civil Engineering, Concept of	degrees of freedom,	D'Alemberts				
principle, Princ	ciple of virtual dis	placement and energy, Single degree of freedom	systems, Examples o	of Single				
degree of freed	om systems in En	gineering, Free vibration of damped and undam	ped systems.					
		UNIT - II		9 Hrs				
Single degree o	f freedom systems	s subjected to sinusoidal loading, Resonance and	d its resonance diagr	am –				
support motion	i, Vibration isolati	on, transmissibility, Methods of damping measu	irements, Response	of Single				
degree of freed	om systems to art	otrary excitation, Duhamel integral solution, Res	sponse to suddenly a	applied load				
and triangular	puise loading, Pri			Q U#0				
Dunamica of m	11ti Dograd of frag	udam avatam Natural Fragmanav and normal ma	dag Orthogonality o	f modol				
vectors Shear	building model wi	thout damping and with proportional damping	Approximate method	l moual				
frequency anal	vsis Ravleigh's m	ethod and matrix iteration methods	Approximate method	15 01				
	<i>y</i> 516, <i>ita y</i> 101 <u>6</u> 11 6 111	UNIT - IV		8 Hrs				
Concepts of Re	sponse Spectrum	Response of shear building with proportion dar	nping. Superposition	of normal				
modes, Examp	le of a 3-storeyed	frame subjected to ground motion						
/ 1	5	UNIT - V		9 Hrs				
Continuous sys	stems, Flexural vi	bration of beams, Simply supported and cantilev	ver beams, Longitudi	nal				
vibrations of ba	ars, Longitudinal	waves in bars, Waves and vibration response of s	simply supported be	ams under				
uniformly distr	ibuted triangular	pulse loading, Matrix formulation of beams with	lumped masses.					
		LABORATORY		28 Hrs				
1. Determination	on of fundamenta	l frequency and mode shape for SDOF systems,	analytically, experim	entally, and				
numerically.								
2. Determination	on of fundamenta	l frequencies and mode shapes for 2-DOF system	ns, analytically, expe	erimentally,				
and numerical	ly.	frequencies and mode change for 2 DOF system	na analytically aver	rimontolly				
and numerical		inequencies and mode snapes for 5-DOF system	ins, analytically, expe	innennany,				
4 Determination	on of fundamenta	frequencies and mode shapes for continuous ca	antilever systems ar	alvtically				
experimentally	, and numerically		anthever systems, a	iary croarry,				
5. Experimenta	al and analytical s	tudies on MDOFs with and without the effect of	walls.					
6. Experimenta	al and analytical s	tudies on MDOF's with and without tuned mass	dampers.					
7. Experimenta	al and analytical s	tudies on SDOF's with and without torsional irre	egularity.					
8. Experimenta	al studies on the e	ffect of water level of dynamic behaviour of wate	r tanks subjected to	harmonic				
excitation.								
9. Experimenta	al studies on MDC	Fs with and without base isolators. 10. Analytic	al and numerical mo	odelling of a				
10-DOF and de	etermination of all	mode shapes and frequencies.						
0								
After going thr	mes:	he student will be able to:						
	· Idealize and mo	del simple structures as discrete and continuou	s wibratory system					
CO2: Develop equations of motion for discrete and continuous vibratory system								
CO3 · Evaluate the frequencies for various discrete and continuous vibratory system								
	CO3 : Evaluate the irequencies for various discrete and continuous vibratory system.							
04	experimentally	and numerically.	mai moucis anaiyile	any,				
Reference Boo	oks							

1. Structural Dynamics : Vibrations and Systems, Madhujit Mukophadhyay, Edition: 01, 2008, Publisher: ANE Books ISBN: 9788180520907, 8180520900



2. Structural Dynamics: Theory and Computation, 2nd Edition, Mario Paz, CBS Publisher ISBN: 9788123909783, 8123909780

3. Dynamics of Structures, R,W. Clough and J. Penzien, McGraw – Hill Education, 2nd revised Edition, 1993, ISBN -10: 0071132414, ISBN -13: 978-0071132411

4. Theory of vibration with applications, Willaim Thomson; 4th edition, 1996, CRC Press ISBN -10: 0748743804, ISBN -13: 978-0748743803.

Scheme of Continuous Internal Evaluation (CIE): 10 + 30 + 30 + 30 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The average of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 30 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (10), Video based seminar /presentation /demonstration (20) adding upto 30 marks.

Laboratory: Conduction of laboratory exercises, Lab report & observation & analysis (30 Marks), Lab Test (10 Marks) & Innovative Experiment/Concept Design & Implementation (10 Marks) adding up to 50 Marks. The final marks will be reduced to 30 Marks.

Scheme of Semester End Examination (SEE) for 100 marks: Each unit consists of TWO Questions of 16 Marks each. Answer FIVE full questions selecting one from each unit (from 1 to 5). Question No. 11 is compulsory (Laboratory component) for 20 Marks.

	Rubric for CIE & SEE for Integrated Theory courses with Laboratory							
	RUBRIC of CIE			RUBRIC of SEE				
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	10	Each u	nit consists of TWO questions of 16 Marks each. Answ	wer FIVE			
2	Tests - T1 & T2	30	full questions selecting ONE from each unit (1 to 5). Question No. 11 is compulsory (Laboratory component) for 20 Marks					
3	Experiential Learning - EL1 & EL2	30	18:2	Unit-1: Question 1 or 2	16			
4	Laboratory	30	3&4	Unit-2: Question 3 or 4	16			
	Total Marks	100	5&6	Unit-3: Question 5 or 6	16			
			7 & 8	Unit-4: Question 7 or 8	16			
	NO SEE for Laboratory			Unit-5: Question 9 or 10	16			
				Laboratory Component (Compulsory)	20			
				Total Marks	100			



University, E	3elaga	avi				
			SEMES	ΓER: II		
Course Code	:	22MST23T	ADVANCED DESIGN (NE STEEL STRUCTURES	CIE Marks	: 100
Credits L-T-P	:	3-0-0	ADVANCED DESIGN C	of Sileel Siruciures	SEE Marks	: 100
Hours	:	42L	(Professio	nal Core - 4)	SEE Durations	: 3 Hrs
Fac	cu	Ity Coordinator:	Dr.Ravindra.R		• •	
			UNIT - I			9 Hrs
Components o	f i	ndustrial struct	re, assessment of dead l	oads, live loads and wind l	oads on a mill ben	t frame.
Analysis and d	les	sign of knee brac	e, column and purlins.			_
			UNIT - II			9 Hrs
Analysis and d shear force.	les	sign of gantry gir	ler subjected to single a	nd two wheel loads, Splices	s for bending mome	ent and
			UNIT - III			8 Hrs
Components s	elf	supporting stee	chimneys, assessment of	of wind loads, moments at	base, assessment	of seismic
loads. Analysis	s a	nd Design of sel	supporting circular stee	el chimneys.	,	
			UNIT - IV			8 Hrs
Forms of light	gu	age sections, Ef	ective width computation	n of unstiffened, stiffened,	multiple stiffened	
compression e	lei	ments of cold for	ned light guage sections	. Concept of local buckling	of thin elements. I	Limiting
width to thick	ne	ss ratio. Post bu	kling strength. Design o	f compression and tension	members of cold fe	ormed
light guage sec	cti	ons, Design of fl	xural members (Laterall	y restrained / laterally unr	estrained).	-
			UNIT - V			8 Hrs
Design of open	ı w	veb structures(tr	angular and rectangular),concept of pre-engineered	l buildings	
Course Outco	m	es:				
After going thr	ou	igh this course t	e student will be able to	:		
CO1	:	Identify and con	pute the design loads or	n different types of steel str	ructures.	
CO2	:	Analyze the var	ous steel components for	r different loads acting on t	them.	
CO3	:	Design various	ypes of steel structural of	components using provisio	ns of standards, co	odes of
		practice for eth	cal design of steel compo	nents and develop profess	ional competencies	
CO4	:	Propose design	solution of industrial ste	el structures at component	t and system level.	
Reference Bo	ok	S				
1. Bureau of Ir	nd	ian Standards, I	8800-2007, IS875-1987,	IS-801-1975. Steel Tables	, SP 6 (1) – 1984, I	S6533(Part
1 and 2),IS189	93(part 4):2005.				
2. Design of St	tee	l Structures, N.	ubramanian, Oxford Un	iversity Press,2011, ISBN:	9780198068815.	
3. Design of St	tee	el Structures, Ra	nchandra and Virendra	Gehlot ,Vol 1 and Vol.2, So	cientific Publishers	, Jodhpur,
2010.						
4. Limit State 2009	De	esign of Steel Str	ictures, Duggal S K,TMF	I publication, New Delhi, I	SBN (13):978-0-07	-070023-9.
Scheme of Co	nt	tinuous Interna	Evaluation (CIE): 20 +	40 + 40 = 100		
QUIZZES: Qui	ZZ	es will be condu	ted in online/offline mod	de. Two quizzes will be con	ducted & Each Qu	iz will be
evaluated for 1	0	Marks. The sum	of two quizzes will be th	e Final Quiz marks.		
TESTS: Stude:	nt	s will be evaluat	d in test, descriptive que	estions with different comp	lexity levels (Revise	ed Bloom's

Go, change the world

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.



G0,	change	the	world
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Rubric for CIE &	& SEE Theory	courses
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	RUBRIC for CIE		RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each unit consists of TWO questions of 20 Marks each. Answer FIVE			
2 Tests - T1 & T2 40				full questions selecting ONE from each unit (1 to 5).		
3	Experiential Learning - EL1 & EL2	40	18:2	Unit-1: Question 1 or 2	20	
	Total Marks	100	38:4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			78⊾8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	



Oniversity, D	orden 1			
		SEMESTER: II		
Course Code	: 22MST2C1T	DESIGN OF CONCRETE BRIDGES	CIE Marks	: 100
Credits L-T-P	: 3 - 0 - 0	DESIGN OF CONCRETE BRIDGES	SEE Marks	: 100
Hours	: 42L	Elective C (Professional Elective)	SEE Durations	: 3 Hrs
Fac	culty Coordinator:	Er.B.V.Nagesh/Dr.B.C.Udayashankar		-
		UNIT - I		8 Hrs
Classification of	of Bridges, IRC Lo	ading and vehicular load combinations Impact fac	ctor and congestion f	actors.
Partial safety f	actor for – verifica	tion of equilibrium, Structural strength and servi	ceability limit state. I	Design of
RCC solid slab	bridge.			
		UNIT - II		9 Hrs
Design of Box	culverts. RCC T-B	eam Girder & Slab Bridge :Transverse Analysis a	nd Design, Longitudi	nal
Analysis - Cou	rbon method Ultin	nate Design for Long bending and Shear and Lim	it state of serviceabili	ity
		UNIT - III		9 Hrs
Grillage Analys	sis for T-Beam Gir	der super structure . Design of post tensioned PS	C Girders - losses in	
presstressing ,	cable profile, end	block design and ultimate strength design .		
		UNIT - IV		8 Hrs
Design of comp	posite Girder Brid	ge Limit state of strength and Servicibility . Typ	es of bearings and ex	rpansion
joints .				
		UNIT - V		8 Hrs
Bridge Sub Str	ucture And Found	dation: Calculation of various forces on Substruct	ure & Foundation as	Per IRC,
Methodology for	or design of subst	ructure and foundation, Design of Substructure for	or simply supported (Girder
Bridge.	0	<i>,</i>		
0				
Course Outco	mes:			
After going thr	ough this course	he student will be able to:		
CO1	: Explain the cor	nponents of a Highway bridges and specifications	•	
CO2	: Analyse the IR	C loading conditions for the design of bridges.		
CO3	: Design Aspects	of RCC, PSC and Composite Bridge Super struc	ture and understand	ing the
	types of Bridge	Bearings and Expansion joints		0
CO4	: Design Bridge	Substructure by analysing the forces acting on it.		
Reference Bo	oks			
1.Concrete Bri	dge Practice: Anal	vsis, Design and Economics , V. K. Raina : Publis	her. Tata McGraw-H	ill. 1991
ISBN, 0074603	3086. 978007460	3086	non, rata modraw m	,
2. Bridge Eng	ineering. Ponnusy	vamy.McGraw-Hill Education (India) Pyt Limited.	2007.ISBN 00706569	
978007065695	56	,		;
3 Bridge Deck	Behaviour .Hamh	ly EC, December 12, 2019 by CRC Press.ISBN 97	80367863425	
4.Bridge Super	r Structure. N.Rai	gopalan .Narosa Publishing House Pvt. Ltd. New	Delhi, 2013.ISBN 13	:
978817319647	78. IRC CODES : 1	RC -6. IRC-112. IRC -24 . IRC -78	,	

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.



	RUBRIC for CIE			RUBRIC for SEE		
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answer FIVE		
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).		
3	Experiential Learning - EL1 & EL2	40	1842	Unit-1: Question 1 or 2	20	
	Total Marks	100	38:4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			78 8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	

University, I	Belagav	vi			
			SEMESTER: II		- 1
Course Code	:	22MST2C2T	DESIGN FOR SAFETV	CIE Marks	: 100
Credits L-T-P	:	3 - 0 - 0		SEE Marks	: 100
Hours	:	42L	Elective C (Professional Elective)	SEE Durations	: 3 Hrs
Fac	cul	ty Coordinator:	Er.Govind Ramesh/Dr.B.G.Anand Kumar		
		-	UNIT - I		9 Hrs
PRINCIPLES-	Mis	ssion Statement	: conceptulization of requirements- result cha	in analysis-validation of	mission
statement-per	iod	ic testing and c	onfirmation.Interacting in the Eco-System-und	derstanding stakeholder	
participation-r	ma:	ximum human :	mpact due to safety-feedback and correction a	at the origin of impact-	
incorporating	bes	st practice- situ	ation monitor and correction for design for saf	ety.Dealing with Jumble	d Flow-
types of proces	ss f	flows- continous	flow- intermittent flow-jumbled flow.Role Effi	icacy for Civil Engineers	- personal
effectiveness-	ME	BTI- Role Play ar	nd Integration		
			UNIT - II		9 Hrs
TRAINING-AIS	SC	Design Guide-1	0 on lateral stability- lateral stability during li	ifts and shifts-sequentia	stability-
stiffness vs de	for	mations- bifurc	ation theory and instability theory. Anthropolog	gical Study-Hoffstede Cu	ultural
Studies- Cons	tru	ction labour pro	oductivity-migrant workers-Hygienic and Core	Motivation- Statutory	
Requirements,	, Ac	dult Teaching.D	ealing with Jumbled Flow- types of process flo	ows- continous flow- inte	ermittent
flow-jumbled f	flov	v.Role Efficacy f	or Civil Engineers- personal effectiveness- MB	TI- Role Play and Integra	ation
			UNIT - III		8 Hrs
RISK MANAG	EM	IENT-Uncertain	ty-Risk attitudes, Monte Carlo Simulations or	equivalent methods.Pre	vention
Methods- prev	ven	tion through de	sign.Quantitative Assessments-decision trees,	root cause analysis, lea	n
construction n	net	hods.Qualitativ	e Assessments- S curves		
			UNIT - IV		8 Hrs
BIASES & HU	ER	ISTICS-Individ	ual-availability- representative-anchoring-conf	firmation Biases.Team-C	roup
Thinking-Mose	es J	Effect-Cultural	onfirmity-Risky Shift-Cautios Shift.Organisat	ional- Cultural- Behavio	ur and
Structure.Mat	rix	Organization-ty	rpes and efficacy.		
			UNIT - V		8 Hrs
CASE STUDIE	ES-	PreMortem Tech	iniques- Complete premortem methods, Individ	dual Case Studies,Grour	Case
Studies,Life C	ycl	e Process- intiat	ion- planning- exectuion and maintainance		
	-		¥ ¥		
Course Outco	me	es:			
After going thr	rou	gh this course t	he student will be able to:		
CO1		Conceptualizati	on of Safety in Design		
CO2	2	Knoweldge Stad	king for Safety in Design		
CO3	<u>.</u>	Understanding	& Managing Unknowns		
CO4	$\frac{1}{1}$	Independent in I	ecision Making		
	<u>-</u>				
Reference Bo	ok.	e			
1 Bazerman '	June 1	gements' Fifth	Edition Wiley 2002 ISBN 0 471 20897 V		
D Horeld Variation	<u>Ju(</u>	n Droiget Mar-	Equation, whey, 2002, ISBN 0-471-39007-A	1 110 16525 4	
2. marola Kert	zne	er, Project Mana	gement, 12th Edition, 2017, whey, 15BN978-	1-119-10000-4	
3.USHA, Steel	<u>Ere</u>	ection, SubPart	1920, USHA		
4.AISC, Struct	tura	al Steel Building	s Specifications, 2021, AISC		
Scheme of Co	ont	inuous Interna	l Evaluation (CIE): 20 + 40 + 40 = 100		

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QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.


Rubric for CIE & SEE Theory courses								
	RUBRIC for CIE	1		RUBRIC for SEE	1			
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit (1 to 5).				
2	Tests - T1 & T2	40						
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20			
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20			
			5&6	Unit-3: Question 5 or 6	20			
				Unit-4: Question 7 or 8	20			
			9 & 10	Unit-5: Question 9 or 10	20			
				Total Marks	100			

Oniversity, De	agavi (
		SEMESTER: II		
Course Code	: 22MST2C3T	DRECAST CONCRETE STRUCTURES	CIE Marks	: 100
Credits L-T-P	: 3 - 0 - 0	PRECASI CONCRETE STRUCTURES	SEE Marks	: 100
Hours	: 42L	Elective C (Professional Elective)	SEE Durations	: 3 Hrs
Fac	ulty Coordinator:	Er.Ganapati M G /Dr.B.G.Anand Kumar		
		UNIT - I		8 Hr
Concept of prec methodologies, prefabricated si	cast, precast prod equipments and tructure. Disuniti	ucts, standardization, precast accessories, types of machineries, economy of prefabrication, Planning ng of structures.	of precast construct for Components of	ions,
<u> </u>	· · · · · · · · · · · · · · · · · · ·	UNIT - II		9 Hr
Choice of produ setup, Storage hoisting and er Columns – Vac	action setup, Man of precast elemen ection Techniques uum lifting pads.	Sufacturing methods, Stationary and mobile products, Dimensional tolerances, Acceleration of concress for erection of different types of members like Be Logistics and transportation.	ction, Planning of p te hardening. Equip ams, Slabs, Wall pa	roduction ments nels ar
		UNIT - III		8 Hr
Types of pre-str	ress hollow core s	labs, manufacturing methodology, load chart and	curves, preparation	of layo
cutting list, loa	ding sequence, pr	oduction loading transportation and erection, ser	vices and maintenar	nce.
		UNIT - IV		9 Hr
beams and colu Modular constr	umns. 3D Precast	elements, 3D printing of elements, Prestressed pr UNIT - V recast elements, typical layout, joint details, shop	ecast slabs for road	s 8 Hr
columns, beam loading, transp	s, panel, stairs an ortation, site prep	nd slab, mould fabrication, reinforcement details, paration and erection, finishing and handling over	casting, curing, stor service and mainte	ckyard nance.
Course Outcor	nes:			
After going thro	ough this course t	he student will be able to:		
CO1	: Demonstrate th	e precast concrete concepts, types of precast cons	struction and its adv	vantage
CO2	: Identify precast elements	plant set up for production and storage systems,	plan logistics of pre	ecast
CO3	: Examine differe	ent types of pre-cast elements.		
CO4	: Design of preca	st elements, manufacturing methods.		
Reference Boo	oks			
1. Kim.S.Elliott	, Precast Concre	te Structures , Butterworth-Heinemann, An impris	nt of Elsevier Scienc	e, 2002
2.Hubert Bachı &Co., ISBN978	mann and Alfred 3 -3-433-60096-2.	Steinle, Precast concrete structures, First edition,	2011, Ernst &Sohn,	GmbH
3. Kim.S.Elliot 2013, Wilev-Bla	and Colin K Jolly ackwell , ISBN: 97	,Multi –Storey Precast Concrete Framed Structure 78-1-4051-0614-6.	es,2nd Edition, Nove	ember
4. PCI Journal-	- Proposed Design Building Code and	Requirements for Precast Concrete ,Prestressed (PCI Technical Activities Committee,	Concrete Institute ,	PCI
	0000 un			



Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

	RUBRIC for CIE			RUBRIC for SEE					
SLNo	Content	Marks	Q. No	Contents	Marks				
1	Quizzes - Q1 & Q2	20	Each u	Cach unit consists of TWO questions of 20 Marks each. Answer FIVE					
2	Tests - T1 & T2	40 full questions selecting ONE from each unit (1 to 5).							
3	Experiential Learning - EL1 & EL2	40	1842	Unit-1: Question 1 or 2	20				
	Total Marks	100	38:4	Unit-2: Question 3 or 4	20				
	·		5&6	Unit-3: Question 5 or 6	20				
			78 8	Unit-4: Question 7 or 8	20				
			9 & 10	Unit-5: Question 9 or 10	20				
				Total Marks	100				

RV Educational Institutions * RV College of Engineering * Autonomous Institution Affiliated Tochnological University, Belegavi

		SEMESTER: II		
Course Code	: 22MST2C4T	SUSTAINADIE CONSTRUCTION DRACTICES	CIE Marks	: 100
Credits L-T-P	: 3 - 0 - 0	SUSTAINABLE CONSTRUCTION PRACTICES	SEE Marks	: 100
Hours	: 42L	Elective C (Professional Elective)	SEE Durations	: 3 Hrs
Fac	culty Coordinator:	Dr.Yoganand/Dr.Somanath Basutkar	-	
		UNIT - I		9 Hrs
Materials and	resources. Mortar	s and concrete. Environmental considerations		
Problem of san	id, aggregate, cem	ent and steel - Carbon emission – importance of loc	al resources. Alter	natives
cement and pla	asters. Utilization	of industrial waste products. Construction and dem	nolition waste and	their
utilization. Rol	e of Timber and E	amboo in low energy alternatives.		
		UNIT - II		8 Hrs
Environment d	legradation due to	exploitation of iron ore, limestone in forested areas	. Importance of ce	ment and
steel conservin	g buildings. Repla	acement of fossil fuels by renewable energy. Founda	tions	
Energy enicien	t concepts for fou			O Hro
Wall construct	ion Brielss and bl	ocks strength of masonry and its design sample de	sign of a 4 and 5	9 IIIs
masonry build	ing other method	s of wall construction	sign of a 4 and 5 s	storieu
masonry bund	ing, other method	IINIT - IV		8 Hrs
Precast Compo	nents for Buildin	gs Pre cast elements for lintels sunshades and roof	ing systems. Use (of
ferro-cement a	nd ferro-concrete	elements.	ing bystems. Obe t	/1
		UNIT - V		8 Hrs
Roof construct	ion			
In-situ roofs –	Filler Slabs, Bean	n and Panel roofing – Jack arch roof. Curved Panel r	roofs – Ventilated 1	roofs.
Ferrocement P	recast roofs, Maso	onry shell roofs – Cylindrical and domical roofs, shall	llow dome roofs.	
Weatherproofin	ng of roofs.			
Course Outco	mes:			
After going thr	ough this course	the student will be able to:		
CO1	: Apply concepts	of sustainable technology for design and construction	ion of various buil	ding
	components.			
C02	: Examine the st	mability of sustainable materials in building compo		
C03	: Select the best	possible sustainable technology based on in-situ co	maitions.	
C04	: Justily the cho	sen sustamable technologies with suitable design.		
Defense as Dec	- 1			
Kelerence Boo	Sustainable Duil	ding Technology IV International Dublishing House	o Dut Itd IODN 10).
A.S. Jagauisii,	SUSTAILIADIE DUIIO	Ref Rechnology, TK International Publishing House	e Pvi. Liu ISBN-10).
K S Jagadish	Structural Masor	ury IK International Publishing House Put Itd ISE		60
ISBN-13 978-	-9384588663 30	November 2015	51(-10.)50(-5000	00,
K. S. Jagadish	. B. V. Venkatara	ma Reddy and K. S. Nanjunda Rao, Alternative Build	ding Materials and	1
Technologies. I	New Age Internati	onal Publishers, New Delhi, 2nd Edition, 2016.		
K. S. JAGADIS	H and PANKAJ M	ODI, Domes and Vaults of South India, Indian Natio	onal Academy of E	ungineering,
New Delhi, 201	11			
Scheme of Co	ntinuous Interna	al Evaluation (CIE): 20 + 40 + 40 = 100		
QUIZZES: Qui	zzes will be condu	icted in online/offline mode. Two quizzes will be con	ducted & Each Qu	iz will be
evaluated for 1	0 Marks. The sur	n of two quizzes will be the Final Quiz marks.		1.51
TESTS: Studen	nts will be evaluat	ted in test, descriptive questions with different comp	lexity levels (Revis	sed Bloom's

Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.



Rubric for CIE & SEE Theory courses								
	RUBRIC for CIE	1		RUBRIC for SEE	1			
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit (1 to 5).				
2	Tests - T1 & T2	40	1					
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20			
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20			
			5&6	Unit-3: Question 5 or 6	20			
				Unit-4: Question 7 or 8	20			
			9 & 10	Unit-5: Question 9 or 10	20			
				Total Marks	100			

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SEMESTER: II Course Code 22BT2D01T BIOINSPIRED ENGINEERING CIE Marka 100 Corefais L-T-P 30-0 Elective D (Global Elective) SEE Durations 13 Hr Faculty Coordinator: Dr Nagashree Ros and Dr Abwani Sharma SEE Durations 13 Hr Faculty Coordinator: Dr Nagashree Ros and Dr Abwani Sharma SEE Durations 13 Hr Inroduction to Bio-inspired Engineering. Macromolecules, Stom cells; types and applications. Synthetic Biology: Bottom-up and 'top-down' engineering approaches. Synthetic / artificial life. Biological Clock, Genetic Algorithma, 9 Hrs Drincellos of bioinspired materials. Biological and synthetic materials, Self-assembly, hierarchy and volution. Bioplymeres, Bio-setel, Bio-composites, multi-functional biological materials. Thereinal Properties, Antrifeelection and photo-thermal biomaterials, GRob - Gecko tape, Whale fins - Turbine blades, Boy Fish / Bone - Bonic car, Shark skin - Friction erducing swim suits, Kingfisher beak - Bullet train, Coral - Calera cement, Forest Loor / Ecosystem functioning - Flooring itels, Morph butterfly. Structured color, Namb beetle- Water collecting, Termite mound passive cooling, Birds/Insects- flights/ acrodynamics, Mosquito inspired micro needle. 9 Hrs Biomedical Inspiration-Concept and applications: Organ system: Circulatory- artificial blood, artificial leaf. 8 Hrs Biomimetics: Inventions in nature for Human Innovation: Photosynthesis and Photovoltaic cells, Bionic / Artificial leaf. </th <th>to Visvesv Technolog</th> <th>araya ical Balacavi</th> <th></th> <th></th>	to Visvesv Technolog	araya ical Balacavi		
Course Code 22E72D01T IDONSPIRE INCIDE CIE Marks 1 100 Credits L-T-P i 3-0-0 Elective D (Global Elective) SEE Marks 1 100 Itours Cit [42L Elective D (Global Elective) SEE Durations : 3 IIT Faculty Coordinator: Dr Nagashree Rao and Dr Ashwani Sharma WIT - I SHe Introduction to Bio-inspired Engineering: Macromolecules, Stem cells; types and applications. Synthetic Biology; Bottom-up and top-down engineering approaches. Synthetic Hile: Biological Clock, Cenetic Algorithms, 9 Hrs Frinciples of bioinspired materials. Biological Clock, Cenetic Biological Biophymers, Biophymers, Bio-steel, Bio-composities, multi-functional biological materials. Ref Termal Properties. Antireflection and photo-thermal Lessons from Nature:Bioinspired Materials and mechanism: Firefly-Bioluminescence, Cockleburs - Velero, Lotus leaf - Biomedical Inspiration-Concept and applications: Coral - Calera cement, Forest floor / Ecosystem functioning less, Morpho butterfly. Structural color, Namb beetle. WIT - IV 8 Hre Biomedical Inspiration-Concept and applications: Cigan system - Circulatory- artificial biod, artificial heart, pacemaker. Respiratory. Artificial Ingus. Structure - Struc	Oliverary,	Dongan	SEMESTED. II	
Botomes Enditise Figure 2 Contract 1, 1-7; 3-0.0 Elective D (Globat Elective) SEE Durations : 1 100 Hours : [42L Elective D (Globat Elective) SEE Durations : 1 3 Hr Faculty Coordinator: Dr Nagashree Rao and Dr Ashwani Sharma SEE Durations : 1 3 Hr Introduction to Bio-inspired Engineering: Macromolecules, Stme cells; types and applications. Synthetic Biology: Bottom-up' NHT - I 9 Hrs Difference Composites, multi-functional biological materials. Steff-assembly, hierarchy and volution. Biopolymers, Bio-etcl, Bio-composites, multi-functional biological materials. Thermal Properties. AntriceCiction and photo-thermal biomaterials, Microfluidicis in biology, Invasive and non-invasive thermal detection inspired by ski 9 Hrs Electeaning materials, Cecko - Gecko tape, Whale fins. "Turbine blades, Box Fish / Bone. Bionic car, Shark skin - Friction educing swim suits, Kingfisher beak - Bullet train, Coral - Calera cement, Forest Hoor / Ecosystem functioning - Flooring cites, Morph butterly. "Structural color, Namb Skin - Striction educing swim suits, Strafficial long and skin. Artificial bioport and replacement of human organs artificial lines. Visual prosthesis - artificial biolog, Horizon educing structurel color, Namb Skin - Friction and photo-artificial lines. Exerctory - Artificial lines. Visual prosthesis - artificial biolog, Horizon educing structurel color, Namb Skin - Friction educing structurel. Elescherical Instructurel color, Namb beetle- Water collecting, Termiti mound passive cooling, Birds/Insecoting structurel color, Nam	Course Code	· 22PT2D01T	SEMESTER, II	. 100
Chemis 1:-17 [] 100 Hours [] 42L Becetive D (Global Elective) [] 100 Faculty Coordinator: [Dr Nagashree Rao and Dr Ashwani Sharma UNT - I [] 8 Hrs Introduction to Bio-inspired Engineering: Macromolecules, Stem cells; types and applications. Synthetic Biology; Bottom-up' and top-down engineering approaches. Synthetic / artificial life. Biological Clock, Genetic Algorithms. 9 Hrs Biomaterials, Microfluidies in biologi, Invasive and non-invasive thermal detection inspired and photo-thermal biomaterials. Microfluidies in biology, Invasive and non-invasive thermal detection inspired by ski 9 Hrs Desons from Nature:Bioinspired Materials and mechanism: Firely-Bioluminescence, Cockleburs -Velcro, Lorus leaf-celucing syma suits, Kingfasher beak - Bullet train, Coru - Calera cement, Forest floor / Ecosystem functioning - Flooring ciles, Morpho butterfly- Structural color, Namib beede. Water collecting, Termite mound passive cooling, Birds/Inaects- Biomedical Inspiration-Concept and applications: UNT - V 8 Hrs Biomimetics: Inventions in nature for Human Innovation: Photosynthesis and Photovoltaic cells, Biomic/Artificial Leaf. 8 Hrs Bio-ink and 3D-Bioprinting, Cellular automata. Biosensors: Artificial Biogue and nose. Biomimetic cholation. Insect foot adaptations for adhesion, Thermal insulation and storage materials. Bees and Honeycomb Structures. 8 Hrs Bio-ink and 3D-Bioprinting, Cellular automata. Biosensors: Artificial Biogue and nose. Biomine/Artificial Intell	Credite L T D	· 22B12D011	BIOINSPIRED ENGINEERING	100
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Patchay Coordinator: [DF Registrice Ruo and DF Asimus Statmin UNT - I [8 Hrs Introduction to Bio-inspired Engineering: Macromolecules, Stem cells; types and applications. Synthetic Biology, Bottom-up' and 'top-down' engineering approaches. Synthetic/ articlal IdE. Biological Clock, Genetic Algorithms. 9 Hrs Principles of bioinspired materials: Biological materials, Self-assembly, hierarchy and evolution. Biopolymers, Bio-steel, Bio-composites, multi-functional biological materials, Self-assembly, hierarchy and evolution. Biopolymers, Bio-steel, Bio-composites, multi-functional biological materials, Bicrefite Bioluminescence, Cockleburs -Velcro, Lotus leaf - Self-cleaning materials, Gecko - Gecko tape, Whale fins - Turbine blades, Box Fish / Bone - Bionic car, Shark skin - Friction reducing swim suits, Kingfisher beak - Bullet train, Coral - Calera cement, Forest Boor / Ecosystem functioning - Flooring likes, Morpho buttrifty - Structural color, Namib beetle- Watter collecting, Termite mound passive cooling, Birdy/Insects- lights/ aerodynamics, Mosquite inspired micro needle. B Hrs Biomedical Inspiration-Concept and applications: Organ system - Circulatory- artificial blood, artificial heart, pacemaker. Respiratory - artificial lungs. Exerctory- Artificial klong and skin. Artificial Support and replacement of human organs: artificial liver and panereas. Total joint replacements - artificial tongue and Hose. Biomimetic echolation. Insect foot adaptations for adhesion. Thermal insulation and storage materials. Bees and Honeycomb Structure. Artificial Intelligence, Neural Networking and bio-robotics. Course Outcomes: After agline trungs this course the student will be able to: COI : Duby the basic principles of design	nouis	· 42L	Dr Narsshras Das and Dr Ashmari Sharma	. 5 пі
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UNT - V 8 Hrs Biominetics: Inventions in nature for Human Innovation: Photosynthesis and Photovoltaic cells, Bionic/Artificial leaf. Bio-ink and 3D-Bioprinting. Cellular automata. Biosensors: Artificial tongue and nose. Biomimetic echolation. Insect foot adaptations for adhesion. Thermal insulation and storage materials. Bees and Honeycomb Structure. Artificial Intelligence, Neural Networking and bio-robotics. Course Outcomes: After going through this course the student will be able to: CO1 : Elucidate the concepts and phenomenon of natural processes CO2 : Apply the basic principles for design and development of bioinspired structures CO3 : Analyse and append the concept of bio-mimetics for diverse applications CO4 : Designing technical solutions by utilization of bio-inspiration modules. Reference Books: 1. D. Floreano and C. Mattiussi, Bio-Inspired Artificial Intelligence: Theories, Methods and Technologies, 1st edition, John Wiley, 2018, ISBN: 978-1-193-903362 2. Guang Yang, Lin Xiao, and Lallepak Lamboni. Bioinspired Materials Science and Engineering. 1st edition, Cambridge University Press, 2014, ISBN 978-1-107-01045. 4. Tao Deng. Bioinspired Engineering of Thermal Materials, 1st edition, Wiley-VCH Press, 2018. ISBN: 978-3-527-33834-4. Steeme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. <	artificial liver	and pancreas. To	otal joint replacements- artificial limbs. Visual prosthesis -artificial eve/ bionic eve.	
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Bio-ink and 3D-Bioprinting. Cellular automata. Biosensors: Artificial tongue and nose. Biomimetic echolation. Insect foot adaptations for adhesion. Thermal insulation and storage materials. Bees and Honeycomb Structure. Artificial Intelligence, Neural Networking and bio-robotics. Course Outcomes: After going through this course the student will be able to: CO1 : Elucidate the concepts and phenomenon of natural processes CO2 : Apply the basic principles for design and development of bioinspired structures CO3 : Analyse and append the concept of bio-mimetics for diverse applications CO4 : Designing technical solutions by utilization of bio-inspiration modules. Reference Books: 1. D. Floreano and C. Mattiussi, Bio-Inspired Artificial Intelligence: Theories, Methods and Technologies, 1st edition, MIT Press, 2008, ISBN: 978-0262062718 2. Guang Yang, Lin Xiao, and Lallepak Lamboni. Bioinspired Materials Science and Engineering. 1st edition, John Wiley, 2018, ISBN: 978-1-119-3903362 3. M.A. Meyers and P.Y. Chen. Biological Materials, Bioinspired Materials, and Biomaterials, 1st edition, Cambridge University Press, 2014, ISBN 978-1-107-01045. 4. Tao Deng. Bioinspired Engineering of Thermal Materials, 1st editon, Wiley-VCH Press, 2018. ISBN: 978-3-527-33834-4. Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. FESTES: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program s	Biomimetics:	Inventions in nat	ture for Human Innovation: Photosynthesis and Photovoltaic cells Bionic/Artificial le	af
adaptations for adhesion. Thermal insulation and storage materials. Bees and Honeycomb Structure. Artificial Intelligence, Neural Networking and bio-robotics. Course Outcomes: After going through this course the student will be able to: CO11: Ebucidate the concepts and phenomenon of natural processes CO21: Apply the basic principles for design and development of bioinspired structures CO31: Analyse and append the concept of bio-immetics for diverse applications CO41: Designing technical solutions by utilization of bio-inspiration modules. Reference Books: 1. D. Floreano and C. Mattitusi, Bio-Inspired Artificial Intelligence: Theories, Methods and Technologies, 1st edition, MIT Press, 2008, ISBN: 9780-20620f2718 2. Guang Yang, Lin Xiao, and Lallepak Lamboni. Bioinspired Materials Science and Engineering. 1st edition, John Wiley, 2018, ISBN: 978-1-119-3903362 3. M.A. Meyers and P.Y. Chen. Biological Materials, Bioinspired Materials, and Biomaterials, 1st edition, Cambridge University Press, 2014, ISBN 978-1-107-01045. 4. Tao Deng. Bioinspired Engineering of Thermal Materials, 1st editon, Wiley-VCH Press, 2018. ISBN: 978-3-527-33834-4. Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demostration (SE) for 100 marks. The question paper w	Bio-ink and 3	D-Bioprinting, C	ellular automata, Biosensors: Artificial tongue and nose. Biomimetic echolation. Inse	ct foot
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 I. D. Floreano and C. Mattiussi, Bio-Inspired Artificial Intelligence: Theories, Methods and Technologies, 1st edition, MIT Press, 2008, ISBN: 9780262062718 2. Guang Yang, Lin Xiao, and Lallepak Lamboni. Bioinspired Materials Science and Engineering. 1st edition, John Wiley, 2018, ISBN: 978-1-119-3903362 3. M.A. Meyers and P.Y. Chen. Biological Materials, Bioinspired Materials, and Biomaterials, 1st edition, Cambridge University Press, 2014, ISBN 978-1-107-01045. 4. Tao Deng. Bioinspired Engineering of Thermal Materials, 1st edition, Wiley-VCH Press, 2018. ISBN: 978-3-527-33834-4. Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (SEE) for 100 marks. The question paper will have FIVE questions with internal have to answer one full question from each unit house for each unit fach question will carry 20 marks. 	C04		mical solutions by utilization of bio-inspiration modules.	
 1. D. Floreano and C. Mattuussi, Bio-Inspired Artificial Intelligence: Theories, Methods and Technologies, 1st edition, MI1 Press, 2008, ISBN: 9780262062718 2. Guang Yang, Lin Xiao, and Lallepak Lamboni. Bioinspired Materials Science and Engineering. 1st edition, John Wiley, 2018, ISBN: 978-1-119-3903362 3. M.A. Meyers and P.Y. Chen. Biological Materials, Bioinspired Materials, and Biomaterials, 1st edition, Cambridge University Press, 2014, ISBN 978-1-107-01045. 4. Tao Deng. Bioinspired Engineering of Thermal Materials, 1st edition, Wiley-VCH Press, 2018. ISBN: 978-3-527-33834-4. Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (SEE) for 100 marks. The question paper will have FIVE questions with internal heir group action from each unit. Each unit Each question will carry 20 marks. Student will have to answer one full question from each unit.		OOKS:		
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 Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. 	4 Tao Dong	Disingningd Engin	976-1-107-01045.	2024 4
 Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. 	4. Tao Delig. I		incerning of finerinal Materials, 1st eution, whey-verif fress, 2018. ISBN: 978-3-327-3.	3034-4.
 Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. 				
 QUIZZES: QUIZZES will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit. 	Scheme of Co		nal Evaluation (CIE): $20 + 40 + 40 = 100$	1 4 1 6
 TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. 	QUIZZES: Qu	izzes will be cond	ducted in online/online mode. Two quizzes will be conducted & Each Quiz will be eva	luated for
 Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. 	TO MAIKS. The	t sum of two quiz	zzes will be tille Fillal Quiz Illaiks.	avonomu
will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit	Levels, Demor	nhering Underst	tanding Applying Applyzing Evaluating and Creating). Two tests will be conducted	Fach test
 EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit 	will be evolue	ted for 50 Marizo	adding up to 100 marks. Final test marks will be reduced to 40 Marks.	Bach itsi
Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit			, adding up to 100 marks. Final test marks will be reduced to 40 Marks. Students will be evaluated for their creativity and practical implementation of the proj	hlem
seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.	Case study-be	ased teaching les	urning and Program specific requirements (15) Video based	510111.
Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.	seminar/nres	entation /demons	stration (25) adding unto 40 marks	
choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit	Scheme of Se	emester End Eve	amination (SEE) for 100 marks. The question naner will have FIVE questions with it	nternal
SHOLO HOM OUOH WIN, LAUH GAUGUOH WIN OUTY ZO MAINO, DIQUOH, WILHAW, D'ANOWLI UNU THE HUUGUUH FOUL CAULTHIT.	choice from e	ach unit. Each ou	uestion will carry 20 marks. Student will have to answer one full question from each	unit.

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RUBRIC for CIE				RUBRIC for SEE				
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	20	Each u	each unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit (1 to 5).				
2	Tests - T1 & T2	40]					
3 Experiential Learning - EL1 & EL2 40		40	1&2	Unit-1: Question 1 or 2	20			
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20			
			5&6	Unit-3: Question 5 or 6	20			
			7 & 8	Unit-4: Question 7 or 8	20			
			9 & 10	Unit-5: Question 9 or 10	20			
				Total Marks	100			

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RV	RV College o	of Engineering
STILLION.	Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi	Approved by AICTE. New Delhi

University,	Belagavi					
		SEMESTER: II				
Course Code	: 22BT2D02T	HEALTH INFORMATION	(CIE Marks	:	100
Credits L-T-P	: 3-0-0	HEALTH INFORMATICS	5	SEE Marks	:	100
Hours	: 42L	Elective D (Global Elective)	5	SEE Durations	:	3 Hrs
Facı	alty Coordinator:	Dr A H Manjunatha Reddy				
		UNIT - I				8 Hrs
Overview of H	ealth Informatics	: Introduction, Key players in HI, organizations involved, bar	rriers, pro	ograms, organiz	zat	ions
and career, H	Resoruces					
		UNIT - II				8 Hrs
Healthcare da challenges, ro	ta, information a le of informatics :	nd knowledge: Data types, data conversion, clinical data war n analytics, future trends	rehouse,	data analytics,		
		UNIT - III				8 Hrs
Electronic hea implementing	llth records: Intro EHR	duction, scope for the e health records, challenges, example	s, logical	l steps to select:	in	g and
		UNIT - IV				9 Hrs
Data standard	ls and medical co	ding: Introduction, medical content standards, termonology	standar	ds, transport st	ar	ıdards,
medical codin	g and reimbursei	nent, future trends,				
		UNIT - V				9 Hrs
Health Inform	ation privacy and	security: Introduction, basic security principles, authentica	ation and	l identity manag	gei	ment,
data security	in the cloud and	client/server management				
Course Outco	mes:					
After going thi	rough this course	the student will be able to:				
<u> </u>	Understand th	e basic principles of Health informatics				
C02	Data capture t	o data transformation and to analysis				
003	Creation of E	health records, identify the challenges				
C04	: Improvise the	significant factors as per the spatio-temporal requirements				
Reference Bo	oks:		1.1.0			
1. Robert E. H	loyt Ann K. Yoshi	hashi, Health Informatics, Practical guide for Healthcare and	d Informa	ation Technolog	у	
Professionals,	Un edition, into	Induce Education, 2014, ISBN: 978-0-9887529-2-4	- 2005 I	CDN. 1 05022 0	20	6 1
2. Katiliyi J.	Tailliall Marioli	. Ball, Health Informatics, Springer Series edition, Springer,	$\frac{,2005,13}{0700000000000000000000000000000000000$	5DN: 1-65255-0	2	5-1
3. William K F	inon Modical inf	armatics, a Plactical guide, 8th edition. 2022, ISBN 978-1-36	$\frac{57-00470}{12 \cdot 0}$	0-2 79 2026E0009		
4. Pentu Niem	men. meuicai mi	ormatics and data analysis 1st edition, MDP1 AG, 2021, 15D.	N-13.9	78-3030300980	<u> </u>	
Sohema of Ca	ntinuova Intar	$a_1 = 100$				
OIIIZZES: Out	izzes will be cond	used in online offline mode. Two duizzes will be conducted	& Each	Ouiz will be eve	11 [.]	lated for
10 Marks. The	e sum of two quiz	zes will be the Final Quiz marks.	the Dati		uu	
10 Marks. The	e sum of two quiz	zes will be the Final Quiz marks.				

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based

seminar/presentation/demonstration (25) adding upto 40 marks.

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RUBRIC for CIE				RUBRIC for SEE				
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	20	Each u	each unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit (1 to 5).				
2	Tests - T1 & T2	40]					
3 Experiential Learning - EL1 & EL2 40		40	1&2	Unit-1: Question 1 or 2	20			
	Total Marks	100	38:4	Unit-2: Question 3 or 4	20			
			5&6	Unit-3: Question 5 or 6	20			
			7 & 8	Unit-4: Question 7 or 8	20			
			9 & 10	Unit-5: Question 9 or 10	20			
				Total Marks	100			

R		cational Institutions *	Go, ci	hange ti	he world
-an	Autonomo Institution to Visvesv Technolog University,	us Approved by AICTE. Affiliated New Delhi araya Ical Belagavi			
			SEMESTER: II		
Cours	se Code	: 22CS2D03T	CIE Mari	ss دs	100
Credi	ts L-T-P	: 3-0-0	SEE Mar	ks :	100
Hours	3	: 42L	Elective D (Global Elective) SEE Dur	ations :	3 Hrs
	Faci	ulty Coordinator:	Dr. Azra Nasreen and Dr. Badarinath K		
			UNIT - I		9 Hrs
Overv Proce Statis	riew of B ss and o stical me	usiness analytics rganization, com thods, Review of	s, Scope of Business analytics, Business Analytics Process, Relationship of Bu petitive advantages of Business Analytics. Statistical Tools: Statistical Notatio probability distribution and data modelling.	siness A n, Descr	Analytics riptive
			UNIT - II		9 Hrs
Trend Resou Explc	liness ar urces, Bu oring Dat	nd Regression An asiness Analytics a, Business Anal	alysis Modelling Relationships and Trends in Data, simple Linear Regression. Personnel, Data and models for Business analytics, problem solving, Visualiz lytics Technology.	Importa zing and	int
			UNIT - III		8 Hrs
Orgar Outso Analy	nization ourcing, tics, Pre	Structures of Bus Ensuring Data Q dictive Analytics,	siness analytics Team management, Management Issues, Designing Informati quality, Measuring contribution of Business analytics, Managing Changes. Des , Predicative Modelling, Predictive analytics analysis.	on Polic scriptive	y,
			UNIT - IV		8 Hrs
Forec Static Regre	asting To mary Tir ssion Fo	echniques Qualit ne Series, Foreca recasting with C	ative and Judgmental Forecasting, Statistical Forecasting Models, Forecasting sting Models for Time Series with a Linear Trend, Forecasting Time Series wit asual Variables, Selecting Appropriate Forecasting Models.	g Models h Seaso:	; for nality,
			UNIT - V		8 Hrs
Decis	ion Anal	ysis Formulating	Decision Problems, Decision Strategies with and without Outcome, Probabili	ties, Dec	cision
Trees	, The Va	lue of Information	n, Utility and Decision Making.		
Cours	se Outco	omes:			
Aiter	going t	Apply the con	rse the student will be able to:		
<u> </u>	<u> </u>	· Apply the con	l and active decision problems in different actings		
<u> </u>	002	: Analyse, mode	el and solve decision problems in different settings		
	<u> </u>	: Interpret resu	its/solutions and identify appropriate courses of action for a given business s	cenario	
	C04	: Demonstrate s	skills like investigation, effective communication, working in team/individual	and iolic	owing
			tes by implementing solutions to decision making problems		
Defet	ones Pe	- 1			
1 Ru	siness a	nalytics Principle	es Concents and Applications FT Press Analytics Marc I Schniederians Da		
Schni 2. Th	iederjans e Value o	s, Christopher M. of Business Analy	Starkey, 1st Edition, 2014, ISBN-13: 978-0133989403, ISBN-10: 013398940 ytics: Identifying the Path to Profitability, Evan Stubs , John Wiley & Sons,	2)2	
DOI	:10.1002	2/978111898388	1,1st Edition 2014, ISBN:978111898388		
3. Bu 10: 0	siness A 3219978	nalytics, James l 24	Evans, Pearsons Education 2nd Edition, ISBN-13: 978-0321997821 ISBN-		
4. Pre	edictive E	Business Analytic	es Forward Looking Capabilities to Improve Business, Gary Cokins and		
Lawre	ence Mai	sel, Wiley; 1st Ec	lition, 2013, ISBN: 978-1-118-17556-9 .		
Scher QUIZ 10 Ma TEST Levels will b EXPE	me of Co ZES: Qu arks. Tho S: Stude s: Remer e evalua CRIENTI	ontinuous Intern izzes will be cond e sum of two quiz ents will be evalu nbering, Underst ted for 50 Marks AL LEARNING: S	nal Evaluation (CIE): 20 + 40 + 40 = 100 ducted in online/offline mode. Two quizzes will be conducted & Each Quiz will zzes will be the Final Quiz marks. ated in test, descriptive questions with different complexity levels (Revised Bld anding, Applying, Analyzing, Evaluating, and Creating). Two tests will be cond , adding upto 100 marks. Final test marks will be reduced to 40 Marks. Students will be evaluated for their creativity and practical implementation of	be eval bom's Ta lucted. I the prot	uated for xonomy Each test blem.

Case study-based teaching learning and Program specific requirements (15), Video based

seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

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RUBRIC for CIE				RUBRIC for SEE				
SLNo	Content	Marks	Q. No	Contents	Marks			
1	Quizzes - Q1 & Q2	20	Each u	ach unit consists of TWO questions of 20 Marks each. Answer FIVE full questions selecting ONE from each unit (1 to 5).				
2	Tests - T1 & T2	40						
3 Experiential Learning - EL1 & EL2 4		40	1&2	Unit-1: Question 1 or 2	20			
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20			
			5&6	Unit-3: Question 5 or 6	20			
			7 & 8	Unit-4: Question 7 or 8	20			
			9 & 10	Unit-5: Question 9 or 10	20			
				Total Marks	100			

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Autonomous Approved by AICTE.			
to Visvesvaraya Technological			
University, Belagavi	SEMESTER: II		
Course Code : 22CV2D04T		CIE Marks	: 100
Credits L-T-P : 3-0-0	INDUSTRIAL AND OCCUPATIONAL HEALTH AND SAFETY	SEE Marks	: 100
Hours : 42L	Elective D (Global Elective)	SEE Durations	: 3 Hrs
Faculty Coordinato	r: Dr.V.AnanthaRam		1.1.0
	UNIT - I		08Hrs
Industrial safety: Accident, c	auses, types, results and control, mechanical and electrical hazards.	types, causes an	d
preventive steps/procedure, layouts, light, cleanliness, fir	describe salient points of factories act 1948 for health and safety, wa e, guarding, pressure vessels, etc, Safety color codes. Fire prevention	sh rooms, drinkin and fire fighting	ng water ,
equipment and methods.	тита т		0011=2
Occupational health and acf	UNIT - II	hotmoon montron	U9HIS
Health hazards, workplace, e and promotion Activities in t unions, Communities, Occup Biological hazards, Physical measurement techniques, In controls, Work practice control	economy and sustainable development, Work as a factor in health pro- be workplace: National governments, Management, Workers, Worker- pational health professionals. Potential health hazards: Air contamina- hazards, Ergonomic hazards, Psychosocial factors, Evaluation of hea- terpretation of findings recommended exposure limits. Controlling ha- rols, Administrative controls. Occupational diseases: Definition, Char	omotion. Health p s' representatives ants, Chemical ha lth hazards: Expo azards: Engineerin cacteristics of occ	and azards, osure ng upational
diseases, Prevention of occup	pational diseases.		
	UNIT - III		09Hrs
and Metallic Compounds, Pa Substitutes, Allergens, Carci Exposure Limits. Physical Ag Teratogenicity. Ergonomic St Display Terminals.	rticulates and Fibers, Alkalies and Oxidizers, General Manufacturing nogens, Mutagens, Reproductive Hazards, Sensitizers and Teratogen gents, Noise and Vibration, Temperature and Pressure, Carcinogenici resses: Stress-Related Health Incidents, Eyestrain, Repetitive Motion	; Materials, Chem s, Recommended ty, Mutagenicity a ., Lower Back Pair	iical Chemical and n, Video
	UNIT - IV		08 Hrs
Wear and Corrosion and the	r prevention: Wear- types, causes, effects, wear reduction methods, l	ubricants-types a	and
applications, Lubrication me	thods, general sketch, working and applications, i. Screw down greas	se cup, ii. Pressur	e grease
gun, iii. Splash lubrication, i	v. Gravity lubrication, v. Wick feed lubrication vi. Side feed lubrication	n, vii. Ring lubric	cation,
Definition, principle and fact	ors affecting the corrosion. Types of corrosion, corrosion prevention 1	nethods.	
	UNIT - V		08 Hrs
Periodic and preventive main	tenance: Periodic inspection-concept and need, degreasing, cleaning	and repairing scl	hemes,
overhauling of mechanical co	omponents, over hauling of electrical motor, common troubles and re	medies of electric	: motor,
repair complexities and its u	se, definition, need, steps and advantages of preventive maintenance	. Steps/procedur	e ior
Program and schedule of pro	ventive maintenance of mechanical and electrical equipment, educat	a generating (DG)	, sets,
maintenance Repair cycle of	ventive maintenance of mechanical and electrical equipment, advant	ages of preventive	e
maintenance. Repair cycle co			
Course Outcomes:			
After going through this co	urse the student will be able to:		
CO1 : Explain the	Industrial and Occupational health and safety and its importance.		
CO2 : Demonstrate	the exposure of different materials, occupational environment to wh	hich the employee	can
expose in th	e industries.	lien the employee	/ cull
CO3 : Characterize	the different type materials, with respect to safety and health hazard	ds of it.	
CO4 : Analyze the	different processes with regards to safety and health and the mainter	nance required in	the
industries to	avoid accidents.		
Reference Books:			
1.Maintenance Engineering I	Handbook, Higgins & Morrow, SBN 10: 0070432015 / ISBN 13: 9780	070432017, Pub	lished by
McGraw-Hill Education. Da l	Information Services.		-
2. H. P. Garg, Maintenance H	Engineering Principles, Practices & Management, 2009,S. Chand and	Company, New I	Jelhi,
ISBN:9788121926447			
3.Fundamental Principles of	Occupational Health and Safety, Benjamin O. ALLI, Second edition,2	008 Internationa	l Labour
Ottice – Geneva: ILO, ISBN 9	78-92-2-120454-1		
4.Foundation Engineering Ha	andbook, 2008, Winterkorn, Hans, Chapman & Hall London. ISBN:8	788111925428.	



Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based

seminar/presentation/demonstration (25) adding upto 40 marks.

	RUBRIC for CIE	1	RUBRIC for SEE				
SLNo	Content	Marks	Q. No	Contents	Marks		
1	Quizzes - Q1 & Q2	20	Each u	nit consists of TWO questions of 20 Marks each. Answ	ver FIVE		
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20		
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	20		
			7&8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		

Go, change the world V Educational Institutions RV College of Engineering Approved by AICTE New Delhi SEMESTER: II 22CV2D05T Course Code CIE Marks 100 INTELLIGENT TRANSPORT SYSTEMS Credits L-T-P : 3-0-0 SEE Marks : 100 Elective D (Global Elective) Hours : 42L SEE Durations : 3 Hrs Faculty Coordinator: Dr.Sunil S UNIT - I 8 Hrs Introduction: -Historical Background, Definition, Future prospectus, ITS training and educational needs. Fundamentals of Traffic Flow and Control- Traffic flow elements, Traffic flow models, Shock waves in Traffic streams, Traffic signalization and control principles, Ramp metering, Traffic simulation UNIT - II 9 Hrs ITS User services-User services bundles, Travel and Traffic management, Public Transportation Operations, Electronic Payment, Commercial Vehicles Operations, Emergency Management, Advanced Vehicle Control and safety systems, Information Management, Maintenance and construction Management. ITS Architecture-Regional and Project ITS Architecture, Need of ITS architecture, concept of Operations, National ITS Architecture, Architecture development tool UNIT - III 9 Hrs Technology Building Blocks for ITS-Introduction, Data acquisition, Communication Tools, Data Analysis, and Traveller Information. Various detection, identification and collection methods for ITS. ITS Applications and their benefits-Freeway and incident management systems, Advanced arterial traffic control systems, Advanced Public Transportation Systems, Multimodal Traveller Information systems UNIT - IV 8 Hrs ITS Planning-Transportation planning and ITS, Planning and the National ITS Architecture, Planning for ITS, Integrating ITS into Transportation Planning, relevant case studies. ITS Standards-Standard development process, National ITS architecture and standards, ITS standards application areas, National Transportation Communications for ITS Protocol, Standards testing UNIT - V 8 Hrs ITS Evaluation - Project selection at the planning level, Deployment Tracking, Impact Assessment, Benefits by ITS components, Evaluation Guidelines, Challenges and Opportunities. ITS for Law Enforcement: Introduction, Enhance and support the enforcement traffic rules and regulations, ITS Funding options and ITS case studies **Course Outcomes:** After going through this course the student will be able to: CO1 : Identify and apply ITS applications at different levels CO2|: Illustrate ITS architecture for planning process CO3 : Examine the significance of ITS for various levels CO4 : Compose the importance of ITS in implimentions **Reference Books:** 1. Pradip Kumar Sarkar and Amit Kumar Jain, "Intelligent Transport Systems", PHI Learning Private Limited, Delhi, 2018, ISBN-9789387472068 2. Choudury M A and Sadek A, "Fundamentals of Intelligent Transportation Systems Planning" Artech House publishers (31 March 2003); ISBN-10: 1580531601 3. Bob Williams, "Intelligent transportation systems standards", Artech House, London, 2008. ISBN-13: 978-1-59693-291-3 4. Asier Perallos, Unai Hernandez-Jayo, Enrique Onieva, Ignacio Julio García Zuazola "Intelligent Transport Systems: Technologies and Applications" Wiley Publishing ©2015, ISBN:1118894782 9781118894781 Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks. **TESTS:** Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. **EXPERIENTIAL LEARNING:** Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

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	RUBRIC for CIE		RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answer FIVE		
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).		
3	Experiential Learning - EL1 & EL2	40	182	Unit-1: Question 1 or 2	20	
	Total Marks	100	38:4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			78.8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	

RV Educ RV CC Autonmo Instituion. b Visuese University	satio lle us Affilia araya cal Bela	aponal Institutions [©] ige of Engineering [®] ted Approved by AICTE. New Definition gavi	
			SEMESTE
Course Code	:	22EC2D06T	FI ECTRONIC S
Credits L-T-P	:	3-0-0	ELECTRONIC ST
Hours	:	42L	Elective D (Glo
Facı	alt	y Coordinator:	Prof. Ravishankar Holla
			UNIT - I

		SEMESTER: II			
Course Code	: 22EC2D06T	ELECTRONIC SYSTEM DESIGN	CIE Marks	:	100
Credits L-T-P	: 3-0-0	ELECTRONIC SISTEM DESIGN	SEE Marks	:	100
Hours	: 42L	Elective D (Global Elective)	SEE Durations	:	3 Hrs
Facu	alty Coordinator:	Prof. Ravishankar Holla			
		UNIT - I			9 Hrs
Design Proces	s & its Fundame	ntals: Life Cycle of Electronic Products, Design and Development Pr	ocess, Guidance	fc	or
Product Plann	ing, Design and	Development, Technical Drawings, Circuit Diagrams, Computer-Aid	ed Design (CAD)		
		UNIT - II			9 Hrs
System Archit	ecture and Prote	ction Requirements: Introduction - Terminology, Functions and			
Structures, Sy	stems Design A	chitecture, Electronic System Levels, System Protection			
Experiential L	earning: (4 quizz	es on the below mentioned topics other than CIE) Reliability Analysi	s: Introduction,		
Calculation Pr	inciples, Expone	ential Distribution, Failure of Electronic, Components, Failure of Ele	ctronic Systems,	,	
Reliability Ana	lysis of Electron	ic Systems, Recommendations for Improving Reliability of Electronic	Systems		0.77
<u>771</u>		UNIT - III 1iana Inter frontina - Transford - Transford - III		D	8 Hrs
Inermal Mana	Mothoda to Inco	Sing: Introduction - Terminology, Temperatures and Power Dissipation	on, Calculation	PT:	incipies,
Thermal Mana	gement of Flect	conic Systems, Cooling systems, liquid, air and non cooling systems, Re	commentiations	IC	11
	igement of Election	INIT - IV			8 Hrs
Electromagnet	tic Compatibility	(EMC):			0 1115
Introduction.	Coupling Betwee	n System Components, Grounding Electronic Systems, Shielding fro	om Fields, Electr	05	tatic
Discharge (ES	D), Recommenda	ations for EMC-compliant Systems Design			latio
0 (UNIT - V			8 Hrs
Recycling Requ	uirements and D	esign for Environmental Compliance: Introduction - Motivation and	the Circular Eco	on	omy,
Manufacture,	Use, and Dispos	al of Electronic Systems in the Circular Economy, Product Recycling	g in the Disposal	Ρ	rocess,
Material Recyc	cling in the Disp	osal Process, Design and Development for Disassembly, Material Su	itability in Desig	n a	and
Development,	Recommendatio	ns for Environmentally Compliant Systems			
Course Outco	mes:				
After going th	irough this cou	rse the student will be able to:			
CO1	: Understand th	ne fundamentals of various parameters of System Design			
CO2	: Implement us	ing suitable simulation tools, the basic concepts			
CO3	: Analyze the va	arious concept implementations, standards and Compliances			
CO4	Engage in self	-study through assignments, simulations and projects			
Reference Bo	oks:				
1. Fundament	als of Electronic	Systems Design, Jens Lienig, Hans Brümmer2017, Springer Interna	ational Publishin	ıg,	ISBN
978-3-319-55	839-4, eBook ISI	BN 978-3-319-55840-0, DOI 10.1007/978-3-319-55840-0			
2. "Embedded	System Design"	, Marwedel, Peter, Springer Nature, 10.1007/978-3-030-60910-8			
3. "Electromag	gnetic Compatibi	lity Engineering", Henry W. Ott, WILEY Publication, ISBN: 978-0-47	0-18930-6		
4. Charles A. I	Harper, "Handbo	ok of Electronic Systems Design", McGraw-Hill Inc., ISBN: 978-007()266834		
Scheme of Co	ontinuous Inter	nal Evaluation (CIE): $20 + 40 + 40 = 100$	~		
QUIZZES: Qui	zzes will be cond	fucted in online/offline mode. Two quizzes will be conducted & Each	i Quiz will be eva	ılυ	lated for
10 Marks. The	sum of two qui	zzes will be the Final Quiz marks.	orrigod Dloom's T	°1	
IEDID: Diude	nts will be evalu	and in test, descriptive questions with different complexity levels (R	tristu DIOOIII S I	.a2 F	ach test
will be evaluat	red for 50 Marks	adding unto 100 marks Final test marks will be reduced to 40 Mar	nks	. Ľ	acii test
EXPERIENTIA	AL LEARNING: S	Students will be evaluated for their creativity and practical implement	ntation of the pro	b	em.
Case study-ba	used teaching lea	rning and Program specific requirements (15), Video based	pro		
aominan/nroa	ontotion /doman	stration (05) adding unto 40 martia			

seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

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	RUBRIC for CIE			RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks		
1	Quizzes - Q1 & Q2	20	Each u	ach unit consists of TWO questions of 20 Marks each. Answ			
2	Tests - T1 & T2	40]	full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20		
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	Merks er FIVE 20 20 20 20 20 20 20 100		
			7 & 8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		



Technologi University,	ical Belagavi		
		SEMESTER: II	
Course Code	· 22FC2D07T		CIF Mortro 100
Course Coue	· 22EC2D071	EVOLUTION OF WIRELESS TECHNOLOGIES	SEE Mortes 100
Cleans L-I-P	. 3-0-0	Elective D (Clobal Elective)	SEE Marks . 100
Hours	: 42L	Elective D (Global Elective)	SEE Durations : 3 Hrs
Faci	alty Coordinator:	Dr. Mahesh A	
		UNIT - I	9 Hrs
Introduction t	o cellular system	s: Overview of Cellular Systems and evolution 2G/3G/4G/5G, Cellul	lar Concepts – Frequency
reuse, Co			
channel and A	Adjacent channel	Interference, C/I, Handoff, Blocking, Erlang Capacity, Bluetooth, Wi	Fi, WWAN and PAN.
		UNIT - II	9 Hrs
Fundamental	s of wireless com	munication: Wireless Channel, Wireless propagation, Link budget, Fr	ree-space path loss, Noise
figure of receiv	ver, Multipath fac	ding, Shadowing, Fading margin, Shadowing margin, Wireless Chanr	iel Capacity, OFDM
and LTE, Larg	ge Scale Propagat	ion effects and Channel Models	
		UNIT - III	8 Hrs
Fundamentals	s of 5G architectu	are: Difference between 4G and 5G, 5G Architecture, Planning of 5G	Network, Quality of
Service, Radio)		
Network, Requ	uirements, Secur	ity, SIM in 5G Era, Specifications, Standardization, Terminal States	
		UNIT - IV	8 Hrs
mmWave and	Visible Light Cor	nmunications: Back ground and concept of mmWave Communication	ns, Frequency bands,
propagation c	haracteristics, ch	annel models, applications and challenges in 5G	
		UNIT - V	8 Hrs
Future Genera	ations: Future Ge	enerations(where is the 6G?), Health Considerations, Identifiers, Inter	rfaces, ,Key Derivation,
Location Base	ed Services, Mass	ive Internet of Things, Measurements, Network Functions Virtualizat	zion,
Network Slicir	ng, Open Source,	, User Equipment, Vehicle-to-Vehicle communications (V2V), Virtual	Reality
(VR/AR/XR).	Case study- Bha	rath Stack	
Course Outco	omes:		
After going the	hrough this cou	rse the student will be able to:	
CO1	: Demonstrate t	heir understanding on functioning of wireless communication system	n and evolution of
	different wirel	ess communication systems and standards	
CO2	: Compare diffe	rent technologies used for wireless communication systems.	
CO3	: Demonstrate a	an ability explain recent techniques for Wireless Communication syst	iems
CO4	: Update the lat	est trends in wireless communications	
Reference Bo	oks:		
1. Theodore S	. Rappaport, "Wi	reless Communications: Principles and Practice", Pearson, 2nd Edition	
2. Aditva K Ja	gannatham "Pri	nciples of Modern Wireless Communications" McGraw Hill 2017	<u>· · · · · · · · · · · · · · · · · · · </u>
3 Robin Chat	aut Robert Akl	"Massive MIMO Systems for 5G and beyond Networks—Overview Re	cent Trends Challenges
and Future Re	esearch Direction	" Sensors May 2020	cent frends, chanenges,
4 A N Llwae	chia and N M M	abyuddin A Comprehensive Survey on Millimeter Wave, Communica	ations for
Fifth-Generati	ion Wireless Netw	works: Feasibility and Challenges in IEEE Access vol 8 np 62367-	.62414 2020
		vorks. I casionity and chancinges, in indel, Access, vol. 6, pp. 62607	02111, 2020
Scheme of C	ontinuque Inter	$a_{2} = 100$	
	izzes will be cond	hat Evaluation (CIE): 20 + 40 + 40 - 100	Quiz will be evaluated for
10 Marks The	e sum of two quiz	zzes will be the Final Ouiz marks	Quiz will be evaluated ion
TESTS. Stude	ents will be evalu	ated in test descriptive questions with different complexity levels (Re	wised Bloom's Taxonomy
Levels: Remen	nhering Underst	anding Applying Applyzing Evaluating and Creating) Two tests wil	ll be conducted. Each tes
will be evaluat	ted for 50 Marks	adding upto 100 marks. Final test marks will be reduced to 40 Marl	ks
EXPERIENTI	AL LEARNING.	Students will be evaluated for their creativity and practical implement	tation of the problem
Case study-ba	ased teaching lea	rning and Program specific requirements (15) Video based	inclusion of the problem.
seminar/pres	entation/demons	stration (25) adding upto 40 marks	
Scheme of Se	emester End Exa	mination (SEE) for 100 marks: The question paper will have FIVE	questions with internal
choice from ea	ach unit. Each qu	lestion will carry 20 marks. Student will have to answer one full que	stion from each unit.

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	RUBRIC for CIE		RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	ach unit consists of TWO questions of 20 Marks each. Answ		
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).		
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	Marks www.FIVE 20 100	
			5&6	Unit-3: Question 5 or 6		
			7 & 8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	

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Technologi University,	cal Belagavi			
A51000440392	201/24452	SEMESTER: II		
Course Code	: 22ET2D08T	CI	E Marks	: 100
Credits L-T-P	: 3-0-0	TRACKING AND NAVIGATION SYSTEMS	EE Marks	: 100
Hours	: 42L	Elective D (Global Elective)	EE Durations	: 3 Hrs
Faculty Coord	inator:	Prof. Shambulinga . M. Dr. B. Roja Reddy		
racarty coord		IINIT - I		9 Hrs
An Introductio	on to Radar Basi	c Radar The simple form of the Radar Equation Radar Block Diagram	Radar Frequ	iencies
Application of	radar Types of I	Radars Detection of signals in Noise Receiver Noise and the Signal-to l	Noise Ratio P	robability
of Detection a	nd False alarm, I	ntroduction to Doppler, MTI, UWB Radars	noibe nano, i	rosusnity
	,	UNIT - II		8 Hrs
Terrestrial Net	twork based posi	tioning and navigation: General Issues of wireless positions location. Fi	undamentals.	
positioning in	cellular network	s, positioning in WLANs, Positioning in Wireless sensor networks.	,	
. 0		UNIT - III		8 Hrs
Satellite-based	d navigation syst	ems: Global Navigation satellite systems (GNSS), GNSS receivers.		
	<u> </u>	UNIT - IV		9 Hrs
LiDAR: Introd	uction to LiDAR.	context and conceptual discussion of LiDAR. Types of LiDARS, LiDARS	S Detection m	odes.
Flash LiDAR v	versus Scanning	LiDAR, Monostatic versus Bistatic LiDAR, Major Devices in a LiDAR, Li	iDAR remote s	sensing,
Basic compon	ents and physica	l principles of LiDAR, LiDAR accuracy and data formats.		0,
	1 0	UNIT - V		8 Hrs
SONAR: Unde	rwater acoustics	, applications, comparison with radar, submarine detection and warfar	e, overcoming	the
effects of the o	ocean, sonar and	information processing. Transmission of the acoustic signal: Introducti	ion, detection	contrast
and detection	index, transmiss	ion equation, equation of passive and active sonar.		
Course Outco	omes:			
After going th	hrough this cou	rse the student will be able to:		
CO1	: Understand th	e concepts of Radar, LiDAR, Sonar, terrestrial and satellite based navig	gation system	
CO2	: Apply the cond	cepts of radars, LiDAR, Sonar, cellular networks, WLAN, sensor networ	ks and satelli	tes in
	determining th	ne user position and navigation.		
CO3	: Analyze the di	fferent parameters of satellite and terrestrial networks for navigation sy	ystems.	
CO4	: Evaluate the F	Radar, LiDAR, Sonar systems and satellite and terrestrial network base	d navigation a	and
	tracking syste	ms		
Reference Bo	oks:			
1. M. L Skolni	k,Introduction to	RADAR Systems, 3rd edition, 2017, TATA Mcgraw-Hill, ISBN: 978-0070)445338	
2. Mark A Ric	hards, James A S	Scheer, William A Holam, Principles of Modern Radar Basic Principles, 2	2010, 1st	
edition,SciTec	h Publishing Inc	ISBN:978-1891121524 .		
3. Davide dare	lari, Emanuela F	alletti, Marco Luise, Satellite and Terrestrial Radio Positioning techniqu	ues- A signal j	processing
perspective, 1	st Edition, 2012,	Elsevier Academic Press, ISBN: 978-0-12-382084-6.		
4. Paul McMa	namon,LiDAR Te	chnologies and Systems, SPIE press, 2019.		_
5. Pinliang Do	ng and Qi Chen,	LiDAR Remote Sensing and Applications, CRC Press, 2018, ISBN: 978-	-1-4822-4301-	-7
6. Jean-Paul I	Marage, Yvon Mo	ri, Sonar and Underwater Acoustics, Wiley, 2013, ISBN: 97811186006	58	
Scheme of Co	ontinuous Interi	nal Evaluation (CIE): 20 + 40 + 40 = 100		
QUIZZES: Qu	izzes will be cond	lucted in online/offline mode. Two quizzes will be conducted & Each Q	uiz will be eva	luated for
10 Marks. The	e sum of two quiz	zes will be the Final Quiz marks.	1.51 1.5	
TESTS: Stude	ents will be evalu	ated in test, descriptive questions with different complexity levels (Revis	sed Bloom's T	axonomy
Levels: Remen	ndering, Underst	anding, Applying, Analyzing, Evaluating, and Creating). Two tests will a	se conducted.	Each test
	AL LEADNING.	auding up to 100 marks. Final lest marks will be reduced to 40 Marks	tion of the pro	hlem
Case study-ba	used teaching lear	rning and Program specific requirements (15) Video based	non or the pro	0101111.
seminar/nres	entation / demons	stration (25) adding upto 40 marks.		
Scheme of Se	mester End Exa	mination (SEE) for 100 marks: The question paper will have FIVE qu	lestions with i	internal
choice from ea	ach unit. Each qu	lestion will carry 20 marks. Student will have to answer one full questi	ion from each	unit.

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	RUBRIC for CIE			RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks		
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answer FIVE			
2	Tests - T1 & T2	40]	full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1 & 2 Unit-1: Question 1 or 2		20		
	Total Marks	100	38:4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	20		
			78.8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		

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Technologi University,	ical Belagavi			
		SEMESTER: II		
Course Code	: 22IM2D09T	CIE Ma	arks :	100
Credits L-T-P	: 3-0-0	SEE M	arks :	100
Hours	: 42L	Elective D (Global Elective) SEE D	urations :	3 Hrs
Facı	alty Coordinator:	Dr. Vikram N Bahadurdesai	· · · ·	-
		UNIT - I		8 Hrs
Introduction	: Project Planning	g, Need of Project Planning, Project Life Cycle, Roles, Responsibility and Tea	m Work, F	roject
Planning Proc	ess, Work Break	down Structure (WBS), Introduction to Agile Methodology.		-
		UNIT - II		8 Hrs
Capital Budge	eting: Capital Inv	vestments: Importance and Difficulties, phases of capital budgeting, levels of	of decision	making
facets of proje	ct analysis, feasi	bility study – a schematic diagram, objectives of capital budgeting		-
		UNIT - III		9 Hrs
Project Costi	ng: Cost of Proje	ct, Means of Finance, Cost of Production, Working Capital Requirement and	l its Finan	cing,
Profitability Pr	rojections, Projec	ted Cash Flow Statement, Projected Balance Sheet, Multi-year Projections,	Financial	
Modeling, Soc	ial Cost Benefit A	Analysis		1
		UNIT - IV		8 Hrs
Tools & Tech	niques of Projec	ct Management: Bar (GANIT) chart, bar chart for combined activities, logic	diagrams	and
networks, Pro	ject evaluation a	nd review Techniques (PERT) Critical Path Method (CPM), Computerized pro	ject mana	gement
	. 10			9 Hrs
FIOJECT Mana	gement and Cer	timeation. An infordation to SEI, emin and project management institut	2 USA – III.	iportane
of the same fo	r the industry ar	nd practitioners. PMBOK 6 - Introduction to Agile Methodology, hemes / Ep	ics / Stori	es,
Implementing	Agile.			_
Domain Speci	fic Case Studies	on Project Management: Case studies covering project planning, scheduling	g, use of to	ols
& technio	ques, performanc	ce measurement.		
Course Outco	omes:			
After going th	hrough this cou	rse the student will be able to:	1.	
<u> </u>	: Explain projec	ct planning activities that accurately forecast project costs, timelines, and q	uality.	-
CO2	: Evaluate the t	budget and cost analysis of project feasibility.		
CO3	: Analyze the co	oncepts, tools and techniques for managing projects.		
CO4	: Illustrate proje	ect management practices to meet the needs of Domain specific stakeholder	rs from mu	ıltiple
	sectors of the	economy (i.e. consulting, government, arts, media, and charity organization	ıs).	
Reference Bo	oks:			
1. Prasanna C	Chandra, Project	Planning Analysis Selection Financing Implementation & amp; Review, Tata		
McGraw Hill F	Publication, 8th E	Edition, 2010, ISBN 0-07-007793-2.		
2. Project Mar	nagement Institu	te, A Guide to the Project Management Body of Knowledge (PMBOK		
Guide), 5th Eo	dition, 2013, ISB	N: 978-1-935589-67-9		
Harold Kerz	zner, Project Man	nagement A System approach to Planning Scheduling & amp; Controlling,		
John Wiley &a	amp; Sons Inc., 1	11th Edition, 2013, ISBN 978-1-118-02227-6.		
 Rory Burke 	, Project Manage	ment – Planning and Controlling Techniques, John Wiley & amp; Sons, 4th		
Edition, 2004	, ISBN: 9812-53-	121-1		
Scheme of Co	ontinuous Intern	nal Evaluation (CIE): 20 + 40 + 40 = 100		
QUIZZES: Qui	izzes will be cond	ducted in online/offline mode. Two quizzes will be conducted & Each Quiz v	vill be eval	uated fo
10 Marks. The	e sum of two quiz	zzes will be the Final Quiz marks.		
TESTS: Stude	ents will be evalu	ated in test, descriptive questions with different complexity levels (Revised I	3loom's Ta	ixonomy
Levels: Remen	nbering, Underst	anding, Applying, Analyzing, Evaluating, and Creating). Two tests will be co	onducted.	Each tes
will be evaluat	ted for 50 Marks,	, adding upto 100 marks. Final test marks will be reduced to 40 Marks.		
FVDFDIFNTI	AT TEADNING. C	Students will be evaluated for their creativity and practical implementation.	of the most	

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based

seminar/presentation/demonstration (25) adding upto 40 marks.

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	RUBRIC for CIE			RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks		
1	Quizzes - Q1 & Q2	20	Each u	nit consists of TWO questions of 20 Marks each. Answ	ver FIVE		
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20		
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	20		
			7 & 8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		

Go, change the world V Educational Institutions RV College of Engineering Approved by AICTE New Delhi SEMESTER: II 22IS2D10T Course Code CIE Marks 100 DATABASE AND INFORMATION SYSTEMS Credits L-T-P : 3-0-0 SEE Marks : 100 Elective D (Global Elective) 42L Hours SEE Durations : 3 Hrs Faculty Coordinator: Prof.Smitha G R UNIT - I 8 Hrs Advanced Database Models, Systems, and Applications : Enhanced Data Models: Introduction to Active, Temporal, Spatial, Multimedia, and Deductive Databases . Distributed Database Concepts : Distributed Database Concepts, Data Fragmentation, Replication, and Allocation Techniques for Distributed Database Design, Overview of Concurrency Control and Recovery in Distributed Databases UNIT - II 8 Hrs Introduction to Information Retrieval and Web Search : Information Retrieval (IR) Concepts Retrieval Models, Types of Queries in IR Systems, Text Preprocessing, Inverted Indexing, Evaluation Measures of Search Relevance, Web Search and Analysis, Trends in Information Retrieval. UNIT - III 8 Hrs Information Systems, Organizations and Strategy: Organizations and information systems, How information systems impact organization and business firms, Using information systems to gain competitive advantage, management issues, Ethical and Social issues in Information Systems: Understanding ethical and Social issues related to Information Systems, Ethics in an information society, The moral dimensions of information society. A Case study on business planning. UNIT - IV 9 Hrs Achieving Operational Excellence and Customer Intimacy: Enterprise systems, Supply chain management(SCM) systems, Customer relationship management(CRM) systems, Enterprise application. E-commerce: Digital Markets Digital Goods: E-commerce and the internet, E-commerce-business and technology, The mobile digital platform and mobile E-commerce, Building and E-commerce web site. A Case study on ERP. UNIT - V 9 Hrs Managing Knowledge: The knowledge management landscape, Enterprise-wide knowledge management system, Knowledge work systems, Intelligent techniques. Enhancing Decision Making: Decision making and information systems, Business intelligence in the enterprise. Business intelligence constituencies. Building Information Systems: Systems as planned organizational change, Overview of systems development. **Course Outcomes:** After going through this course the student will be able to: CO1 : Understand the different models for Infromation Retrieval. CO2 : Appricieate the technology of Information Retrieval and Web Search CO3 : To understand the basic principles and working of information technology. CO4 : Describe the role of information technology and information systems in business. **Reference Books:** 1. Kenneth C. Laudon and Jane P. Laudon: Management Information System, Managing the Digital Firm, Pearson Education, 14th Global edition, 2016, ISBN:9781292094007. 2. Fundamentals of Database Systems, Ramez Elmasri, Shamkant B. Navathe, 7th Edition, 2016, Published by Pearson, Copyright © , ISBN-10: 0133970779 3. James A. O' Brien, George M. Marakas: Management Information Systems, Global McGraw Hill, 10th Edition, 2011, ISBN: 978-0072823110. 4. Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, 2003, McGraw-Hill, ISBN: 9780071231510 Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100 **QUIZZES:** Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two guizzes will be the Final Quiz marks. **TESTS:** Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks. **EXPERIENTIAL LEARNING:** Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks. Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit. **Rubric for CIE & SEE Theory courses**

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	RUBRIC for CIE	1		RUBRIC for SEE		
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	ver FIVE		
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7&8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	s 100	

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RV Educational Institutions		
Autonomous Institution Affiliated New Delhi		
to Visvesvaraya Technological		
University, Belagavi I	SEMESTER: II	
Course Code : 22IS2D11T	MANACEMENT INFORMATION SUCTEME	CIE Marks : 100
Credits L-T-P : 3-0-0	MANAGEMENT INFORMATION SYSTEMS	SEE Marks : 100
Hours : 42L	Elective D (Global Elective)	SEE Durations : 3 Hrs
Faculty Coordinator:	Prof. Vanishree K	
	UNIT - I	8 Hrs
Overview: Introduction: Professional Software Developm activities, Coping with Change, Agile Software Development: Int scaling agile methods. Informat Perspectives on information sys	ent, Software Engineering Ethics, Case studies. Software Proce Process improvement. The Rational Unified Process. Computer roduction to agile methods, Agile development techniques, Agil ion Systems in Global Business Today: The role of information tems, Contemporary approaches to information systems	esses: Models, Process r Aided Software Engineering. le project management and systems in business today,
	UNIT - II	9 Hrs
Software Requirements: Function and Change. System Modeling: architecture. Information System systems impact organization and issues	onal and Non-functional requirements. Requirements Elicitation Context models, Interaction models, Structural models, Behavior ms, Organizations and Strategy: Organizations and information d business firms, Using information systems to gain competitive	on, Specification, Validation ioural models, Model driven n systems, How information ve advantage, management
	UNIT - III	9 Hrs
Development and Testing: Design and implementation: Ob development. Software Testing: Securing Information Systems: framework for security and com	ject oriented design using UML, Design patterns, Implementat Development testing, Test-driven development, Release testing System vulnerability and abuse, Business value of security and trol, Technology and tools for protecting information resources.	ion issues, Open-source g, User testing. d control, Establishing . A case study on cybercrime.
	UNIT - IV	8 Hrs
Advanced Software Engineering Dependable systems: Dependable dependability, A15 Availability a Markets Digital Goods: E-comm	: pility properties, Sociotechnical systems, dependable processes, and reliability, reliability requirements, Reliability measuremen perce and the internet, E-commerce-business and technology, <i>F</i>	, formal methods and hts E-commerce: Digital A Case study on ERP.
		rease staay on Brail
	UNIT - V	8 Hrs
Software Management:	UNIT - V	8 Hrs
Software Management: Project Management: Risk Mana development, Project Schedulin Systems: Systems as planned o	UNIT - V agement, Managing People, Teamwork, Project Planning: Softwa g, Agile planning, Estimation Techniques, COCOMO cost mode rganizational change, Overview of systems development.	8 Hrs are Pricing, Plan driven eling. Building Information
Software Management: Project Management: Risk Mana development, Project Schedulin Systems: Systems as planned o	UNIT - V agement, Managing People, Teamwork, Project Planning: Softwa g, Agile planning, Estimation Techniques, COCOMO cost mode rganizational change, Overview of systems development.	8 Hrs are Pricing, Plan driven eling. Building Information
Software Management: Project Management: Risk Mana development, Project Schedulin Systems: Systems as planned o Course Outcomes: After going through this course	UNIT - V agement, Managing People, Teamwork, Project Planning: Softwa g, Agile planning, Estimation Techniques, COCOMO cost mode rganizational change, Overview of systems development.	8 Hrs are Pricing, Plan driven eling. Building Information
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RV Educational Institutions * RV College of Engineering * Autonomous Institution Affiliated to Visvesvaraya Technological University, Belegavi

	RUBRIC for CIE	1		RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks		
1	Quizzes - Q1 & Q2	20	Each u	nit consists of TWO questions of 20 Marks each. Answ	ver FIVE		
2	Tests - T1 & T2	40		full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20		
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20		
			5&6	Unit-3: Question 5 or 6	20		
			7&8	Unit-4: Question 7 or 8	20		
			9 & 10	Unit-5: Question 9 or 10	20		
				Total Marks	100		

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2511-5662-85		SEMESTER: II								
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Credits L-T-P	: 3-0-0	Elective D (Clobal Elective)	SEE Marks : 100							
Hours	: 42L	Dr. DRAKASH P	SEE Durations : 3 Hrs							
Faculty Coold		IINIT - I	9 Hrs							
Random Vect	ors:									
Probability models of N random variables, Vector notation, Marginal probability functions, Independence of random variables and random vectors, Functions of random vectors, Expected value vector and Correlation matrix, Gaussian random vectors, Expected values of sums, Probability density function of the sum of two random variables, Moment Generating Functions										
(MGF), MGF o	f the sum of inde	ependent random variables, Characteristic function and Probability	generating function.							
Estimation: I	Point estimation	UNIT - II Estimator and estimate. Criteria for good estimates - unbiasedness	8 Hrs							
and sufficience likelihood, Bay	y, Variance of a p yesian estimation	point estimator, Methods of point estimation - Method of moments n of parameters.	and Method of maximum							
		UNIT - III	9 Hrs							
Inferential Statistics: Principles of Statistical Inference, Formulation of the problems with examples. Test of hypothesis - Null and alternative hypothesis, Procedure for statistical testing, Type I and Type II errors: level of significance, Rejection regions and power, Standard Normal null distribution (Z-test), Z-tests for means and proportions, Duality: two-sided tests and two-sided confidence intervals, P-value, Inference about variances, Special tests of significance for large and small samples (F. Chi = square, Z, t = test)										
	1 , ,	UNIT - IV	8 Hrs							
Fuzzy Optimization: Basic concepts of fuzzy sets - Operations on fuzzy sets, Fuzzy relation equations, Fuzzy logic control, Fuzzification, Defuzzificatiuon, Knowledge base, Decision making logic, Membership functions, Rule base. Artificial Neural Networks: Introduction - Neuron model, Multilayer perceptions - Back propagation algorithm and its										
variants, Loss	functions in arti	ilicial neural networks, Stochastic gradient descent method.	variants, Loss functions in artificial neural networks, Stochastic gradient descent method.							
Machine Lear	UNIT - V 8 Hrs									
Data mining,	ning Algorithms	s:	8 HIS							
data, Statistical nature of Big data, Support Vector Machines. Statistical Learning Theory. Linear Support Vector Machine.										
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data, Statistic Kernel functio Course Outco After going th CO1 CO2 CO3 CO4 Reference Bo 1. Roy D. Yate ISBN: 978935 2. Douglas C. & Sons, 2019 3. Trevor Hast Prediction", 2n 4. Michael Ba 2014, ISBN- 1 5. Shai Shaley Cambridge Ur	 ming Algorithms Hierarchy Cluster al nature of Big of ns and Nonlinear mes: mough this court illustrate the f optimization at i Derive the solustatistics, fuzz i Evaluate the s world problem i Compile the ow optimization gro oks: s, David J. Good 4243455. Montgomery and ISBN: 97811195 ie Robert Tibshir nd Edition, Sprin con, "Probability at 3: 978-1-4822-14 -Shwartz and Shiversity Press, 20 	s: rring, k-Means Clustering, Distance Metric, Data mining for Big dat data, Support Vector Machines, Statistical Learning Theory, Linear r Support Vector Machines. rse the student will be able to: fundamental concepts of statistics, random variables, estimation, in and machine learning algorithms. ution by applying the acquired knowledge of random variables, esti- group optimization and machine learning algorithms to the problems of solution of the problems using appropriate statistical and probabilities arising in many practical situations. verall knowledge of statistics, probability distributions and estimati- grained to engage in life – long learning. Iman, "Probability and Stochastic Processes", 3rd Edition, An India d George C. Runger, "Applied Statistics and Probability for Engineer 570615. rani Jerome Friedman, "The Elements of Statistical Learning - Data ager, 2009 (Reprint 2017), ISBN-10: 0387848576, ISBN-13: 978038 and Statistics for Computer Scientists", 2nd Edition, CRC Press, 410-9. nai Ben-David "Understanding Machine Learning: From Theory to A 014, ISBN: 978-1-107-05713-5.	a, Characteristics of Big Support Vector Machine, Inferential statistics, fuzzy mation, inferential f engineering applications. Ty techniques to the real ion, tests of hypothesis and n Adaptation, Wiley, 2021, rs", 7th Edition, John Wiley Mining, Inference, and 37848570.							



Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based

seminar/presentation/demonstration (25) adding upto 40 marks.

RUBRIC for CIE			RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answer		
2	Tests - T1 & T2	40]	full questions selecting ONE from each unit (1 to 5).		
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7 & 8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	





Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based

seminar/presentation/demonstration (25) adding upto 40 marks.

	RUBRIC for CIE		RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answ		
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7&8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	

Autoncmous Institution Affiliated to Visvesvaraya Technological University, Belagavi

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Course Code : 22	HSS25T	PROFESSIONAL SKILL	CIE Marks :	50				
Credits L-T-P : 2-0)-0	DEVELOPMENT- I	SEE Marks :	50				
Hours : 28	L	Common Course to all M.Tech Programs	SEE Durations :	2 Hrs				
Faculty Co	ordinator:	Dr. C.Bindu Ashwini	ĮĮ.	•				
				4 Hrs				
Communication SL	Communication Skills: Basics of Communication Personal Skills & amp: Presentation Skills -							
Introduction Appli	ication Sin	ulation Attitudinal Development Self Co	nfidence SWOC	nalveie				
Resume Writing. II	nderstandi	ng the basic essentials for a resume Resu	me writing tins (uidelines				
for better presenta	tion of fact	Theory and Applications	the writing ups c	uluennes				
				8 Hrs				
Quantitative Antitu	ide and Da	to Analysis: Number Systems Math Vocal	oulary fraction de	cimals digit				
Quantitative Aptiti	aue allu Da	Linear equations Elimination Method S	ubstitution metho	d				
Inequalities Reaso	ning – a V	erbal - Blood Relation Sense of Direction	Arithmetic & amr	v Alphabet				
h Non- Verbal read	soning - a. V	sual Sequence Visual analogy and classifi	cation Analytical	Reasoning -				
Single & amp: Mult	inle compa	risons Linear Sequencing	cation. Miarytical	Reasoning -				
Logical Antitude -	Svllogism	Venn-diagram method Three statement s	vllogism Deducti	ve and				
inductive reasonin	g Introduc	tion to puzzle and games organizing inform	nation parts of a	n argument				
common flaws are	g. ments an	d assumptions	nation, parts of a	n argument,				
Verbal Analogies /	ntitude – i	ntroduction to different question types – a	nalogies Gramm	ar review				
sentence completio	ns senten	ce corrections antonyms/synonyms yoca	bulary building e	te Reading				
Comprehension, Pr	roblem Solv	ving	isulary summing c	te. Reading				
		IINIT - III		6 Hrs				
Interview Skills O	lestions as	ked & amp: how to handle them. Body lan	guage in interview	o mo				
Etiquette – Conver	sational an	d Professional Dress code in interview Pr	ofessional attire a	and Grooming				
Behavioral and tec	hnical inte	rviews Mock interviews - Mock interviews	with different Par	nels Practice				
on Stress Interview	vs Technic	al Interviews, and General HR interviews		liels. I factice				
	<i>, , , , , , , , , , , , , , , , , , , </i>			5 Hrs				
Internersonal and	Managerial	Skills: Ontimal co-existence cultural sen	sitivity gender se	neitivity:				
canability and mat	urity mode	decision making ability and analysis for	brain storming.	Froun				
discussion(Assertiv	veness) and	nresentation skills	brain storning, (lioup				
	veness) and	IINIT - V		5 Hrs				
Motivation: Self_m	otivation a	roup motivation Behavioral Management	Inspirational and	1 motivational				
speech with conclu	sion (Eva	noup motivation, Demavioral Management,	and Integrity G	a monvational				
leadershin ability		inples to be cited). Leadership Skills. Ethic	s and micgrity, c	ioai Setting,				
	•							
After going through	gh this cou	urse the student will be able to.						
CO1 · Develop professional skill to suit the industry requirement								
COL Analyza problems using quantitative and reasoning stalls								
CO2 An	CO2 Develop to develop on the section of the sect							
CO2 : An		nalain and internance of marting alrilla						
CO2 : An CO3 : De	velop leade	rship and inter personal working skills.	• . • • •					
CO2 : An CO3 : De CO4 : De	velop leade monstrate	rship and inter personal working skills. verbal communication skills with appropr	iate body languag	je.				
CO2:AnCO3:DeCO4:DeReference Books:	velop leade monstrate	rship and inter personal working skills. verbal communication skills with appropr	iate body languag	e.				
CO2 : An CO3 : De CO4 : De Reference Books: 1. The 7 Habits of 1 ISBN: 0743272455 1	velop leade monstrate Highly Effe	rship and inter personal working skills. verbal communication skills with appropr ctive People, Stephen R Covey Free Press,	iate body languag 2004 Edition,	e.				
CO2 : An CO3 : De CO4 : De Reference Books: 1. The 7 Habits of ISBN: 0743272455 2. How to win frien	velop leade monstrate Highly Effe ds and infl	rship and inter personal working skills. verbal communication skills with appropr ctive People, Stephen R Covey Free Press, uence people, Dale Carnegie General Pres	iate body languag 2004 Edition, s, 1st Edition, 20	je. 16,				
CO2 : An CO3 : De CO4 : De Reference Books: 1. The 7 Habits of ISBN: 0743272455 2. How to win frien ISBN: 9789380914	velop leade monstrate Highly Effe ds and infl	rship and inter personal working skills. verbal communication skills with appropr ctive People, Stephen R Covey Free Press, uence people, Dale Carnegie General Pres	iate body languag 2004 Edition, s, 1st Edition, 20	ie. 16,				
CO2 : An CO3 : De CO4 : De Reference Books: 1. The 7 Habits of ISBN: 0743272455 2. How to win friem ISBN: 9789380914 3. Crucial Convers	velop leade monstrate Highly Effe ds and inf 787 ation: Tool	rship and inter personal working skills. verbal communication skills with appropr ctive People, Stephen R Covey Free Press, uence people, Dale Carnegie General Pres s for Talking When Stakes are High, Kerry	iate body languag 2004 Edition, s, 1st Edition, 20 Patterson, Josep	je. 16, h				
CO2 : An CO3 : De CO4 : De Reference Books: 1. The 7 Habits of ISBN: 0743272455 2. How to win frien ISBN: 9789380914 3. Crucial Convers Grenny, Ron Mcmi	velop leade monstrate Highly Effe ds and infl 787 ation: Tool llan 2012 1	rship and inter personal working skills. verbal communication skills with appropr ctive People, Stephen R Covey Free Press, uence people, Dale Carnegie General Pres s for Talking When Stakes are High, Kerry Edition, McGraw-Hill Publication ISBN: 97	iate body languag 2004 Edition, s, 1st Edition, 20 Patterson, Josep 80071772204	je. 16, h				
CO2 : An CO3 : De CO4 : De Reference Books: 1. The 7 Habits of ISBN: 0743272455 2. How to win frien ISBN: 9789380914 3. Crucial Convers Grenny, Ron Mcmi 4. Ethnus, Aptimit	velop leade monstrate Highly Effe ds and infl 787 ation: Tool illan 2012 1 hra: Best A	rship and inter personal working skills. verbal communication skills with appropr ctive People, Stephen R Covey Free Press, uence people, Dale Carnegie General Pres s for Talking When Stakes are High, Kerry Edition, McGraw-Hill Publication ISBN: 97 ptitude Book ,2014 Edition, Tata McGraw	iate body languag 2004 Edition, s, 1st Edition, 20 Patterson, Josep 80071772204 Hill ISBN: 97812	e. 16, h 259058738				



Phase *	Activity
	Test 1 is conducted after completion 9 of hours of training program (3 Class) for 50
т	marks
1	Part A- Quiz for 15 Marks and Part B for 50 Marks (Descriptive answers). Part B – 50
	Marks is consolidated to 35 and total marks on 50 is 15 + 35 = 50 Marks.
	Test 2 is conducted after completion 18 hours of training program (6 Class) for 50 marks
TT	Part
11	A- Quiz for 15 Marks and Part B for 50 Marks (Descriptive answers). Part B – 50 Marks
	is consolidated to 35 and total marks on 50 is 15 + 35 = 50 Marks.
	Average of 2 tests is considered as final CIE marks.
emester E	nd Examination: SEE is conducted for 50 Marks for a duration of 2 hours.



Universit	y, Belaj	javi							
0 0 1				SEMESI			1	1	50
Course Code	:	22MS124L	ANALYSIS AND	DESIG	N OF STUCTURES USING	CIE Mar	ks	:	50
Credits L-T-P	' :	1 - 0 - 1	(0)	ET	ABS	SEE Mai	rks	:	50
Hours	:	14L + 28P	(Cod	ling / Sk	cill Laboratory)	SEE Dui	rations	:	3 Hrs
Fa	acu	lty Coordinator:	Prof.Dhanush S/	Prof.Asl	hwin Thammiah/Prof.Shrit	i Badami			
			Co	ntent					28 Hrs
1. Analysis of	fa	Plane and Space	e Truss 2. Analysis	s of Cont	tinuous Beams 3. Analysis	of Plane	and Spa	ace	Frames
4. Analysis of		ructures with FI	lat slad and Wallie	\sim Slab. 5	Analysis and Design of M	ulti-Store	y RCC	BU	lilding.
6. Analysis al	na nd	Design of Multi-	Storey Steel Bulla	ing. 7. P	Analysis and Design of Bull	aings suc	ojected	το	Eartnquak
9 Analysis al	nd	Design of Buildi	ngs subjected to E	hishover	cloads 10 Analysis and D	esign of F	Quilding	0	subjected t
11 Analysis a	nu ano	Design of Build	lings subjected to	Wind L	a loads. 10. Allalysis allu D	esign of L	Junume	50 0	subjected t
12 Analysis	and	l Design of Shea	r Walls using Sect	tion Des	igner				
Course Outo	011	es:							
After going t	:hr	ough this cours	e the student wil	ll be abl	e to:				
CO	1:	Apply knowled	ge of Structural Ar	nalysis a	and Design to model and ar	nalyze str	uctures	6 01	n ETABS.
СО	2:	Analyze a build	ling component su	biected	to various loads using ETA	ABS.			
CO	3 :	Design various	building compone	ents as r	per Codal Provisions using	ETABS.			
CO	4 .	Distinguish bet	tween the various	static a	nd dynamics types of analy	rses perfo	rmed or	n s	tructures
	. .	using ETABS.		otatie ai	ind dynamics types of analy	beb perio	inica of	10	li detui eo
		400008 200200							
Scheme of C	on	tinuous Interna	al Evaluation (CIE	E- Labor	atory) : Only LAB Course	30 + 10 +	+ 10 = 5	50.	The
Laboratory se	ess	on is held every	week as per the ti	imetable	e and the performance of th	ne studen	t is eval	lua	ited in
every session	. Т	he average of ma	arks over number	of exper	iments conducted over the	weeks is	conside	ere	d for 30
Marks i.e (La	b F	eport, Observati	ion & Analysis). Th	ne stude	ents are encouraged to impl	lement ad	lditiona	1 i1	nnovative
experiments i	in t	he lab (10 mark	s). At the end of th	ne semes	ster a test is conducted for	10 Marks	s (Lab T	`es	t). This
adds to 50 M	ark	s.							
Scheme of S	em	ester End Exar	nination (SEE- La	borator	ry) : Only LAB Course 40 +	+ 10 = 50.	Studen	ts	will be
evaluated for	W	rite-up, Experim	ental Setup, Expe	riment (Conduction with Results, A	nalysis &	Discus	sio	ons for 40
Marks and Vi	iva	will be conducte	ed for 10 Marks ad	lding to	50 Marks.				
			Only LAB	Courses	s with 50 Marks				
		RU	JBRIC FOR CIE		RUBRIC F	OR SEE			
	S1.	No C	ontent	Marks	Content		Marks		
	_	Write Up, Setu	up, Conduction						
]	Results, Analy	sis & Discussions	30	1. Write Up, Setup, Conduct	ion	40		
		Innovative Ex	periment/Concept	10	2. Results, Analysis & Discu	issions	40		
		Design & Imp	lementation	10					
	4	Laboratory Int	ternal	10	Viva Voce		10		
				10			10		
			Total Marks	50	То	otal Marks	50		



SEMESTER: III								
Course Code	: 22MST31T		CIE Marks : 100					
Credits L-T-P	· 3 - 1 - 0	ADVANCED CONSTRUCTION MATERIALS	SEE Marks : 100					
Hours	$\cdot 42L + 28T$	(Professional Core - 5)	SEE Durations : 3 Hrs					
For	1. 122 · 201	Dr. Radhakrishna						
1 at			Q H#0					
Deview of com	antional company	UNII - I	9 HIS					
Review of conventional concrete, various methods of proportioning of concrete, proportioning of a concrete mix by								
is and ACI method, initial, and chemical admixtures, and new cementious								
	i loi making bunu.		9 Urc					
Coopolymore								
Geopolymens – Paste, montar, concrete, and masonry units. Concept, advantages, Proportioning, Geopolymen								
	Inasonry, Application. File-resistant concrete. Ready Mixed Concrete, Advantages, Components of Rive Flant.							
Fibro roinforco	d concrete behav	ion in compression and flavura. Types of fibera Acti	9 ms					
Fibre reiniorce	a concrete, benav	Light weight appendix trans. Materials used Desig	of lightweight opports					
Simple design	Applications.	Light weight concrete, types, Materials used, Desig	n of lightweight concrete,					
Properties and	Applications.	11311/3 137	0.11					
Dama a succest	<u>O</u>	UNII - IV						
Ferro cement-	Concept, material	is, construction methods, benavior in tension, Simp	he design, Applications. High					
Density concre	ete- necessity, Rac		0 11					
NT	1.0							
Nanotechnolog	y and Concrete –	nono-Engineering, manipulation of materials at the	e nanoscale, hydrate-					
hybridization,	nanomaterials in	concrete – nano SiO2, nanoTiO2, Nano Al2O3, nano	o clay, carbon nanotubes,					
nanofibers, Ul	trahigh Performan	ice Concrete, Properties and applications.						
Course Outco	mes:							
After going thr	ough this course i	the student will be able to:						
CO1 : Explain the properties of modern construction materials								
CO2	: Illustrate the u	se of construction materials						
CO3	: Identity suitabl	le materials for specific applications.						
CO4	: Design and con	ceptualize mixes for various situations.						
Reference Boo	oks							
1. Concrete Mi	crostructure, Prop	perties and Materials, P. Kumar Mehta, Paulo J. M.	Monteiro McGraw Hill					
Education Indi	ia Private Limited,	New Delhi, Fourth Edition, 2015. ISBN-13: 978-93	3-393-0476-1.					
2. Concrete Te	chnology, A R Sar	hthakumar, Oxford University Press, 2012, ISBN-13	3:978-0-19-567153-7.					
3. Properties o	f Concrete, Neville	e. A.M, 4th Edition, Pearson Education, Inc, and Do	orling Kindersley Publishing Inc					
Code Books:								
i) IS 10262: 20	009, Concrete Mix	proportioning guidelines, First Revision.2009. ii) AG	CI Committee 211, Standard					
Practice for Se	lecting Proportion	s for Normal, Heavyweight and Mass Concrete, ACI	211.1-91, American Concrete					
Institute, Farn	nington Hills,							
Scheme of Co	ntinuous Interna	al Evaluation (CIE): 20 + 40 + 40 = 100						
QUIZZES: Qui	zzes will be condu	icted in online/offline mode. Two quizzes will be cor	nducted & Each Quiz will be					
evaluated for 1	0 Marks. The sun	n of two quizzes will be the Final Quiz marks.						
TESTS: Stude:	nts will be evaluat	ted in test, descriptive questions with different comp	plexity levels (Revised Bloom's					
Taxonomy Lev	els: Remembering	, Understanding, Applying, Analyzing, Evaluating, a	and Creating). Two tests will					
be conducted.	Each test will be e	evaluated for 50 Marks, adding upto 100 Marks. Fin	nal test marks will be reduced					
to 40 Marks.								
	LEARNING: Stu	udents will be evaluated for their creativity and pra-	ctical implementation of the					
problem. Case	study-based teac	ning learning and Program specific requirements (1)	5), Video based					
seminar/prese	entation/demonstr	ration (25) adding upto 40 marks.						
Scheme of Se		nination (SEE) for 100 marks: The question paper	WIII nave FIVE questions					
with internal c	noice irom each u	init. Each question will carry 20 marks. Student will	II nave to answer one full					
question from	each unit.							



G0,	change	the	world
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Rubric f	for CIE	& SEE	Theory	courses
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RUBRIC for CIE			RUBRIC for SEE			
SLNo	Content	Marks	Q. No	Contents	Marks	
1	Quizzes - Q1 & Q2	20	Each u	Each unit consists of TWO questions of 20 Marks each. Answer FIVE		
2	Tests - T1 & T2	40	full questions selecting ONE from each unit (1 to 5).			
3	Experiential Learning - EL1 & EL2	40	1 & 2	Unit-1: Question 1 or 2	20	
	Total Marks	100	38:4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7&8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	
	Serger 1	SEMESTER: III				
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Course Code	: 22MST3E1T		CIE Marks	: 10	00	
Credits L-T-P	: 3 - 1 - 0	STRUCTURAL RELIABILITY	SEE Marks	: 10)()	
Hours	: 42L+28T	Elective E (Professional Elective)	SEE Durations	: 31	Hrs	
Fac	ulty Coordinator:	Dr. Ravindra.R				
		UNIT - I		8	Hrs	
Probability mas	ss function, proba	bility density function, mathematical expectation,	Chebyshev's theor	rem.		
Probability dist	ributions: discret	e distributions- Binomial and Poison distributions	, continuous distri	ibutio	ns-	
Normal, Lognor	rmal distributions	3				
		UNIT - II		9]	Hrs	
Measures of rel	liability-factor of s	safety, safety margin, reliability index, performance	e function and limi	ting s	state.	
Reliability anal	ysis-first order se	cond moment method (FOSM), Point Estimate met	hod (PEM)			
		UNIT - III		9	Hrs	
Evaluation of r	eliability by First	Order Second Moment method (Hasofer-Lind's met	thod). Simulation 7	Fechn	iques:	
Monte Carlo su	mulation-statistic	cal experiments, confidence limits, sample size and	l accuracy, genera	tion o	1	
random numbe	ers- random num	bers with standard uniform distribution, continuot	is random variable	es, ais	screte	
	168.	UNIT - IV		8	Hrs	
System Reliabi	lity of series para	illel and combined systems, evaluation of probabili	ty of survival for d	eterm	inate	
and redundant	structural system	n.	ty of Survivar for a	cterm	mate	
		UNIT - V		8	Hrs	
Reliability base	d design- Steel ar	nd RCC beams by FOSM and advanced FOSM, eva	luation of geometr	ical		
dimension for g	given level of safet	y index.				
		-				
Course Outcon	mes:					
After going thre	ough this course t	he student will be able to:				
CO1	: Apply the theor density function	retical principles of randomness of variables in struns and probability distribution.	actural engineering	g thro	ugh	
CO2	: Analyze compo	nents of structure to assess safety using concepts	related to structur	al reli	iability	
	by various met	hods.				
CO3	: Evaluate the sa	fety reliability index at system level.				
CO4	: Perform reliabil	ity based design for beam element at given level of	safety.			
Reference Boo	oks					
1.Structural Re India.ISBN81-7	eliability Analysis 7224-851-2	and Design ,Ranganathan, R, 2000, Jaico Publish	ing House, Mumba	ai,		
2.Reliability ba	sed Analysis and	Design for Civil Engineers, Devaraj.V & Ravindra.I	R,2017, ,I.K.Intern	ationa	al	
Publishing Hou	ise Pvt.Ltd,India,I	SBN 978-93-85909-80-1.				
3.Probability C	oncepts in Engine	eering Planning and Design, Volume –I & II, Ang, A	. H. S., and Tang,	W. H.	., 1984,	
John Wiley and Sons, Inc, New York.ISBN10-047103200X ,ISBN13- 978-0471032007.						
4.Probability, F	Reliability and Sta	tistical Methods in Engineering Design, Achintya H	Ialdar and Sankar	an		
Mahadevan ,20	000, Wiley , ISBN	10-8126567783.				
	·· · ·					
Scheme of Con	ntinuous Interna	11 Evaluation (CIE): 20 + 40 + 40 = 100	advanted 9 De -1 C	· · · :	-11 h -	
QUIZZES: Quiz	O Morteo The condu	cted in online/oilline mode. Two quizzes will be co	naucted & Each Q	uiz w	шре	
TESTS. Studer	o marks. The sub	a of two quizzes will be the Final Quiz marks.	nlevity levels (Dow	ised T	Rloom's	
Taxonomy I eve	als. Remembering	Understanding Applying Applyzing Fyelyeting	and Creating) Two	n testi	s will	
be conducted.	Each test will be e	evaluated for 50 Marks, adding upto 100 Marks. Fi	inal test marks wil	1 be r	educed	

to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.



Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Rubric for CIE & SEE Theory courses						
	RUBRIC for CIE	1		RUBRIC for SEE		
SLNo	Content	Marks	Q. No	Contents	Marks	
1	1 Quizzes - Q1 & Q2 20 Each unit consists of TWO questions of 20 Marks each. An				er FIVE	
2	2 Tests - T1 & T2 40 full questions selecting ONE from each unit (1 to 5).					
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7&8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	



SEMESTER: III								
Course Code : 22MST3E	2T DAD		CIE Marks	: 100				
Credits L-T-P : 3 - 1 - 0	EAR	THQUAKE RESISTANT STRUCTUR	SEE Marks	: 100				
Hours : 42L+28T		Elective E (Professional Elective)	SEE Durations	: 3 Hrs				
Faculty Coordin	nator: Prof.Dha	anush.S						
	I	UNIT - I		8 Hrs				
Introduction to engineering	g seismology, G	eological and tectonic features of Ind	ia, Origin and propaga	tion of				
seismic waves, characteris	tics of earthqua	ake, location of epicenter and probler	ns on the same. Quanti	ification of				
an earthquake – Magnitude	e of an earthqu	ake, different types, problems on the	same. Intensity of an e	earthquake.				
Earthquake Hazards, Risk	evaluation and	l Mitigation.						
		UNIT - II		9 Hrs				
Computation of seismic for	ces, base shea	r in multi-storied buildings and othe	strctures – using Equi	ivalent				
lateral force method, as pe	r provisions in	IS-1893 2016.						
		UNIT - III		8 Hrs				
Response history and stror	ng motion char	acteristics. Response Spectrum – ela	stic and inelastic respo	nse spectra,				
tripartite (D-V-A) response	spectrum, use	of response spectrum in earthquake	resistant design. Comp	outation of				
seismic forces in multi-stor	ried buildings -	- using procedures for dynamic analy	sis as per IS-1893 2010	6.				
	1 6		1.1	9 Hrs				
Effect of infill masonry wal	ls on irames, n	nodeling concepts of masonry infills,	Denavior of masonry bu	lildings				
Configuration for conthesis	during earthquakes. Problems on design of equivalent diagonal strut as per IS-1893 2016. Structural							
storey Torsion in building	s Problems on	forces induced due to torsion as per	design provisions in IS	$_{-1803}$ 2016				
	5. 1 100101115 011			8 Hrs				
Ductility and energy absor	ntion in buildir	age Confinement of concrete for duct	ility detailing of colum	ins and				
beams for ductility, ductile	detailing prov	isions as per IS- 13920 2016. Structu	ral behavior, ductile de	etailing of				
shear walls and beam colu	mn junctions.	Seismic response control concepts –	Seismic demand, seism	ic capacity.				
Overview of P-Delta, Pusho	over and Time-1	history analysis. Performance Based	Seismic Engineering me	ethodology,				
Seismic evaluation. Retrofi	tting of structu	res - Classification and applications.	0 0					
Course Outcomes:								
After going through this course the student will be able to:								
CO1 : Apply the	concepts of str	ructural dynamics to assess the beha	viour of structures.					
CO2 : Analyse t	he response of	structures with various configuration	18.					
CO3 : Evaluate	the loads and f	forces acting on structures as per cod	al provisions.					
CO4 : Design an	nd detail variou	is structural elements for earthquake	loading, as per codal p	provisions.				
Reference Books								
1. Dynamics of Structures – Theory and Application to Earthquake Engineering- 2nd ed. – Anil K. Chopra.								
Pearson Education, 2011, ISBN-10: 0132858037; ISBN-13: 978-0132858038								
2. Earthquake Resistant Design of Building Structures, Vinod Hosur, WILEY (India), 2013, ISBN 13:								
9788126538591								
3. Earthquake resistant design of structures – Pankaj Agarwal, Manish Shrikande - PHI India, 2006, ISBN 10:								
8120328922								
4. Seismic Design of Reinfo	orced Concrete	and Masonry Buildings, T Paulay an	d M J N Priestley, John	Wiley and				
Sons, 1992, ISBN 0-471-54	4915-0							



Scheme of Continuous Internal Evaluation (CIE): 20 + 40 + 40 = 100

QUIZZES: Quizzes will be conducted in online/offline mode. Two quizzes will be conducted & Each Quiz will be evaluated for 10 Marks. The sum of two quizzes will be the Final Quiz marks.

TESTS: Students will be evaluated in test, descriptive questions with different complexity levels (Revised Bloom's Taxonomy Levels: Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating). Two tests will be conducted. Each test will be evaluated for 50 Marks, adding upto 100 Marks. Final test marks will be reduced to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.

Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Rubric for CIE & SEE Theory courses						
	RUBRIC for CIE	1		RUBRIC for SEE	1	
SLNo	Content	Marks	Q. No	Contents	Marks	
1 Quizzes - Q1 & Q2 20				nit consists of TWO questions of 20 Marks each. Answ	ver FIVE	
2 Tests - T1 & T2 40 full questions selecting ONE from each unit (1 to 5).						
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
			7 & 8	Unit-4: Question 7 or 8	20	
			9 & 10	Unit-5: Question 9 or 10	20	
				Total Marks	100	

		SEMESTER: III		
Course Code	: 22MST3E3T		CIE Marks	: 100
Credits L-T-P	: 3 - 1 - 0	STABILITY OF STRUCTURES	SEE Marks	: 100
Hours	: 42L+28T	Elective E (Professional Elective)	SEE Durations	: 3 Hrs
Fac	culty Coordinator:	Dr.Madhavi.K	I	
		UNIT - I		9 Hrs
Buckling of co	lumns: Euler's eq	uation for buckling of elastic column, Buckling c	of columns with vario	Jus
boundary cond	ditions, Deflection	shapes of buckled columns. Energy method, Co	ncepts of stable and	unstable
equilibrium of	systems, Approxi	mate calculation of critical loads by energy meth	od. Elastically suppo	orted
columns, Criti	cal load of portal i	trames with different boundary conditions.		0 11
Inclastic Ducl	ling Effort of abo	UNIT - II	n to buolding of buil	
columns Inels	ang: Ellect of shea	itations of Fuler's theory Reduced modulus the	ii to buckling of buil	t up
modulus theor	v comparison wit	h experimental results	ory and Shemey's ta	ligent
inouuluo theor	y, comparison wit	UNIT - III		8 Hrs
Buckling of Ec	centrically loaded	columns: Large deflection theory. Effect of initia	al imperfections. Perr	v Robertsor
approach to co	olumn failure. Infl	uence of eccentricity and secant formula. Multip	le column formulas.	Multiple
column curves	s of IS code for var	ious imperfection factors. Selection of sections for	or compression mem	bers.
		UNIT - IV		8 Hrs
Lateral bucklin	ng of beams: Later	al buckling of beams in pure bending, Lateral b	uckling of cantilever	beam and
narrow rectan	gular beams. Simp	oly supported beam of I section subjected to cen	tral concentrated loa	d. Pure
Torsion of thir	n – walled bars of o	open cross section. Non – uniform Torsion of thi	n – walled bars of ope	en cross
section.				
		UNIT - V		9 Hrs
Buckling of the	in Plates: Introduc	ction to plate buckling and small deflection theor	ry, Critical load of pla	ate using
equilibrium an	id energy approact	h, Simply supported rectangular plate with unifo	rm compression in o	ne direction
	mes.	nder the action of shearing stresses.		
After going thr	rough this course i	the student will be able to:		
CO1	: Explain the pri	nciples of strength, stability and phenomenon of	f buckling	
CO2	: Apply the princ	ciples of stability to calculate buckling load.		
CO3	: Evaluate the bi	uckling load on column, beam – column, frames	and plates using cla	ssical and
	approximate m	ethods.	1 0	
CO4	· : Develop analyt	ical skills leading to solution of buckling problen	ns	
Reference Bo	oks			
1.Theory of Ela	astic Stability, Ste	phen P.Timoshenko, James M Gere, 2nd Edition	ı, Tata McGraw Hill,	New
Delhi,2010, IS	BN-10 0-07-0702	41-1		
2. Chajes, A. "	Principles of Strue	ctures Stability Theory", 1st Edition, Prentice Ha	11, 1974.ISBN: 97801	137099641
3.Gambhir, "S	tability Analysis a	nd Design of Structures", Springer, New York, 2	004.ISBN-: 3540207	7848
4.Guide to Sta	bility Design Crite	ria for Metal Structures, T.V.Galambos,5th Edit	ion, John	
Wiley&Sons,N	ewyork,1998. ISB	N 1-4196-5207-9.		
Scheme of Co	ontinuous Interna	al Evaluation (CIE): 20 + 40 + 40 = 100		
QUIZZES: Qui	zzes will be condu	icted in online/offline mode. Two quizzes will be	conducted & Each Q	Juiz will be
evaluated for 1	10 Marks. The sur	n of two quizzes will be the Final Quiz marks.	1	
TESTS: Stude	nts will be evaluat	ted in test, descriptive questions with different co	omplexity levels (Rev	ised Bloom's
Lev	EIS: Remembering	, Understanding, Applying, Analyzing, Evaluatin	g, and Creating). Two	D tests will
be conducted.	Lach test will be	evaluated for 50 Marks, adding upto 100 Marks.	rinal test marks wi	i be reduced

to 40 Marks.

EXPERIENTIAL LEARNING: Students will be evaluated for their creativity and practical implementation of the problem. Case study-based teaching learning and Program specific requirements (15), Video based seminar/presentation/demonstration (25) adding upto 40 marks.



Scheme of Semester End Examination (SEE) for 100 marks: The question paper will have FIVE questions with internal choice from each unit. Each question will carry 20 marks. Student will have to answer one full question from each unit.

Rubric for CIE & SEE Theory courses						
	RUBRIC for CIE			RUBRIC for SEE	1	
SLNo	Content	Marks	Q. No	Contents	Marks	
1	1 Quizzes - Q1 & Q2 20 Each unit consists of TWO questions of 20 Marks each. Answer FIVE				er FIVE	
2	2 Tests - T1 & T2 40 full questions selecting ONE from each unit (1 to 5).					
3	Experiential Learning - EL1 & EL2	40	1&2	Unit-1: Question 1 or 2	20	
	Total Marks	100	3&4	Unit-2: Question 3 or 4	20	
			5&6	Unit-3: Question 5 or 6	20	
				Unit-4: Question 7 or 8	20	
				Unit-5: Question 9 or 10	20	
				Total Marks	100	



SEMESTER III

Course Code	:	22MST32N		CIE Marks	:	50
Credits L-T-P	:	0 - 0 - 6	INTERNSHIP	SEE Marks	:	50
Hours/Week	:	12		SEE Durations	:	3 Hrs

Guidelines:

1. The duration of the internship shall be for a period of 6 weeks on full time basis after II semester final exams and before the commencement of III semester.

2. The student must submit letters from the industry clearly specifying his / her name and the duration of the internship on the company letter head with authorized signature.

3. Internship must be related to the field of specialization of the respective PG programme in which the student has enrolled.

4. Students undergoing internship training are advised to report their progress and submit periodic progress reports to their respective guides.

5. Students have to present the internship activities carried out to the departmental committee and only upon approval by the committee, the student can proceed to prepare and submit the hard copy of the final internship report. 6. The reports shall be printed on A4 size with 1.5 spacing and Times New Roman with font size 12, outer cover of the report (wrapper) has to be softbound in Ivory color for PG circuit Programs and Light Blue for Non-Circuit Programs.

Course Outcomes: After going through the internship the student will be able to

CO1: Apply Engineering and Management principles to solve the problems

CO2: Analyze real-time problems and suggest alternate solutions

CO3: Communicate effectively and work in teams

CO4: Imbibe the practice of professional ethics and lifelong learning

Scheme of Continuous Internal Evaluation (CIE):

The evaluation committee shall consist of Guide, Professor, Associate Professor/Assistant Professor. The committee shall assess the presentation and the progress reports.

Reviews	Activity	Weightage
т	Application of Engineering knowledge in industries, ability to comprehend the	
1	functioning of the Organization/ Departments.	40%
TT	Importance of Resource Management, Environment and Sustainability.	
11	Demonstration and Presentation of Internship work with Report Submission	60%

Scheme for Semester End Evaluation (SEE):

The SEE examination shall be conducted by an external examiner (domain expert) and an internal examiner. Evaluation shall be done in batches, not exceeding 6 students per batch.



SEMESTER III Course Code 22MST33P **CIE Marks** 50 : 50 Credits L-T-P 0 - 0 - 6 MINOR PROJECT SEE Marks : Hours/Week 12 SEE Durations 3 Hrs •

Guidelines:

1. Each project group will consist of maximum of two students.

2. Each student / group has to select a contemporary topic that will use the technical knowledge of their program of study after intensive literature survey.

3. Allocation of the guides preferably in accordance with the expertise of the faculty.

4. The minor project would be performed in-house.

5. The implementation of the project must be preferably carried out using the resources available in the department/college.

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

CO1: Conceptualize, design and implement solutions for specific problems.

CO2: Communicate the solutions through presentations and technical reports.

CO3: Apply resource managements skills for projects.

CO4: Synthesize self-learning, team work and ethics.

Scheme of Continuous Internal Examination

Evaluation shall be carried out in three reviews. The evaluation committee shall consist of Guide, Professor and Associate Professor/Assistant Professor.

Phase *	Activity	Weightage			
т	Approval of the selected topic, formulation of Problem Statement and				
1	Objectives with Synopsis submission	20 %			
II	Mid-term seminar to review the progress of the work with documentation	40 %			
III	Oral presentation, demonstration and submission of project report	40 %			
* Phase wise rubrics to be prepared by the respective departments					

CIE Evaluation shall be done with weightage / distribution as follows:

• Selection of the topic & formulation of Problem Statement and Objectives	10 %
• Design and simulation/ Algorithm development/ Experimental setup	25 %
Conducting experiments/ Implementation / Testing	25 %
Demonstration & Presentation	25 %
• Report writing	15 %
	-

Scheme of Semester End Examination (SEE):

The evaluation will be done by ONE senior faculty from the department and ONE external faculty member from Academia / Industry / Research Organization. The following weightages would be given for the examination. Evaluation will be done in batches, not exceeding 6 students.

- Brief write up about the project 05%
- Methodology and Experimental Results & Discussion 20%
- Presentation / Demonstration of the Project 25%
- Report 20%
- Viva Voce 30%



SEMESTER IV

Course Code	:	22MST41P		CIE Marks	:	100
Credits L-T-P	:	0 - 0 - 18	MAJOR PROJECT	SEE Marks	:	100
Hours/Week	:	36		SEE Durations	:	3 Hrs

Guidelines:

1. Major Project is to be carried out for a duration of 18 weeks

2. Students must adhere to the Project Presentation Schedule, report to their guide on a weekly basis and get their Project diary signed by their guide 4. Students must execute the Major Project individually and not in teams.

5. It is mandatory for the students to present/publish their project work in National/International Conferences or Journals

6. The reports shall be printed on A4 size with 1.5 spacing and Times New Roman with font size 12, outer cover of the report (wrapper) has to be soft bound and in Ivory color for PG circuit Programs and Light Blue for Non-Circuit Programs

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

CO1: Conceptualize, Design and Implement solutions for specific problems.

CO2: Communicate the solutions through presentations and technical reports.

CO3: Apply project and resource managements skills, professional ethics and societal concerns

CO4: Synthesize self-learning, sustainable solutions and demonstrate life-long learning

Scheme of Continuous Internal Examination

Evaluation shall be carried out in three reviews. The evaluation committee shall consist of Guide, Professor, Associate Professor/Assistant Professor.

Phase *	Activity	Weightage
Ι	Selection of Project Title, Formulation of Problem Statement and Objectives	20 %
II	Design, Implementation and Testing	40 %
TT	Experimental Result & Analysis, Conclusions and Future Scope of Work,	
11	Report Writing and Paper Publication	40 %

* Phase wise rubrics to be prepared by the respective departments

Scheme for Semester End Evaluation (SEE):

Major Project SEE evaluation shall be conducted in two stages. This is initiated after fulfilment of submission of Project Report and CIE marks.

Stage-1 Report Evaluation: Evaluation of Project Report shall be done by the Guide and an External examiner.

Stage-2 Project Viva-voce: Major Project Viva-voce examination is conducted after receipt of evaluation reports from Guide and External examiner.

SEE procedure is as follows:			
Report	Internal Examiner: 100 Marks	= 20	00
Evaluation	External Examiner: 100 Marks	200 / 2 = 100	Α
Viva-Voce	Jointly evaluated by Internal Guide & External Evaluator	= 100	В
Total Marks = (A + B) / 2 = 100			

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