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Desire	ed Requisite	s:	Courses of Se	mester I and II o	f F. Y. M. To	ech (Civil-Stru	ictures)	
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2			~	execute the	e proposeo	i research	work	throug
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3	To analyse	, interpre	et, debate, and c	lassify the findin	gs of the wor	rk.		
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A				CO) with Bloom	1's Taxonon	ly Level	200	<u> </u>
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COI	set up resea			to understand re	search deve	iopinents and	Ap	plying
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				and must bring o				
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				References				
1	Nationa	l and Inte	ernational journa	als, Conference I	Proceedings i	n Structural E	ngineeri	ing.
2	Technic	al Repor	ts of Professiona	al societies.				
3	Internat	ional and	national codes	of Practices and	Handbooks.			
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Desire	ed Rec	quisites:	Dissertation	Phase I			
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		o ma week		100	-		100
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				Course Objectiv	es		
1	To a	nalyze/experim	ent selected re	esearch topic furth	er.		
2	1	review, classify erimental work.	y and consol	idate observation	s/results base	ed on the det	ailed analytical
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3	100	locument the	research work	in the prescribe	ed format and	present it el	fectively.
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will in	clude	the validation	work and con	apletion of one to	two objective	es of the stud	y The literature
review	shou	ld continue to s	tudy the latest	research material	available in the	he chosen field	iy. The merature
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Each CO of the course must map to at least one PO.

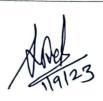
The strength of mapping is to be written as 1: Low, 2: Medium, 3: High



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Each CO of the course must map to at least one PO.





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			Course	Objectives		
1	To provi	de knowledge o	f numerical approac	ch and significance	of analysis by compute	rs.
	To impar	t necessary kno	wledge of numerica	l tools required fo	r analyzing and solving	problems in
2	the field	of engineering.				
,			knowledge to the st	tudents for analyzi	ng and designing structu	res by
3		nal software.				
			Outcomes (CO) w		nomy Level	
At the	end of the	course, the stud	dents will be able to	,		1 1 1 1 1
COI	Execute	various prograr	ns using software fo	or modeling of stru	ictures.	Applying
CO2			ced concrete and ste			Analyzing
CO3	Create v	arious program	s for design of struc	tures.		Creating
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Modu	ıle		Madula			
	-			Contents		Hours
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	Basic	s of computer	ment and Program hardware and os,	ming Languages WWW and Apps	s, Algorithm essentials:	
I	Basic	es of computer em analysis ar	ment and Program hardware and os, and flowcharting, fu	ming Languages WWW and Apps andamentals of se	equential programming:	5
ı	Basic probl Varia	es of computer em analysis ar	ment and Program hardware and os, and flowcharting, fu es & functions +	ming Languages  WWW and Appendamentals of seinput-output + da	equential programming: ata handling + various	5
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1	PratapRudra, "Getting started with MATLABTM", Oxford University press, 2010.
2	Jain M. K., Iyengar S. R. K. & Jain R. K. " Numerical Methods for Scientific and Engineering Computation", 4th ed. 2004.
3	Pundit & Gupta "Structural Analysis", Tata MC Graw Hill Book company.
	References
ı	Steve Otto and James P. Denier "An Introduction to Programming and Numerical Methods" in Springer International books, 1st Edition, 2007
2	Cotes, R.C., Couties, M.G., and Kong, F.K., Structural Analysis, ELBS.
3	Chopra A. K., "Structural Dynamics for Earthquake Engineering", Pearson Publications.
	Useful Links
ı	https://nptel.ac.in/courses/105/105/105105180/
2	http://www.nptelvideos.in/2012/11/numerical-methods-in-civil-engineering.html
3	https://in.mathworks.com/matlab/trial
4	http://www.gnumeric.org/freewarespreadsheetshttps://d.wps.com/?from=premiumpage#/

			CO-PO Mappi	ng		
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CO1	2					
CO2		3			2	
CO3			3		1	

The strength of mapping is to be written as 1: Low, 2: Medium, 3: High Each CO of the course must map to at least one PO.

## Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

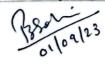
ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

Redi

CO2 Differentiate applications of silica fume concrete and polymer concrete by knowing their properties.  CO3 Propose importance of light weight and high strength concrete in modern constructions.  Module Module Contents Hours Introduction, Properties of constituent materials, Mix proportion, mixing, casting methods, properties of freshly mixed concrete (fiber reinforced concrete), workability tests, mechanical properties, behavior of fiber reinforced concrete compression, tension flexure, research findings, and application of fiber reinforced concrete.  Ferro Cement concrete Introduction, materials used, mechanical properties, construction techniques, design in direct tension, applications, and merits as structural materials  Silica Fume Concrete Introduction, physical and chemical properties of silica Hume, reaction mechanism of silica fume, properties of silica fume concrete in fresh state, mechanical properties and durability of silica fume concrete.  Polymer Concrete Introduction, classification, properties of constituent materials, polymer impregnated concrete, polymer concrete, application.  Light Weight Concrete Introduction, classification, properties of constituent materials, artificial aggregates, application.  High Strength Concrete Introduction, properties of constituent materials, Mix Design, application.  6 Introduction, properties of constituent materials, Mix Design, application.			Wald	chand College	of Engineerin	g, Sangli	
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Class, Semester   Second Year M, Tech., Semester II				The second secon	AND THE RESIDENCE OF THE PARTY		
Course Code 687612 Course Name Elective 4: Advances in Concrete Composites  Teaching Scheme Examination Scheme (Marks)  Teaching Scheme Examination Scheme (Marks)  Lecture 3 Hrs/weck MSE ISE ESE Total Tutorial - 30 20 50 100  Credits: 3  Course Objectives  1 To impart knowledge of various concrete composites used in practice 2 To demonstrate variations in strength of concrete composites used in practice 3 To provide knowledge of various advanced types of concrete in modern construction industry.  Course Outcomes (CO) with Bloom's Taxonomy Level  At the end of the course, the students will be able to, COI Demonstrate engineering properties, behavior and applications of FRC and Ferro cement.  CO2 Differentiate applications of silica fume concrete and polymer concrete by knowing their properties.  CO3 Propose importance of light weight and high strength concrete in modern constructions.  Module Module Contents Hourse Construction of fiber reinforced concrete, workability tests, mechanical properties, behavior of fiber reinforced concrete workability tests, mechanical properties, behavior of fiber reinforced concrete under compression, tension flexure, research findings, and application of fiber reinforced concrete.  Ferro Cement concrete Introduction, physical and chemical properties, construction techniques, design in direct tension, applications, and merits as structural materials  Silica Fume Concrete Introduction, physical and chemical properties of silica Hume, reaction mechanism of silica fume, properties of silica fume concrete in fresh state, mechanical properties of silica fume concrete.  Polymer Concrete Introduction, physical and chemical properties of constituent materials, polymer impregnated concrete, polymer concrete, application.  Light Weight Concrete Introduction, classification, properties of constituent materials, artificial aggregates, application.  High Strength Concrete Introduction, properties of constituent materials, Mix Design, application.  6 Introduction, properties of constituent mate	Donas			The second secon	AND RESIDENCE OF THE PROPERTY	ring)	
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	1	R	afat Siddique, "Spe	ecial Structural Cond	cretes", Galgotia P	ublication Private Ltd.	2000
References  1 R. N. Swamy, "Concrete Technology & Design", Surrey University Press., illustrated, 1984.		P	N Swamu "Cone			Iniversity Press illust	ated 1094



2	P.N. Balaguru, S.P. Shah, "Fiber Reinforced Cement Composites, McGraw Hill., illustrated, 1992.
3	D. J. Hannant, "Fiber Cement and Fiber Concrete", John Wiley & Sons.illustrated,1978
-	Useful Links
1	NPTEL :: Civil Engineering - Concrete Engineering and Technology
2	NPTEL :: Civil Engineering - NOC:Advanced Concrete Technology
,	NPTEL:: Metallurgy and Material Science - NOC: Theory and Practice of Non Destructive
.5	Testing
4	Module 12 (nptel.ac.in)

			CO-PO Mapp	ing		
			Programme O	utcomes (PO)		
	1	2	3	4	5	6
COI	3					
CO2	2			2		
CO3		-	2	2		

The strength of mapping is to be written as 1: Low, 2: Medium, 3: High Each CO of the course must map to at least one PO.

## Assessment

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)

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7	<b>Teaching</b>			the same property of the last terms of the same of the	Scheme (Marks)	
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	compone			1:00	CT-11	
2					s of Tall structures.	
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			utcomes (CO) wi		onomy Level	
	end of the	course, the studer	its will be able to,	4.11		A
COI		rate design philo				Applying
CO2		tall structures for		il loads.	•	Analyzing
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Wodu	_	duction: Design			s and disadvantages -	Hours
					ater supply - drainage	,
1					foundation systems.	6
	Facto	rs affecting heigh	t, growth and form	n - Human comfo	ort criteria.	
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II					Earthquake loading -	6
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III					es - shear walls - wall	8
		s - tubular system				
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IV	analys	sis - Member fo	rces - displacem	ents. Analysis f	or various secondary	6
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		d frames for earth			or acough or mit	
					ion buildings - Expert	
VI					eeds in tall building	6
		ials, systems and		N	3	_
				101		



	Textbooks
1	Schuller.W.G., "High Rise Building Structures", John Wiley & sons, 1977
2	Lynn.S. Beedle, "Advances in Tall Buildings", CBS Publishers and Distributors, New Delhi 1986.
	References
1	Lin T.Y and StotesBurry, D, "Structural Concepts and Systems for Architects and Engineers", John Wiley and Sons, 1988
2	Dr.Gupta.Y.P, Editor, "Proceedings of National Seminar on High Rise Structures - Design and construction practices for Middle Level Cities", Nov - 14 - 16, 1955. New Age International Publishers Ltd., Chennai
3	Lecture Notes on "Tall Buildings" - Short Term Course organized by Civil Engineerin Department, SRM Engg college, Kattankulathur. June 2002
	Useful Links
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			CO-PO	Mapping		
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CO2		3			2	2
CO3			3		2	2

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2	exper	imental work.						
3	To do	ocument the i	research work	in the prescribe	d format and	present it e	ffectively.	
		-	<b>7</b> 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(CO) with Bloom	o's Tovonomy	Lovel		
At the	end of			(CO) with Bloom be able to.	n s raxonomy	Level		
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CO2	Class	ify and assess	research outco	mes critically.			Analysing	
CO3 Compose and conclude the results for presentation.						Evaluating		
				Contents	DOTTED VILLE			
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oreser	ntation s	hould be done	after completion	on of one more ob he latest research	jective in conti	nuation with	the Phase 3. If	
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2	National and International journals, Conference Proceedings in Structural Engineering.  Technical Reports of Professional societies.							
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CO3 Compose and conc							Evaluating
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		International and national codes of Practices and Handbooks.					
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3	To document the		n the prescribed	l format and	present it ef	fectively.	
		urse Outcomes (C		's Taxonomy	Level		
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CO2	Classify and asses					Analysing	
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