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SRI VASAVI ENGINEERING COLLEGE (AUTONOMOUS) (Sponsored by Sri Vasavi Educational Society)
Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada Pedatadepalli, TADEPALLIGUDEM – 534 101, W.G. Dist, (A.P.)

Department of Civil Engineering

COURSE STRUCTURE

<u>M.Tech</u> (Structural Engineering)

V21 Regulation

I SEMESTER

S.No	Course Code	Course Name	L	Т	Р	С
1	V21STET01	Theory of Elasticity	3	0	0	3
2	V21STET02	Structural Dynamics	3	0	0	3
3	V21STET03 V21MAT01 V21STET04	 Elective I 1. Matrix Analysis of Structures 2. Analytical & Numerical Methods for Structural Engineering (Bos of Maths) 3. Design of RCC Foundations 	3	0	0	3
4	V21STET05 V21STET06 V21STET07	 Elective II 1. Bridge Engineering 2. Repair and Rehabilitation of Structures 3. Structural Optimization 	3	0	0	3
5	V21STET08	Advanced Concrete Technology	2	0	0	2
6	V21STEL01	Advanced Concrete Technology Laboratory	0	0	4	2
7	V21STEL02	Advanced Structural Engineering Laboratory		0	4	2
8		Audit Course -1	2	0	0	0
	Total				8	18

Total Contact Hours : 24 Total Credits : 18

II SEMESTER

S.No	Course Code	Course Name		Т	Р	С
1	V21STET09	Finite Element Methods in Structural Engineering		0	0	3
2	V21STET10	Stability of Structures		0	0	3
3	V21STET11 V21STET12 V21STET13	Elective III 1. Theory of Plates and Shells 2. Advanced Steel Design 3. Analysis of Offshore Structures	3	0	0	3
4	V21STET14 V21STET15 V21STET16	Elective IV Earthquake Resistant Design ofBuildings Precast and Prefabricated Structures Farth Potaining Structures 		0	0	3
5	V21STET17	Advanced Reinforced Concrete Design	2	0	0	2
6	V21STEL03	Structural Design laboratory	0	0	4	2
7	V21STEP01	Mini Project With Seminar	0	0	4	2
8		Audit Course -2		0	0	0
		Total	16	0	8	18

Total Contact Hours : 24 Total Credits : 18

Audit course 1 & 2

- 1. English for Research Paper Writing V21PGENT54(BOS English)
- 2. Disaster Management (BOS of CIVIL) V21STEAC1
- 3. Value Education (BOS English) V21PGENT55
- 4. Constitution of India (BOS English) V21PGENT56
- 5. Pedagogy Studies (BOS English) V21PGENT51
- 6. Personality Development through Life Enlightenment Skills (BOS English)
 V21PGENT52
- 7. Stress Management by Yoga V21PGENT53

III SEMESTER

S.No	Course Code	Course Name	L	Т	Р	С
1	V21STET18 V21STET19 V21STET20	 Elective III/ MOOCS*/NPTEL* 1. Design of Prestressed ConcreteStructures 2. Structural Health Monitoring 3. Industrial Structures 4. MOOCS-1 through NPTEL/SWAYAM 12 Week Programme related to the programme which is not listed inthe course structure 	3	0	0	3
2	V21MAT02 V21MBT56	 Open Elective / MOOCS*/NPTEL* 1. Operational Research(BOS of Maths) 2. Cost Management forEngineering Projects (BOS of MBA) 3. MOOCS-2 through NPTEL/SWAYAM 12 Week Programme related to the programme which is not listed inthe course structure 	3	0	0	3
3	V21STEP02	Project Phase I		0	20	10
		Total	6	0	20	16

Total Contact Hours: 26 Total Credits : 16

III

SEMESTER

S.No	Course Code	Course Name	L	Т	Р	С
1	V21STEP03	Project Phase II	0	0	32	16
		Total	0	0	32	16

Total Contact Hours: 32 Total Credits : 16

COURSE OUTCOMES

<u>M.Tech</u> (Structural Engineering)

<u>I SEMESTER – SYLLABUS</u>

Year/Sem	I Sem	L	Т	Р	C	COURSE CODE				
Regulation/Year	V21 / 2021- 2022	3	V21STET01							
Name of the Course	THEORY OF ELASTICITY									
Course Outcomes:	 Relate the sto determinant strain Apply the equilibrium Employ the materials, generalize Use the by the compatibili (K3) Develop in and matrix plane stress 	stress a ne the tensors condition n (K3) e mech constit d Hook equilit displace lity con ndex no x notation	nd de comp (K3) ons of anical utive law (brium cemen dition tation con an e of pla	format onents compa chara equatio K3) equa its s state of equ ddefin ane str	ion a of the tibilit cteris onsar tions tions ed by uation e star	nd how e stress ty and equations of stics of nd stated and stresses ns, tensor te of K3)				

Year/Sem	I Sem L T P C COURSE CODI									
Regulation	V21 3 0 0 3 V21STET0									
Name of the Course	STRUCTURAL DYNAMICS									
Course Outcomes:	 Asses the to dyna earthque earthque Demonse SDOF ese loading. Illustrate systemse behavion nonline variouse Develope solutione beams weighted beams w	ne beha mic loa ake loa strate th structur (K3) te the s to dyr or and ar SDOI dynam o the a for co with dif et the an	vior o ds Ha d(K3) ne beh res w resp resp famic resp F and f ic load bility ontinu ferent nalysis variou	f struc rmonic avior a ith va onse loads a onse MDOF ling. (F to fin ous sy a end co s of bui is meth	tures tures exci and re rious of and F of li struc (3) d ou stem onditi ilding nods.	subjected tation and esponse of dynamic structural Realize the near and tures with at suitable of various ons. (K3) subject to (K3)				

Year/Sem	I Sem	L	Т	Р	C	COURSE CODE				
Regulation	V21 3 0 0 3 V21ST									
Name of the Course	MATRIX ANALYSIS OF STRUCTURES									
Course Outcomes:	 Assess deterministructure method displace Method Solve method Solve method Solve method Asses terministructure Asses terministructure Complementation Complementation 	the inate ces usi s, such ements, s (K3) ultiple imensio beams he ana (K3) the bar pport d te anal vithout	struc an ng cl as r forc degree onal s, fran lysis isplac ysis c side 3)	ctural d lassical nethoo ce an e of fre proble nes an of grid lth, loa ement of plan sway	ana inde l cor l of d e eedon ems d ele ds at (K2) ne fra y by	alysis of eterminate mpatibility consistent quilibrium n two- and involving ane stress ement by stiffness ement by stiffness joints and ames with v various				

Year/Sem	I Sem	L	Т	Р	C	COURSE CODE				
Regulation	V21 3 0 0 3 V21MA									
Name of the Course	ANALYTICAL& NUMERICAL METHODS FOR STRUCTURAL ENGINEERING									
Branch	STRUCTURAL ENGINEERING									
Course Outcomes:	 Calculate heat cond Apply th Develop t Equations Adopt the Finite Diff Apply the Integration 	of Lapl luction le prin che prin s (K3) e princ ference princip on (K3)	ace tr proble ciples ciples aples a and t	ansfor ems(K and and teo and teo heirAp d tech	m mo 3) techn chniq chniq pplica nique	ethods on niques of Elliptic ues of Integral ues of tions (K3) s of Numerical				

Year/Sem	I Sem L T P C COURSE CODE								
Regulation	V21	3	0	0	3	V21STET04			
Name of the Course	DESIGN OF RCC FOUNDATIONS (Elective-I)								
Course Outcomes	 Attain the to select on soil of Capable foundat. Can be of pile the evaluati (K3) Design of Explain mechan 	he perc t suitab category of ensu ion (K3) efficient for diffe on of gr different the pro ism of s	eption le type (K3) uring c t in se erent s roup ca t types pertie	of site e offou lesign o electing coilstra apacity s of wel s of so e foun	e inve ndati conce s suita tum a by fo ll four il and dation	stigation on based pts of shallow able type and in ormulation ndation (K3) l n(K3)			

Year/Sem	I Sem L T P C COURSE CODE							
Regulation	V21	21 3 0 0 3 V21STET						
Name of the Course	BRIDGE ENGINEERING							
Course Outcomes	 Illustra and str (K3) Asses th analyse specific (K3) Demon Develop bridges Illustrat abutme foundat 	te the resses a ne vario s the br ations c strate t o the kn (K3) te the di nts, pier ions for	differen acting us me idges of brid he box owled owled fferen rs and Bridg	ent typ on va thodolo and al ge sup c culve ge on c t types variou ges (K3	oes o rious soint er str rts ar design of be stype 5)	f loads bridges to erpret the ucture nd its design (K3) n of plate girder earings, es of		

Year/Sem	I Sem	L	Т	Р	C	COURSE CODE			
Regulation / Year	V21 / 2021- 2022	3	0	0	3	V21STET06			
Name of the Course	REPAIR AND REHABILITATION OF STRUCTURES								
Course Outcomes	 Reco degr to de (K2) Desc for d inclu (K2) Deve stren struc Dem its p Exar stren (K3) 	ognize t adation esign du cribe an leteriora iding re elop th ngthenin ctures. (onstrat ropertie nine the ngth by	he me of co urable d sugg ated co pairin ne me (K3) e the f es. (K3 e struc high p	chanis ncrete concrete gest rep oncrete g with ethods ethods fiber re 3) ctural n	ms of struc ete struc comp of for einfor nemb	f etures and ructures. crategies etures cosites. concrete ced concrete and er's concrete.			

Year/Sem	I Sem	I Sem L T P C COURSE COI								
Regulation	V21	V21 3 0 0 3 V21								
Name of the Course	STRUCTURAL OPTIMIZATION									
Course Outcomes	 Study the structure Solve set optimized variation Have su optimized program Described linear perstructure Use and program 	he optin ral engi- ome con ation p ons. officient cation te mming, e nume orogram ral optin d descri mming	nizatio neerin tinuou roblen know echniq geom rical a ming nizatio be qua	on met g is struc ns usir vledge jues lik etric a ilgorith suitabl on prol adratic	hodo ctural ng cal on va ce, no nd dy nms a e for olems : and	logies applied to culusof rious n-linear mamic nd s. dynamic				

Year/Sem	I Sem	L	Т	Р	C	COURSE CODE		
Regulation	V21	2	0	0	2	V21STET08		
Name of the Course	ADVANCED CONCRETE TECHNOLOGY							
Course Outcomes	 Explain proport Describ concret Explain perform process Develop durabili Describ designs 	the ma tions (K e the fr e (K2) high st nance c s and its o the sp ity prop be the fo s (K2)	terials 2) esh an crengtl oncret s prop ecial c perties ormwo	s of con ad hard h and h te man certies concret (K3) ork con	ncrete lened nigh- ufact (K2) e and sider	e and its chemical properties of uring I enhance the rations used in		

Year/Sem	I Sem L T P C COURSE CODE								
Regulation	V21	0	0	4	2	V21SEL01			
Name of the Course	ADVANCED CONCRETE TECHNOLOGY LABORATORY								
Course Outcomes	 Deverse Cem / Cem / Ce cond Deverse cond Deverse relat aggr Calc Asset usin metl Find cond and 	elop rel ent Rat ment R crete. elop stre cion bet egates. ulate St ess cor g No hods. l proper crete by Slump	ation tios V atios V ength ween rain r ncrete n rties c v using tests	betwe s Wor Vs Stre and we fine ag neasur prop destr of Self o g L Bos	een V kabil ength orkab grega ertie ertie ructiv comp	Vater / ity,Water in hility ate,coarse nt in concrete. s by ve testing paction dox ,U box			

Year/Sem	I Sem L T P C COURSE CODE						
Regulation	V21 0 0 4 2 V21SEL02						
Name of the Course	ADVANCED STRUCTURAL ENGINEERING LABORATORY						
Course Outcomes	 Conduct various laboratory tests on Cement, Aggregates Know strain measurement Non destructive testing Chemical analysis on concrete and Aggregate and Sand 						

<u>II SEMESTER – SYLLABUS</u>

Year/Sem	II Sem	L	Т	Р	C	COURSE CODE
Regulation	V21	3	0	0	3	V21STET09
Name of the	FINITE ELE	MENT	ME	THOD	S	IN STRUCTURAL
Course	ENGINEERING					
Course Outcomes	 Comput body (K Calculat Calculat Interpr (K3) Formulate 	te princ (3) te the s te the s et displ	iple of tiffnes tiffnes aceme ape fu	poten s matr s matr ents, st nctions	tial e rices o ices o rains s for	nergy of an elastic of truss element (K3) of beam elements (K3) and stress resultants element (K3)

Year/Sem	II Sem L T P C COURSE CODE								
Regulation	V21 3 0 0 3 V21STET10								
Name of the Course	STABILITY OF STRUCTURES								
Course Outcomes	 Deveload load colur Illus elast meth Illus elast vario Asse beha torsi Illus buck 	elop diff ing and mn (K3) trate a ic l nodolog trate a cic k ousmeth ss the t viour o ion of th trate an cling of	ferenti end c and v bucklin ies (K: und w bucklin nodolo orsion f pure nin wa nd wo variou	al equ condition work ng 3) vork c ng u ogies (k al buc e and n lled ba rk out us cros	ation ons o out using out t using (3) kling on un rs (K the la ss sec	based on fbeam the gvarious he in- niform 3) ateral tions(K3)			

Year/Sem		II Sem L T P C COURSE CODE							
Regulation		V21 3 0 0 3 V21STET11							
Name of Course	the	THEORY OF PLATES AND SHELLS							
Course Outco	mes	 Analyze and sol plates (Analyze conditio Practice plate pr Develop principl Identify shells.(I 	e Navier ve for f K3) e circula ons (K3) e on the oblems o the le and the bel K3)	t's soli the re r plat finite (K3) poten find havior	ution, l ctangu es with differe tial er th of fold	Levy's laran n vari ence r nergy le led pl	s solution d square ous boundary nethod of solving solution ofrecta lates and		

Year/Sem	II Sem	L	Т	Р	C	COURSE CODE		
Regulation	V21 3 0 0 3 V21STET12							
Name of the Course	ADVANCED STEEL DESIGN							
Course Outcomes	 Examin various (K3) Assess differer conside Illustra connect membe Develop building lateral l Comple girder measur 	the protections the protection of the protection of the protection of the protection of the the of the protection of the	imple and o plastic peams (K3) eccent vario nalyse cted (K3) design and rders	conne design analy base tric and tric a	ection ofco ysis d d mo uctur dustr isver: teel t	n used in nnection to on their oment cal rial seand russ ing		

Year/Sem	II Sem	L	Т	Р	C	COURSE CODE		
Regulation	V21	V21 3 0 0 3 V21STET13						
Name of the Course	ANALYSIS OF OFFSHORE STRUCTURES							
Course Outcomes	 Illus (K3) Calc mon Asse bodi Asse bodi Com of fix 	trate di ulation nentum ess the V es. (K3) ess the V es. (K3) pute St ked offs	fferent of Cor . (K3) Wave f Wave f atic an hore s	t types nserva force e force e nd dyn structu	of of tion r stima stima amic res.(1	fshore structures. nass and tion on small tion on long analysis K3)		

Year/Sem	II Sem	L	Т	Р	C	COURSE CODE			
Regulation	V21	3	0	0	3	V21STET14			
Name of the Course	EARTHQUAKE RESISTANT DESIGN OF BUILDINGS								
Course Outcomes	 Dem seist mech moti grou Asse varie their Com varie duct (K3) Asse steel elem Illus and to da 	onstration nology hanisms on, mag nd mot ss the sous mo ductilition ous bui cle beh ss the C land nents (K trate the restora amage c	e th and s, tecto gnitud ion. (k seismi bment ty beh che e lding navior (yclic l pre- 3) ne me tion c lue to	e fur basi onics t e and (3) c desig resist aviour arthqu frames of bui oading stre	idamo ic e ypes prop gn co ting fr (K3) iake s and uildir beha ssed of R lings uake	entals of arthquake of ground agation of ncepts of ames and load on study on ag frames vior of RC, concrete etrofitting subjected s (K3)			

Year/Sem	II Sem	L	Т	Р	С	COURSE CODE			
Regulation	V21 3 0 0 3 V21STET15								
Name of the Course	PRECAST AND PREFABRICATED STRUCTURES								
Course Outcomes	 Explain Principl Find Pr Assess (K3) Analyze prefabr Design (K3) 	impote les of P efabrica Joints the pro ication. and det	ence of refabr ited Lo for dif oductio (K3) ailing	f prefal ication oad Car ferent on tech of pred	bricat . (K3) rrying struc nnolog cast U	tion and g Members. (K3) tural connections. gy of JNIT for factories.			

Year/Sem	II Sem	L	Т	Р	C	COURSE CODE			
Regulation	V21	3	0	0	3	V21STET16			
Name of the Course	EARTH RETAINING STRUCTURES								
Course Outcomes	 Computassocia (K3) Assess trequires technica wall (K3) Employ sheet pexterna Apply trin the desystems Relate cestability 	te the la ted with the failu ments in ally app 3) differe ile struc l and in the kn lesignin s (K3) different v of brac	ateral h diffe nre crit n selec ropria nt tecl cture o ternal owled g the o t meth ced cut	earth erent ea terion a cting th ite type hnique stabili ge of r earthre ods in ts andc	press arths and st emos e of ro eringt ty (K einfo etainin analy coffer	sures ystems tability st etaining lesign a poth 3) rced earth ng vzing the dams (K3)			

Year/Sem	I Sem	L	Τ	Р	C	COURSE CODE			
Regulation	V21	2	0	0	2	V21STET17			
Name of the Course	ADVANCED REINFORCED CONCRETE DESIGN								
Course Outcomes	 Expla prov (K2) Apply Deve slabs Expla invol desig Inter eccer 	ain the isions if elop the s (K3) ain the lved in gnproce pret the ntric co	limit s n anal eld lin design design deep k dure (e Design lumn (state m ysis of e meth ns to fl steps beams, K2) gn met (K3)	ethoo struc od to at sla corbo	l ctures analyze slab (K3) bs and ribbed el of slender and			

Year/Sem	II Sem	L	Т	Р	C	COURSE CODE
Regulation	V21	0	0	4	2	V21SEL03
Name of the Course	STRUCTURAL DESIGN LABORATORY					
Course Outcomes	 Develop Analysi various Use diff softwar Enginee 	p Comj s and Structu ferent S re's to s ering pr	outer ral Ele tructu olve v ogram	Progr Desig ements ral Eng arious is	ams n ginee civil	for of ring

<u>III SEMESTER – SYLLABUS</u>

Year/Sem	III Sem	L	Т	Р	C	COURSE CODE
Regulation / Year	V21 / 2021- 2022	3	0	0	3	V21STET18
Name of the Course	DESIGN OF PRESTRESSED CONCRETE STRUCTURES					
Course Outcomes	 Compute the Analysis of prestress , losses in prestress and Anchorageslip (K3) Deflections of prestressed concrete members (K3) Employ types and advantages and analysis of composite sections (K3) Apply the knowledge of prestressed concrete slabs (K3) Analyze continuity beams in prestressed concrete structures (K3) 					

Year/Sem	III Sem	L	Т	Р	C	COURSE CODE
Regulation	V21 3 0 0 3 V21STET19					
Name of the Course	STRUCTURAL HEALTH MONITORING					
Course Outcomes	 Assess the structural health by investigation and regular maintenance (K3) Employ various measures for monitoring structural health (K3) Employ various Investigations for monitoring structural audit (K3) Discover the dynamic field testing (K3) Apply the knowledge of Repairing and rehabilitation of structures (K3) 					nance onitoring or monitoring g (K3) ng and

Year/Sem	III Sem	L	Т	Р	C	COURSE CODE
Regulation	V21	3	0	0	3	V21STET20
Name of the Course	INDUSTRIAL STRUCTURES					
Course Outcomes	 functional requirements of structural systems for various industries(K3) Get an idea about the materials used and design of Pre Engineered Buildings (K3) Realize the basic concepts and design of power plant structures (K3) Design power transmission structures (K3) 					

Year/Sem	III Sem	L	Т	Р	C	COURSE CODE	
Regulation	V21	3	0	0	3	V21MBT56	
Name of the Course	COST MANAGEMENT OF ENGINEERING PROJECTS						
Course Outcomes	 Understa and vario (K2) Unde aspects o relatedpi Analy analy Demo techniqu strategie Apply mana 	and the bus cost erstand of a proj rocesse yze the yze the vsis. (K3 onstrat es besic s (K2) y quant agement	cost m variou ect an s. (K2 conce 3) e qual les bu itative t (K4)	nanage Ivedin Is d pts of I ity man dgetin techni	ement a pr Breal nager g iques	process oject even and CVP nent for cost	

AUDIT COURSES OFFERED IN I & II SEMESTER

Audit course	I & II Sem	Disaster Management	V21STEAC1

Year/Sem		L	Τ	Р	C	COURSE CODE
Regulation Year	V21 / 2021- 2022	3	0	0	3	V21STEAC1
Name of the Course	DISASTER MANAGEMENT					
Course Outcomes	 Describ differer disaster Develop underst and the Prepare inorder codes a (K3) Illustrat technole (K2) Assess and cor disaster 	be to stunt natur r manage p the strand materia tand materia tand materia tand with to und nd vuln te to stud ogy in o the import nmunity r manage	ident al haz gemer udent anmad gemer udent erabili udent lisaste portano gement	to have ards a to to le disa nt (K3) in such d build ity of d about er man ce of e baredne t to stu	e a ide nd ster) n a w ding lisaste agem ducat ess in dent	ea on ay er of ent cion (K3)