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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

V18 Regulation

M. Tech (Structural Engineering)

I SEMESTER

S.No	Code	Subject	L	P	C
1	V18MAT05	Advanced Mathematics	3	0	3
2	V18SET01	Theory of elasticity	3	0	3
3	V18SET02	Matrix analysis of structures	3	0	3
4	V18SET03	Structural dynamics	3	0	3
5	V18SET04	Elective-I I. Pre-stressed concrete I. Sub-structure design II. Structural optimization	3	0	3
6	V18SET05	Elective-II I. Repair and rehabilitation of structures II. Analysis and design of tall buildings III. Plastic analysis and design	3	0	3
7	V18SEL01	Advanced structural Engineering laboratory	0	4	2
Total Credits					20

Total Contact H ours:22

II SEMESTER

S.No	Code	Subject	L	P	C
1	V18SET06	Finite element method	3	0	3
2	V18SET07	Earth quake resistant design	3	0	3
3	V18SET08	Stability of structures	3	0	3
4	V18SET09	Theory of plates and shells	3	0	3

5	V18SET10	Elective-III I. Experimental stress analysis II. Reliability analysis and design III. Advanced concrete technology	3	0	3
6	V18SET11	Elective-IV I. Industrial structures II. Bridge Engineering III. Earth retaining structures	3	0	3
7	V18SEL02	CAD Laboratory	0	4	2
Total Credits					20

Total Contact Hours:22

III SEMESTER

S.No	Code	Subject	L	P	C
1	V18SEL03	Comprehensive Viva-Voce			2
2	V18SEL04	Seminar-I			2
3	V18SEL05	Project Work Part-I			16
Total Credits					20

IV SEMESTER

S.No	Code	Subject	L	P	C
1	V18SEL06	Seminar-II			2
2	V18SEL07	Project Work Part-II			18
Total Credits					20

COURSE OUTCOMES

Year/Sem	I Sem	L	T	P	C	COURSE CODE
Regulation/ Year	V18	3	0	0	3	V18STET01
Name of the Course	**THEORY OF ELASTICITY**					
Course Outcomes:	• Relate the stress and deformation and how to determine the componentsof the stress and strain tensors (K3) • Apply the conditions of compatibility and equations of equilibrium (K3) • Employ the mechanical characteristics of materials, constitutive equationsand generalized Hook law (K3) • Use the equilibrium equations stated by the displacements andcompatibility conditions stated by stresses (K3) • Develop index notation of equations, tensor and matrix notation anddefine state of plane stress, state of plane strain (K3)					

Year/Sem	I Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET02
Name of the Course	**MATRIX ANALYSIS OF STRUCTURES**					
Course Outcomes:	• Assess the structural analysis of determinate and indeterminate structures using classical compatibility methods, such as method of consistent displacements, force and equilibrium Methods (K3) • Solve multiple degree of freedom two- and three-dimensional problems involving trusses, beams, frames and plane stress (K3) • Asses the analysis of grid element by stiffness method (K3) • Discuss the band width, loads at joints and their support displacement (K2) • Complete analysis of plane frames with and without side sway by various approaches. (K3)					

Year/Sem	I Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET03
Name of the Course	**STRUCTURAL DYNAMICS**					
Course Outcomes:	• Asses the behavior of structures subjected to dynamic loads Harmonic excitation and earthquake load(K3) • Demonstrate the behavior and response of SDOF structures with various dynamic loading. (K3) • Illustrate the response of structural systems to dynamic loads and Realize the behavior and response of linear and nonlinear SDOF and MDOF structures with various dynamic loading. (K3) • Develop the ability to find out suitable solution for continuous system of various beams with different end conditions. (K3) • Interpret the analysis of building subject to earthquake by various methods. (K3)					

Year/Sem	III Sem	L	T	P	C	COURSE CODE
Regulation / Year	V18	3	0	0	3	V18STET04
Name of the Course	**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	I Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET04
Name of the Course	**STRUCTURAL OPTIMIZATION**					
Course Outcomes	• Study the optimization methodologies applied to structural engineering • Solve some continuous structural optimization problems using calculusof variations. • Have sufficient knowledge on various optimization techniques like, non-linear programming, geometric and dynamic • Describe numerical algorithms and linear programming suitable for structural optimization problems. • Use and describe quadratic and dynamic programming .					

Year/Sem	I Sem	L	T	P	C	COURSE CODE
Regulation / Year	V21 / 2021-2022	3	0	0	3	V21STET06
Name of the Course	**REPAIR AND REHABILITATION OF STRUCTURES**					
Course Outcomes	• Recognize the mechanisms of degradation of concrete structures and to design durable concrete structures. (K2) • Describe and suggest repair strategies for deteriorated concretestructures including repairing with composites. (K2) • Develop the methods of strengthening methods for concrete structures. (K3) • Demonstrate the fiber reinforced concrete and its properties. (K3) • Examine the structural member‘s strength by high performanceconcrete. (K3)					

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					

II semester

Year/Sem	II Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET06
Name of the Course	**FINITE ELEMENT METHODS**					
Course Outcomes	• Compute principle of potential energy of an elastic body (K3) • Calculate the stiffness matrices of truss element (K3) • Calculate the stiffness matrices of beam elements (K3) • Interpret displacements, strains and stress resultants (K3) • Formulate the shape functions for element (K3)					

Year/Sem	II Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET08
Name of the Course	**STABILITY OF STRUCTURES**					
Course Outcomes	• Develop differential equation based on loading and end conditions ofbeam column (K3) • Illustrate and work out the elastic buckling usingvarious methodologies (K3) • Illustrate and work out the in-elastic buckling using variousmethodologies (K3) • Assess the torsional buckling behaviour of pure and non uniform torsion of thin walled bars (K3) • Illustrate and work out the lateral buckling of various cross sections(K3)					

Year/Sem	II Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET09
Name of the Course	**THEORY OF PLATES AND SHELLS**					
Course Outcomes	• Analyze Navier‘s solution, Levy‘s solution and solve for the rectangularand square plates (K3) • Analyze circular plates with various boundary conditions (K3) • Practice on the finite difference method of solving plate problems(K3) • Develop the potential energy principle and find the solution ofrecta • Identify the behavior of folded plates and shells.(K3)					

Year/Sem	I Sem	L	T	P	C	COURSE CODE
Regulation	V18	2	0	0	2	V18STET10
Name of the Course	**ADVANCED CONCRETE TECHNOLOGY**					
Course Outcomes	• Explain the materials of concrete and its chemical proportions (K2) • Describe the fresh and hardened properties of concrete (K2) • Explain high strength and high-performance concrete manufacturing process and its properties (K2) • Develop the special concrete and enhance the durability properties (K3) • Describe the formwork considerations used in designs (K2)					

Year/Sem	III Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET11
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	I Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET11
Name of the Course	**BRIDGE ENGINEERING**					
Course Outcomes	• Illustrate the different types of loads and stresses acting on variousbridges (K3) • Asses the various methodologies to analyses the bridges and alsointerpret the specifications of bridge super structure (K3) • Demonstrate the box culverts and its design (K3) • Develop the knowledge on design of plate girder bridges (K3) • Illustrate the different types of bearings, abutments, piers and varioustypes of foundations for Bridges (K3)					

Year/Sem	II Sem	L	T	P	C	COURSE CODE
Regulation	V18	3	0	0	3	V18STET11
Name of the Course	**EARTH RETAINING STRUCTURES**					
Course Outcomes	• Compute the lateral earth pressures associated with different earthsystems (K3) • Assess the failure criterion and stability requirements in selecting themost technically appropriate type of retaining wall (K3) • Employ different techniques to design a sheet pile structure consideringboth external and internal stability (K3) • Apply the knowledge of reinforced earth in the designing the earthretaining systems (K3) • Relate different methods in analyzing the stability of braced cuts andcofferdams (K3)					