SHRI VENKATESHWARA UNIVERSITY

EVALUATION SCHEME

M.TECH (Structural Engineering)

PART-TIME

(Two Years Post Graduation Programme)

(w.e.f. 2019-20)

SCHOOL OF ENGINEERING & TECHNOLOGY

Evaluation for M.Tech (Structural Engineering-Part time)

Sl. No.	Subject Codes	Subject	Periods			Evaluation Scheme				End Semester		Total	Credit
			L	T	P	CT	TA	Total	PS	TE	PE		
		SEMESTER-I											
1	WSE-101	Advanced Structural Analysis	3	0	0	20	10	30		70		100	3
2	WSE-011	Theory of Thin Plates and Shells	3	0	0	20	10	30		70		100	3
3	WSE-111	Structural Design Lab	0	0	4				25		25	50	2
4	AUD-101	English for Research Paper Writing	2	0	0								0
		Total										250	8

M.TECH SE (Semester I)
WSE-101 - Advanced Structural Analysis (Credits - 3:0:0 = 3)

Teaching Scheme Lectures: 3 hrs/week

Course outcomes: At the end of the course, students will be able to
1. Analyze the skeleton structures using stiffness analysis code.
2. Use direct stiffness method understanding its limitations

Syllabus Contents:
- **Influence Coefficients:** Physical Significance, Effects of Settlements, Temperature Change and Lack of Fit, Member Approach and Structure Approach.
- **Stiffness Method applied to Large Frames:** Local Coordinates and Global Coordinates.
- **Stiffness Matrix Assembly of Structures:** Stiffness Matrix in Global Coordinates, Boundary Conditions, Solution of Stiffness Matrix Equations, Calculation of Reactions and Member Forces.
- **Applications to Simple Problems:** Beams, Plane Trusses, Plane Rigid Jointed Frames and
Grids by Structure Approach and Member Approach.
- **Boundary Value Problems** (BVP): Approximate Solution of Boundary Value Problems, Modified Galerkin Method for One-Dimensional BVP, Matrix Formulation of the Modified Galerkin Method.
- **Linear Element:** Shape Functions, Solution for Poisson's Equation, General One Dimensional Equilibrium Problem.

References:
- Matrix Analysis of Framed Structures, Weaver and Gere.
- The Finite Element Method, Lewis P. E. and Ward J. P., Addison-Wesley Publication Co.
- Computer Methods in Structural Analysis, Meek J. L., E and FN, Span Publication.
- The Finite Element Method, Desai and Able, CBS Publication.

WSE-011 Theory of Thin Plates and Shells (Credits - 3:0:0 = 3)

Teaching Scheme Lectures: 3 hrs/week

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

1. Use analytical methods for the solution of thin plates and shells.
2. Use analytical methods for the solution of shells.
3. Apply the numerical techniques and tools for the complex problems in thin plates.
4. Apply the numerical techniques and tools for the complex problems in shells.

Syllabus Contents:
- **Introduction:** Space Curves, Surfaces, Shell Co-ordinates, Strain Displacement Relations, Assumptions in Shell Theory, Displacement Field Approximations, Stress Resultants, Equation of Equilibrium using Principle of Virtual Work, Boundary Conditions.
- **Static Analysis of Plates**: Governing Equation for a Rectangular Plate, Navier Solution for
Simply- Supported Rectangular Plate under Various Loadings, Levy solution for Rectangular Plate with other Boundary Conditions.
- **Circular Plates:** Analysis under Axi- Symmetric Loading, Governing Differential Equation in
Polar Co-ordinates. Approximate Methods of Analysis- Rayleigh-Ritz approach for Simple Cases in Rectangular Plates.
- **Static Analysis of Shells: Membrane Theory of Shells** - Cylindrical, Conical and Spherical Shells,
- **Shells of Revolution: with Bending Resistance** - Cylindrical and Conical Shells, Application to Pipes and Pressure Vessels.
- **Thermal Stresses in Plate/ Shell**

References:
- Theory of Plates and Shells, Timoshenko S. and KriegerW., McGraw Hill.
- Stresses in Plates and Shells, UguralAnsel C., McGraw Hill.
- Thin Elastic Shells, KrausH., John Wiley and Sons.

- Theory of Plates, ChandrashekharaK., Universities Press.
- Design and Construction of Concrete Shells, RamaswamyG.S.

WSE-111 Structural Design Lab (Credits - 0:0:4= 2)

Teaching Scheme Lab: 2 hrs/week
Course Outcomes: At the end of the course, students will be able to
1. Design and Detail all the Structural Components of Frame Buildings.
2. Design and Detail complete Multi-Storey Frame Buildings.

Syllabus Content:
Design and detailed drawing of complete G+ 3 structures by individual student using latest relevant IS codes.

AUDIT 1 : ENGLISH FOR RESEARCH PAPER WRITING AUD -101

Course objectives:
Students will be able to:
1. Understand that how to improve your writing skills and level of readability
2. Learn about what to write in each section
3. Understand the skills needed when writing a Title Ensure the good quality of paper at very first-time submission

SYLLABUS CONTENTS
- Planning and Preparation, Word Order, Breaking up long sentences, Structuring
- Paragraphsand Sentences, Being Conciseand Removing Redundancy, Avoiding Ambiguity and Vagueness.
- Clarifying Who Did What, Highlighting Your Findings, Hedging and Criticising,
- Paraphrasing and Plagiarism, Sections of a Paper, Abstracts. Introduction.
- Review of the Literature, Methods, Results,Discussion, Conclusions.
- The Final Check. key skills are needed when writing a Title, key skills are needed when writing an Abstract, key skills are needed when writing an Introduction, skills needed when writing a Review of the Literature, skills are needed when writing the Methods, skills needed when writing the Results, skills are needed when writing the Discussion, skills are needed when writing the Conclusions.
- Useful phrases, how to ensure paper is as good as it could possibly be the first- time submission

Suggested Studies:
1. Goldbort R (2006) Writing for Science, Yale University Press (available on Google Books)
2. Day R (2006) How to Write and Publish a Scientific Paper, Cambridge University Press
3. Highman N (1998), Handbook of Writing for the Mathematical Sciences, SIAM. Highman'sbook .
4. Adrian Wallwork , English for Writing Research Papers, Springer New York Dordrecht Heidelberg London, 2011