Sri Vasavi Engineering College (Autonomous)

(Sponsored by Sri Vasavi Educational Society)

(Approved by AICTE, New Delhi & Permanently affiliated to JNTUK, Kakinada)

(Accredited by NBA & NAAC with 'A' Grade, Recognized by UGC Under Section 2(f) & 12(B))

Pedatadepalli, Tadepalligudem, W.G.Dt, A.P-534101

DEPARTMENT OF MECHANICAL ENGINEERING

Course Outcomes (V18 Regulation)

M.Tech. I Semester

Name of the Course: COMPUTATIONAL METHODS IN ENGINEERING

Course Code: V18MAT06

After successful completion of the course, the student will be able to:

➢ Have a Idea of accuracy & precision rounding off & truncation errors and their propagation.
➢ Apply numerical techniques for solving linear algebraic equations, non-linear equations and differentiation and integration with due idea of above said concept.
➢ Understand the interpolation methods, transformation techniques and regression Methods

Name of the Course: ADVANCED MECHANISMS

Course Code: V18MDT01

After successful completion of the course, the student will be able to:

➢ Determined the point of location of applied load to avoid twisting in thin sections used in aerospace applications.
➢ Understand the concept of distinguish between neutral and centroidal axes in curved beams.
➢ Understanding the analogy models developed for analyzing the non circular bars subjected to torsion, and also analyzing the stresses developed between rolling bodies and stress in three dimensional bodies.

Name of the Course: ADVANCED MECHANICS OF SOLIDS

Course Code: V18MDT02

After successful completion of the course, the student will be able to:

➢ Understand the kinematic analysis of rolling bodies based on graphical, geometrical and analytical methods.
➢ Design of mechanisms by using graphically and analytically by involving function generator, rigid body guidance and path generation(Coupler curve) methods

Name of the Course: MECHANICAL VIBRATIONS

Course Code: V18MDT03

After successful completion of the course, the student will be able to:

➢ To study the vibrations in machine elements and how to control them.
➢ Ability to analyze the mathematical model of linear vibratory system to determine its Response
➢ Obtain linear mathematical models of real life engineering systems
➢ Determine vibratory responses of single and multi degree of freedom systems to harmonic, periodic and non-periodic excitation

Name of the Course: DESIGN OF AUTOMOBILE SYSTEMS (Elective – I)

Course Code: V18MDT04

After successful completion of the course, the student will be able to:

➢ To understand the conceptual , structural design and analysis of automobile

➢ To understand the suspension system and human factors design of automobile

➢ To study the design for safety and performance of automobile

Name of the Course: PRODUCT DESIGN (Elective – I)

Course Code: V18MDT05

After successful completion of the course, the student will be able to:

➢ Should know types of customer needs, need gathering methods

➢ Establish the product function and constraints and modeling process

➢ Should know environmental objectives global issues, Regional and Local issues and DFE Methods

➢ Should develop physical models and know design of experiment principles

➢ Should design the product for robustness.

Name of the Course: GEOMETRIC MODELING (Elective – I)

Course Code: V18MDT06

After successful completion of the course, the student will be able to:

➢ Understand the background of mathematical equations used for development of modeling software modules to develop the various structural related applications

Name of the Course: NON-DESTRUCTIVE EVALUATION (Elective – I)

Course Code: V18MDT07

After successful completion of the course, the student will be able to:

> ➢ Know the working principle of Radiography and do the model analysis using different theorems.
> ➢ Use the various Non-destructive testing methods.

Name of the Course: FRACTURE MECHANICS (Elective – II)

Course Code: V18MDT08

After successful completion of the course, the student will be able to:

> ➢ Understand the different modes of failures like fracture, fatigue and creep of ductile and brittle materials

Name of the Course: GEAR ENGINEERING (Elective – II)

Course Code: V18MDT09

After successful completion of the course, the student will be able to:

> ➢ Ability to analyze behaviour of mechanical elements under different loads
> ➢ Understand the design of different transmission elements of automobile Ability to analyze mechanical elements critically

Name of the Course: DESIGN FOR MANUFACTURING AND ASSEMBLY (Elective – II)

Course Code: V18MDT10

After successful completion of the course, the student will be able to:

> ➢ Understand how a design can be made suitable for various manufacturing processes.
> ➢ To study the various factors influencing the manufacturability of components
> ➢ To study the use of tolerances in manufacturing
> ➢ Application of this study to machining, casting and joining processes

Name of the Course: CONTINUUM MECHANICS (Elective – II)

Course Code: V18MDT10

After successful completion of the course, the student will be able to:

> ➢ Apply the tensor calculus for continuum mechanics
> ➢ Understand the conseration laws in momentum
> ➢ Study the Eulerian and Lagrangian principles in discrete systems

M.Tech. II Semester

Name of the Course: OPTIMIZATION AND RELIABILITY

Course Code: V18MDT12

After successful completion of the course, the student will be able to:

- ➢ Learn various optimization techniques
- ➢ Develop a optimization model for a given problem
- ➢ Solve the model using suitable optimization technique.
- ➢ Analyze the sensitivity of a solution to different variables.
- ➢ Use and develop optimization simulation software for variety of industrial problems

Name of the Course: THEORY OF PLASTICITY

Course Code: V18MDT13

After successful completion of the course, the student will be able to:

- ➢ Experimentally investigate yield criteria's for ductile metal.
- ➢ Discuss the theory of metal working.
- ➢ Describe different stages of plastic yielding.
- ➢ Explain the concept of boundary surface theory.

Name of the Course: FINITE ELEMENT METHOD

Course Code: V18MDT14

After successful completion of the course, the student will be able to:

- ➢ Understand the concepts behind variational methods and weighted residual methods in FEM
- ➢ Identify the application and characteristics of FEA elements such as bars, beams, plane and isoparametric elements, and Dimensional elements.
- ➢ Develop element characteristic equation procedure and generation of global stiffness equation will be applied. Able to apply Suitable boundary conditions to a global structural equation, and reduce it to a solvable form.
- ➢ Able to identify how the finite element method expands beyond the structural domain, for problems
- ➢ Involving dynamics, heat transfer, and fluid flow.

Name of the Course: DESIGN WITH ADVANCED MATERIALS

Course Code: V18MDT15

After successful completion of the course, the student will be able to:

- ➢ Understanding of types, manufacturing processes, and applications of composite materials.
- ➢ Basic understanding of linear elasticity with emphasis on the difference between isotropic and anisotropic material behavior.
- ➢ Ability to analyze problems on macro and micro mechanical behavior of lamina
- ➢ Ability to analyze problems on macro mechanical behavior of laminate
- ➢ An ability to compute the properties of a composite laminate with any stacking sequence.
- ➢ An ability to use the ideas developed in the analysis of composites towards using composites in aerospace design.

Name of the Course: TRIBOLOGY (Elective – III)

Course Code: V18MDT16

After successful completion of the course, the student will be able to:

- ➢ Understand the different types of lubrications and relevant theories used in supporting elements.
- ➢ Understand the failure mechanisms in different types of supporting elements.

Name of the Course: SIGNAL ANALYSIS AND CONDITION MONITORING (Elective – III)

Course Code: V18MDT17

After successful completion of the course, the student will be able to:

- ➢ Understand the analysis of different signals
- ➢ Understand the condition monitoring of various industrial equipment

Name of the Course: COMPUTATIONAL FLUID DYNAMICS (Elective – III)

Course Code: V18MDT18

After successful completion of the course, the student will be able to:

- ➢ Apply various numerical tools like finite volume, finite difference etc for solving the different fluid flow heat transfer problems.

Name of the Course: DESIGN SYNTHESIS (Elective – III)

Course Code: V18MDT19

After successful completion of the course, the student will be able to:

- ➢ Understand the design process and standardization of parts.
- ➢ Understand and apply tolerances from process and function and interchangeability of parts
- ➢ Understand Design of cast forged sheet metal and welded parts based on machining considerations
- ➢ Understand the design for assembly and dismantling of parts
- ➢ Understand the design for optimization

Name of the Course: PRESSURE VESSEL DESIGN (Elective – IV)

Course Code: V18MDT20

After successful completion of the course, the student will be able to:

- ➢ Understand the different pressures and loading conditions in various types of pressure vessels
- ➢ Understand the various design considerations and material selection based on various failure criteria in various pressure vessels

Name of the Course: MECHANICS OF COMPOSITE MATERIALS (Elective – IV)

Course Code: V18MDT21

After successful completion of the course, the student will be able to:

- ➢ understanding of types, manufacturing processes, and applications of composite materials.
- ➢ basic understanding of linear elasticity with emphasis on the difference between isotropic and anisotropic material behavior.
- ➢ Ability to analyze problems on macro and micro mechanical behavior of lamina
- ➢ Ability to analyze problems on macro mechanical behavior of laminate
- ➢ An ability to predict the loads and moments that cause an individual composite layer and a composite laminate to fail and to compute hygro thermal loads in composites.
- ➢ An ability to compute the properties of a composite laminate with any stacking sequence.
- ➢ An ability to use the ideas developed in the analysis of composites towards using composites in aerospace design

Name of the Course: MECHATRONICS (Elective – IV)

Course Code: V18MDT22

After successful completion of the course, the student will be able to:

- ➢ Explain Mechatronics systems, control systems, sensors, transducers, real time interfacing and hardware components for Mechatronics.
- ➢ Explain fabrication, design and packaging of MEMS and Microsystems.
- ➢ Identify advanced applications in Mechatronics.

Name of the Course: EXPERIMENTAL STRESS ANALYSIS

Course Code: V18MDT23

After successful completion of the course, the student will be able to:

- ➢ Know the working principle of stress and strain and do the model analysis using different theorems.

- ➢ Know the concepts of photo elasticity and its applications.

- ➢ Use the various Non-destructive testing methods.

HoD - ME
Head of the Department
Mechanical Engineering
Sri Vasavi Engineering College
TADEPALLIGUDEM-534 101