R. K. Institute of Engineering and Technology
Approved by AICTE, New Delhi and Affiliated to SCTE&VT,Odisha

MECHANICAL ENGINEERING

SEMESTER : 3rd (SEC-B)

FROM :01/07/2026 **TO :**05/11/2026

NAME OF THE FACULTY : Er. DIBYA PRAKASH NATH TIWARI

SUBJECT : Strength of Materials

TOTAL CLASS AVAILABLE IN SEMESTER: 45 nos

NO. OF PERIODS : 03/ WEEK

Class No.	Unit	Topic / Sub-topic	Teaching Method	Learning Outcome
1	I	Introduction to Strength of Materials & Types of Forces	Lecture	Understand scope of SOM
2	I	Stress and Types of Stress	Lecture + Examples	Define stress
3	I	Strain and Types of Strain	Lecture	Explain strain
4	I	Stress-Strain Diagram for Mild Steel	PPT + Discussion	Interpret stress-strain curve
5	I	Elastic Constants (E, G, K, μ)	Lecture + Numerical	Calculate elastic constants
6	I	Significance of Stress-Strain Diagram	Discussion	Analyze material behavior
7	I	Factor of Safety & Working Stress	Lecture + Numerical	Solve design problems
8	I	Thermal Stress	Lecture + Numerical	Calculate thermal stresses
9	I	Strain Energy & Resilience	Lecture	Explain strain energy
10	I	Numerical Problems & Unit Test	Practice	Apply concepts
11	II	Types of Beams & Supports	Lecture	Identify beams
12	II	Types of Loads	Lecture	Classify loads
13	II	Shear Force (SF)	Lecture	Define SF
14	II	Bending Moment (BM)	Lecture	Define BM
15	II	SFD & BMD for Cantilever (Point Load)	Numerical	Draw diagrams
16	II	Cantilever with UDL	Numerical	Draw SFD & BMD
17	II	Simply Supported Beam (Point Load)	Numerical	Solve beam problems
18	II	Simply Supported Beam (UDL)	Numerical	Draw diagrams

Class No.	Unit	Topic / Sub-topic	Teaching Method	Learning Outcome
19	II	Overhanging Beam & Combination Loads	Numerical	Analyze beams
20	II	Revision, Numerical Practice & Test	Practice	Reinforce concepts
21	III	Simple Bending Theory & Assumptions	Lecture	Explain bending theory
22	III	Neutral Axis & Neutral Layer	Lecture	Define basic terms
23	III	Bending Equation Derivation	Lecture	Understand derivation
24	III	Bending Stress Problems	Numerical	Solve bending stress
25	III	Section Modulus	Lecture + Numerical	Calculate section modulus
26	III	Safe Load & Safe Span	Numerical	Design simple beams
27	III	Deflection of Beams	Lecture	Explain deflection
28	III	Standard Deflection Formulae	Numerical	Apply formulae
29	III	Numerical Problems	Practice	Solve beam problems
30	III	Revision & Unit Test	Test	Assess learning
31	IV	Introduction to Torsion	Lecture	Explain torsion
32	IV	Torsion Equation	Lecture + Derivation	Understand equation
33	IV	Solid Shaft Problems	Numerical	Solve shaft problems
34	IV	Hollow Shaft Problems	Numerical	Compare shafts
35	IV	Shaft Design	Numerical	Design shafts
36	IV	Helical Springs	Lecture	Explain spring terminology
37	IV	Deflection & Stiffness of Springs	Numerical	Calculate spring parameters
38	IV	Spring Design Problems	Practice	Solve numerical problems
39	IV	Revision & Test	Practice/Test	Assess learning
40	V	Thin Cylindrical Shells Introduction	Lecture	Explain shell concepts
41	V	Hoop Stress	Lecture + Numerical	Calculate hoop stress
42	V	Longitudinal Stress	Lecture + Numerical	Calculate longitudinal stress
43	V	Safe Thickness & Working Pressure	Numerical	Solve design problems

Class No.	Unit	Topic / Sub-topic	Teaching Method	Learning Outcome
44	V	Comprehensive Numerical Practice	Practice	Apply shell formulas
45	V	Final Revision, Doubt Clearing & Internal Assessment	Discussion/Test	Course revision

Sign of Faculty

Sign of HOD

Sign of Principal

Principal
R.K INSTITUTE OF ENGG & TECH
KANTAPADA,NIALI,CUTTACK