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

MECHANICAL ENGINEERING

SEMESTER : 3rd (SEC-A)

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

NAME OF THE FACULTY : Er. KEDARNATH SAHOO

SUBJECT : MANUFACTURING PROCESSES

TOTAL CLASS AVAILABLE IN SEMESTER: 45 nos

NO. OF PERIODS : 03/ WEEK

Class No.	Unit	Topic/Sub-topic	Teaching Method	Learning Outcome
1	I	Course Introduction, Cutting Fluids: Introduction & Functions	Lecture	Understand the importance of cutting fluids
2	I	Types of Cutting Fluids	Lecture + Discussion	Classify different cutting fluids
3	I	Cutting Fluids for Turning, Drilling, Shaping, Sawing & Broaching	PPT + Examples	Select suitable cutting fluids for operations
4	I	Selection & Methods of Application of Cutting Fluids	Lecture	Explain application methods
5	I	Lubricants: Classification (Solid, Liquid, Gaseous)	Lecture	Classify lubricants
6	I	Properties & Applications of Lubricants	Discussion	Explain lubricant properties
7	I	Lathe: Types, Specifications & Main Parts	Models/Charts	Identify types and parts of lathe
8	I	Lathe Operations: Turning, Facing, Parting, Knurling	Demonstration	Explain common lathe operations
9	I	Boring, Drilling, Threading, Step & Taper Turning, Single Point Cutting Tool Nomenclature	Lecture + Diagram	Describe advanced lathe operations and tool geometry
10	I	Unit Test-I & Revision	Test	Assess Unit-I learning
11	II	Introduction to Broaching & Types of Broaching Machines	Lecture	Explain broaching process
12	II	Broach Tool: Elements, Teeth Details, Nomenclature & Tool Materials	Charts	Identify broach tool components
13	II	Drilling Machines: Classification & Main Parts	Lecture	Classify drilling machines

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14	II	Radial Drilling Machine & Specifications	Diagram	Explain radial drilling machine
15	II	Drilling Operations, Types of Drills & Reamers	Demonstration	Identify drilling tools and operations
16	II	Unit Test-II & Numerical/Revision	Discussion + Quiz	Evaluate Unit-II concepts
17	III	Welding: Introduction & Classification	Lecture	Classify welding processes
18	III	Gas Welding Techniques & Welding Flames	Demonstration	Explain gas welding principles
19	III	Arc Welding: Principle, Equipment & Applications	Video + Lecture	Describe arc welding
20	III	Shielded Metal Arc Welding & Submerged Arc Welding	Lecture	Compare welding methods
21	III	TIG & MIG Welding	PPT	Explain modern welding techniques
22	III	Resistance Welding: Spot, Seam & Projection Welding	Video	Differentiate resistance welding methods
23	III	Welding Defects, Brazing & Soldering	Discussion	Identify defects and joining methods
24	III	Milling Machines: Types, Construction & Specifications	Lecture	Explain milling machines
25	III	Milling Operations, Indexing, Milling Cutters & Tool Holding Devices	Demonstration	Describe milling operations
26	III	Unit Test-III	Test	Assess Unit-III learning
27	IV	Gear Manufacturing Methods	Lecture	Explain gear manufacturing processes
28	IV	Gear Generating: Gear Shaping (Pinion & Rack Cutter)	Lecture	Describe gear shaping
29	IV	Gear Hobbing Machine & Gear Hob	Animation	Explain gear hobbing
30	IV	Gear Finishing, Materials & Heat Treatment	Lecture	Explain finishing processes
31	IV	Press Working: Types of Presses & Specifications	Lecture	Identify press machines
32	IV	Press Operations: Cutting, Bending, Drawing, Punching, Blanking, Notching & Lancing	Demonstration	Explain sheet metal operations

Class No.	Unit	Topic/Sub-topic	Teaching Method	Learning Outcome
33	IV	Die Set Components & Punch-Die Clearance	Models	Describe die components
34	IV	Effect of Clearance & Unit Test-IV	Quiz	Analyze clearance effects
35	V	Grinding: Principles & Abrasives	Lecture	Explain grinding process
36	V	Grinding Wheel Bonds & Selection of Grinding Wheels	Lecture	Select suitable grinding wheels
37	V	Grinding Wheel Marking System & Grinding Machines	Charts	Interpret wheel specifications
38	V	Cylindrical, Surface, Tool & Cutter Grinding Machines	Lecture	Explain grinding machine types
39	V	Centreless Grinding: Principle, Advantages & Limitations	Animation	Describe centreless grinding
40	V	Honing, Lapping & Super Finishing	Demonstration	Explain finishing operations
41	V	Electroplating & Hot Dipping Processes	Lecture	Explain surface coating methods
42	V	Metal Spraying & Organic Coatings	PPT	Describe coating techniques
43	V	Finishing Specifications & Industrial Applications	Discussion	Explain finishing standards
44	All Units	Comprehensive Revision & Problem Solving	Tutorial	Strengthen overall understanding
45	All Units	Final Model Test & Course Review	Test + Discussion	Evaluate complete syllabus

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