NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: MANUFACTURING ENGINEERING(AEPC201-TH:1)

Name of the Faculty- Er.Pradyumna Kumar Khilar

Branch- Automobile Engineering **Session-** 2025-26

Semester- 3rd **Examination-** 2025 (W)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Cutting Tools and Lathe Operations	9	10
2	Casting and Drilling	12	15
3	Welding and milling	9	15
4	Gear Making and press working	9	13
5	Grinding and finishing processes	6	7
	Total Period:	45	60

Khilar 10/07/2025

Sign of the faculty

Khilar 10/07/2025

Sign of H.O.D

Name of the programme: Diploma in AUTOMOBILE ENGINEERING	Semester: 3rd	Name of the Teaching Faculty: Er.Pradyumna Kumar Khilar	
		Academic Year : 2025-26 **Examination :** 2025 (W)	
Course Code: AEPC201 TH-1	**Course Year:** Second Year	**No. of Classes Alloted Per Week :**	4
		Planned Classes Required to Complete the Course	60
Week	**Class Day**	**Topics to be Covered**	
1st	**1st**	**CHAPTER-1-Cutting Tools:** Cutting action of various hand tools such as Chisel, hack saw blade, dies and reamer	
	2nd	Cutting action of various hand tools such as Chisel, hack saw blade, dies and reamer.	
	3rd	Turning tool geometry and purpose of tool angle	
	4th	Machining process parameters (Speed, feed and depth of cut)	
2nd	**1st**	Coolants and lubricants in machining and purpose	
	2nd	**Lathe Operations:** Types of lathes – light duty, Medium duty and heavy duty geared lathe, CNC lathe	
	3rd	Specifications; Basic parts and their functions	
	4th	Specifications; Basic parts and their functions	
3rd	**1st**	Operations and tools – Turning,parting off, Knurling, facing, Boring, drilling, threading, step turning, taper turning.	
	2nd	Operations and tools – Turning,parting off, Knurling, facing, Boring, drilling, threading, step turning, taper turning.	
	3rd	**CHAPTER-2-Casting:** Define Casting and Classify the various Casting processes	
	4th	Define Casting and Classify the various Casting processes	
4th	**1st**	Explain the procedure of Sand mould casting	
	2nd	Explain the procedure of Sand mould casting	
	3rd	Explain different types of molding sands with their composition and properties.	
	4th	Explain different types of molding sands with their composition and properties.	
5th	**1st**	Classify different pattern and state various pattern allowances.	
	2nd	Classify different pattern and state various pattern allowances.	
	3rd	Classify core. Describe construction and working of cupola and crucible furnace.	
	4th	Explain die casting method	
6th	**1st**	Explain centrifugal casting such as true centrifugal casting, centrifuging with advantages, limitation and area of application.	
	2nd	Explain various casting defects with their causes and remedies.	

Week	Class Day	Topics to be Covered
6th	3rd	**Drilling:** Classification; Basic parts and their functions
	4th	Radial drilling machine; Types of operations
7th	1st	Radial drilling machine; Types of operations
	2nd	**CHAPTER-3-Welding:** Classification,Gas welding techniques
	3rd	Types of welding flames
	4th	Arc Welding – Principle, Equipment, Applications
8th	1st	Arc Welding – Principle, Equipment, Applications
	2nd	Shielded metal arc welding
	3rd	Submerged arc welding; TIG / MIG welding
	4th	Resistance welding - Spot welding, Seam welding, Projection welding
9th	1st	Resistance welding - Spot welding, Seam welding, Projection welding
	2nd	Welding defects,Brazing and soldering: Types,Principles, Applications.
	3rd	Welding defects,Brazing and soldering: Types,Principles, Applications.
	4th	Milling: Introduction; Types of milling machines: plain, Universal, vertical; constructional details
10th	1st	specifications; Milling operations: simple, compound anddifferential indexing
	2nd	Milling cutters – types; Nomenclature of teeth; Teeth materials
	3rd	Tool signature of milling cutter; Tool and work holding devices.
	4th	Tool signature of milling cutter; Tool and work holding devices.
11th	1st	**CHAPTER-4-Gear Making:** Manufacture of gears – by Casting, Moulding, Stamping, Coining Extruding, Rolling, Machining
	2nd	Manufacture of gears – by Casting, Moulding, Stamping, Coining Extruding, Rolling, Machining
	3rd	Manufacture of gears – by Casting, Moulding, Stamping, Coining Extruding, Rolling, Machining
	4th	Gear generating methods: Gear Shaping with pinion cutter and rack cutter
12th	1st	Gear hobbing; Description of gear hob; Operation of gear hobbing machine
	2nd	Gear finishing processes; Gear materials and specification; Heat treatment processes applied to gears.
	3rd	Gear finishing processes; Gear materials and specification; Heat treatment processes applied to gears.
	4th	**Press working:** Types of presses and Specifications
13th	1st	Types of presses and Specifications
	2nd	Press working operations - Cutting, bending, drawing, punching, blanking, notching, lancing.
	3rd	Die set components- punch and die shoe, guide pin, bolster plate, stripper, stock guide, feedstock, pilot; Punch and die clearances for blanking and piercing.

Week	Class Day	Topics to be Covered
13th	4th	Die set components- punch and die shoe, guide pin, bolster plate, stripper, stock guide, feedstock, pilot; Punch and die clearances for blanking and piercing.
14th	1st	**CHAPTER-5-Grinding and finishing processes:** Significance of grinding operations
	2nd	Manufacturing of grinding wheels. Criteria for selecting of grinding wheels
	3rd	Manufacturing of grinding wheels. Criteria for selecting of grinding wheels
	4th	Specification of grinding wheels with example
15th	1st	Working of Cylindrical Grinder , Surface Grinder ,Centre less Grinder
	2nd	Description of lapping & explain their specific cutting.
	3rd	Definition of Surface finish ,Define super finishing
	4th	Description of lapping & explain their specific cutting.

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