

GOVERNMENT POLYTECHNIC, JAJPUR
DEPARTMENT OF PRECISION MANUFACTURING ENGINEERING



LESSON PLAN

SUBJECT: ADDITIVE MANUFACTURING (TH4)

FACULTY: Mrs. SUNITA NAYAK

Sunita Nayak

ACCADEMIC SESSION: 2026-27

SEMESTER: 5TH

Sunita Nayak

HOD (PME)

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Discipline: Precision Manufacturing Engg.	SEM-5TH	Name of the teaching faculty: Mrs. SUNITA NAYAK
Subject: Additive Manufacturing (Th4)	No. of days/week class allotted- 3 Periods per week (Mon-1Period, Wed-1Period, Thu- 1 Period)	Semester From Date: 01-07-2026 To Date: 05-11-2026 No. of weeks: 19 weeks
Week	Class Day	Theory Topics
1st	01/07/2026	Discussion of syllabus. Definition of additive manufacturing and application of it.
	02/07/2026	Unit-I Introduction to Additive Manufacturing: Prototyping fundamentals, Historical development
2nd	06/07/2026	3D Printing vs Conventional Machining, Advantages and limitations
	08/07/2026	Additive Manufacturing process chain,
	09/07/2026	Classification of 3D Printing processes, commonly used terms
3rd	13/07/2026	Unit-II CAD and Data Handling: 3D Modeling, CAD Data formats (STL, AMF)
	15/07/2026	Data translation and data loss
4th	20/07/2026	File checking and repair
	22/07/2026	Slicing software basics, Layering strategies
	23/07/2026	Model orientation and support considerations

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5 th	27/07/2026	Unit-III Liquid and Solid-based Processes: Stereo Lithography (SLA)
	29/07/2026	Poly Jet
	30/07/2026	Laminated Object Manufacturing (LOM)
6 th	03/08/2026	Fused Deposition Modeling (FDM)
	05/08/2026	Multi-Jet Modeling (MJM) — Models and specifications
	06/08/2026	Working principle
7 th	10/08/2026	Materials used, Advantages and limitations, Applications
	12/08/2026	Case studies
	13/08/2026	Unit- IV Powder-based Processes: Selective Laser Sintering (SLS)
8 th	17/08/2026	Selective Laser Melting (SLM)
	19/08/2026	Binder Jetting
	20/08/2026	Three-Dimensional Printing (3DP) — Process parameters
9 th	24/08/2026	Bonding mechanisms
10 th	31/08/2026	Process selection for applications
	02/09/2026	Material compatibility
	03/09/2026	Unit-V Additive Manufacturing Materials: Polymers (PLA, ABS, Nylon)
11 th	07/09/2026	Metals (Aluminium, Stainless Steel, Titanium)
	09/09/2026	Ceramics and Composites
	10/09/2026	Material forms: Liquid, Wire, Filament, Powder- Material properties
12 th	17/09/2026	Material forms: Liquid, Wire, Filament, Powder- Material properties

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13 th	21/09/2026	Powder preparation
	23/09/2026	Support materials
	24/09/2026	Unit-VI Post-processing and Quality: Need for post-processing
14 th	28/09/2026	Support removal
	30/09/2026	Surface finishing
	01/10/2026	Heat treatment
15 th	05/10/2026	Inspection techniques (visual, dimensional, CT scanning)
	07/10/2026	Common defects and causes (warping, delamination, porosity)
	08/10/2026	Troubleshooting methods.
16 th	12/10/2026	Unit-VII Application Domains: Design and prototyping
	14/10/2026	Aerospace
	15/10/2026	Automotive
17 th	21/10/2026	Healthcare (implants, prosthetics, surgical models)
	22/10/2026	Electronics, Jewellery, Tooling, Architecture
18 th	26/10/2026	Civil Construction (3D printed houses, bridges, concrete printing), Education
	28/10/2026	Case studies and real-world examples
	29/10/2026	Revision
19 th	02/11/2026	Revision
	04/11/2026	Revision
	05/11/2026	Revision