

**CENTRAL TOOL ROOM AND TRAINING CENTRE, BHUBANESWAR**  
**DAYWISE CONTENT OF ADVANCE ESDP ON 3D-PRINTING**

DAY	TOPIC OF SESSION-1	TOPIC OF SESSION-2	<b>L U N C H</b>	TOPIC OF SESSION-3	TOPIC OF SESSION-4
<b>DAY-1</b>	Overview of advanced additive manufacturing technologies (FDM, SLA, SLS, Metal AM)	Industrial applications and case studies across tooling, automotive, aerospace, medical		End-to-end AM workflow: design → slicing → printing → post-processing	Technology selection criteria and limitations of AM processes
<b>DAY-2</b>	Engineering polymers, composites, resins, and metal powders (overview)	Key process parameters: layer height, infill, speed, temperature, cooling		Print orientation, anisotropy, and strength optimization strategies	Failure modes, defect analysis, and parameter tuning methods
<b>DAY-3</b>	DfAM principles, design rules, and AM-specific constraints	Topology optimization concepts and workflow in Fusion 360		Lattice structures and lightweight design techniques	Hands-on redesign of a conventional part for AM
<b>DAY-4</b>	Fixture and jig design for additive manufacturing	Meta-mould design for rapid tooling and low-volume production		Tolerances, fits, and dimensional accuracy in AM parts	Assembly consolidation and design validation
<b>DAY-5</b>	3D scanning technologies and data acquisition methods	Scan data cleanup, mesh editing, and error correction		Mesh-to-solid conversion and CAD reconstruction	AM production strategy, costing, and ROI evaluation