



National Institute of Technology Meghalaya
An Institute of National Importance

CURRICULUM

Programme	Bachelor of Technology in Mechanical Engineering	Year of Regulation	2018
Department	Mechanical Engineering	Semester	VI

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
ME 318	Advanced Manufacturing Technology and Quality Assurance	3	0	0	3	50	50	100	200
Course Objectives	To introduce the basics of Additive manufacturing	Course Outcomes	CO1	Explain the Additive manufacturing. (Understanding)					
	To Explain the Layer manufacturing process		CO2	Interpret the Layer manufacturing process. (Understanding)					
	To develop an ability to use the different models relevant to the application of AM.		CO3	Make use of the different models in Additive manufacturing and Application of AM.(Application)					
	To develop an ability to analyse the Additive Manufacturing Design and Strategies.		CO4	Analyse the different Additive Manufacturing Design and Strategies (Analysis)					
	To Justify the factors for quality control and Assurance in AM.		CO5	Evaluate the different factors for quality control and Assurance in AM.					

No.	COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	CO1	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0
2	CO2	3	0	3	0	0	0	0	0	0	0	0	0	3	0	0
3	CO3	3	3	3	3	3	0	0	0	0	0	0	0	3	3	0
4	CO4	3	3	3	3	3	0	0	0	0	0	0	0	3	3	0
5	CO5	0	3	0	3	0	0	0	0	0	0	0	2	2	3	0

SYLLABUS

No.	Content	Hours	COs
I	Basics, definitions and application levels Additive manufacturing: layer manufacturing, principles. Application levels: Direct process, indirect process. Classes of machines for additive manufacturing.	02	CO1
II	Layer manufacturing process: Direct Layer Manufacturing processes: polymerization, sintering and melting, extrusion, powder binder bonding layer laminate manufacturing, Aerosolprinting and bioplotter. Machines ,Secondary rapid prototyping processes	04	CO1
III	Applications: Data processing and application work flow: AM process chain, Application work flow, Application of AM	03	CO1 CO2
IV	Additive Manufacturing Design and Strategies: Potential of AM, Potentials and Resulting Perspectives, AM based New Strategies-Customization.	07	CO2 CO3
V	Materials,Design,and Quality Aspects of Additive Manufacturing: Materials for AM,Quality Assurance in AM: Engineering Design Rules: Tolerances-Digital to object, Digital to freedom, Relative Fit, Orientation and clamping, Drilling (bores), Gaps, Pins, and Walls,AM Properties, Selection and Build Management	12	CO3 CO4 CO5
Total Hours		36	

Essential Readings

1. Andreas Gebhardt “Understanding Additive Manufacturing, Rapid Prototyping · Rapid Tooling · Rapid Manufacturing”, Carl HanserVerlag, Munich,2011

Supplementary Readings

1. Douglas C. Montgomery “Introduction to Statistical Quality Control”, 6th edition,John Wiley & Sons, Inc.