



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	V
Course Code	Course Name	Credit Structure	Marks Distribution
ME 315	Non-Traditional Machining	L: 3 , T: 0 , P: 0 , C: 3	INT: 50 , MID: 50 , END: 100 , Total: 200
Course Objectives	To develop the student's ability to understand the material removal mechanisms in various non-traditional machining methods.	Course Outcomes	CO1 Interpret the basic concept of material removal in various non-traditional machining methods. (Understanding)
	To develop the student's ability to analyse the working principle of various non-traditional machining methods.		CO2 Explain the working principle of various mechanical machining methods. (Understanding)
			CO3 Explain the working principle of various electrochemical and chemical machining methods. (Understanding)
			CO4 Explain the working principle of various thermoelectric machining methods. (Understanding)
	To develop the student's ability to find the suitable non-traditional machining method for manufacturing of various engineering components.		CO5 Apply the working principle and processing characteristic of various non-traditional machining methods to produce precision components. (Applying)

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	2	0	0	0	0	0	0	0	0	0	0	2	0	0
2	CO2	3	2	0	0	0	0	0	0	0	0	0	0	2	0	0
3	CO3	3	2	0	0	0	0	0	0	0	0	0	0	2	0	0
4	CO4	3	2	0	0	0	0	0	0	0	0	0	0	2	0	0
5	CO5	3	3	2	0	0	0	2	0	0	0	0	0	3	2	0
6	CO6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

SYLLABUS

No.	Content	Hours	COs
I	Introduction: Need of Non-traditional Machining, Difference between Traditional and Non-traditional Machining, Classification and Application of Non-traditional Machining, Trends in Non-traditional Machining	04	CO1
II	Mechanical Processes: Ultrasonic Machining, Water Jet Machining, Abrasive Water Jet Machining, Abrasive Machining, Ice Jet Machining, Abrasive Flow Finishing, Magnetic Abrasive Finishing	10	CO2 CO5
III	Electrochemical and Chemical Processes: Electrochemical Machining, Electrochemical Grinding, Electrochemical Deburring, Electrochemical Honing, Electrostream Drilling, Shaped Tube Electrolytic Machining, Chemical Machining	10	CO3 CO5
IV	Thermoelectric Processes: Electric Discharge Machining, Wire Cut Electric Discharge Machining, Electric Discharge Grinding, Electric Discharge Diamond Grinding, Plasma Arc Machining, Laser Beam Machining, Electron Beam Machining, Focussed Ion Beam Machining, Hot Machining, Neutral Particle Etching,	12	CO4 CO5
Total Hours		36	

Essential Readings

- H.S. Shan and P.C. Pandey, "Modern Machining Processes", McGraw Hill
- V.K. Jain, "Advanced Machining Processes", Allied Publishers

Supplementary Readings

- A. Ghosh and A.K. Mallik, "Manufacturing Science", Wiley Eastern
- J.A. Mcgeough, "Advanced Methods of Machining", Springer
- P.K. Mishra, "Nonconventional Machining", Narosa Publishing House