	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 304	**Manufacturing Technology-II**	**3**	**0**	**0**	**3**	**50**	**50**	**100**	**200**

Course Objectives	To develop the student's ability to understand the metal cutting theory.	Course Outcomes	CO1	Interpret the basic concept of metal cutting by means of chip formation, cutting tools and tool materials, tool life, thermal aspect of machining, and machinability. (Understanding)
	To develop the student's ability to analyze the working of various machine tools.		CO2	Explain the working principle of various machine tools and machining operations. (Understanding)
	To familiarize the students with the jigs and fixtures, NC and CNC machine tools.		CO3	Explain the concept of jigs and fixtures, functional surfaces, location principles, locating and clamping devices. (Understanding)
	To develop the student's ability to understand various nonconventional machining methods.		CO4	Explain the concept of NC and CNC machine tools. (Understanding)
			CO5	Apply the working principles and processing characteristics of various nonconventional 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**	**2**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**
4	CO4	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**
5	CO5	**3**	**2**	**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	**Metal Cutting** Chip Formation, Shear Zone, Orthogonal Cutting, Cutting Tools, Material, Thermal Aspect, Tool Wear and Tool Life, Tool Geometry, Surface Finish and Machinability, Cutting Fluids	**13**	**CO1**
II	**Machine Tool** Generation of Surfaces and Machining Principles, Classification of Machine Tools: Lathe, Milling, Indexing in Milling, Shaping, Slotting, Planing, Drilling, Boring, Broaching, Grinding (Cylindrical, Surface, Centreless), Thread Rolling and Gear Cutting Machines, Basic Elements of Machine Tools	**13**	**CO2**
III	**Jigs and Fixtures** Functional Surfaces, Location Principles, Locating Devices, Clamping Devices, Designing of Jig, Fixtures	**04**	**CO3**
IV	**Numerical Control Machine Tools** Numerical Control, NC and CNC Machine Tools, Part Programming	**03**	**CO4**
V	**Nonconventional Methods** Need of Nonconventional Machining, Electrochemical Machining, Electro-Discharge Machining, Ultrasonic Machining, LASER Machining, Electron Beam Machining, and Water Jet Machining.	**07**	**CO5**
	Total Hours	**40**	

Essential Readings

1. P.N. Rao, "Manufacturing Technology: Vol. II", McGraw Hill
2. G.K. Lal, "Introduction to Machining Science", New Age International Pvt. Ltd.

Supplementary Readings

1. A. Ghosh and A.K. Mallik, "Manufacturing Science", Wiley Eastern
2. "Production Technology", H.M.T. Publication, Tata McGraw Hill
3. M.C. Shaw, "Metal Cutting Principles", MIT Press
4. P.K. Mishra, "Nonconventional Machining", Narosa Publishing House