



GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc.), 5th Semester

Branch: Production Technology

Subject Name: Non Conventional Machining

Subject Code: 21150304

Type of course: Core

Prerequisite: Zeal to learn the subject

Rationale: Students will explore advance machining process over conventional machining process known as non-conventional machining. The nonconventional machining is designed to prepare interested students for future careers manufacturing industry where non-conventional machines are used.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		C	Theory Marks		Practical	
				ESE (E)	PA(M)	ESE (V)	PA (I)	
3	0	0	3	50	0	0	0	50

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Contents:

Sr. No.	Content	Total Hrs.	Module % Weightage
01	Introduction: Limitations of conventional manufacturing processes, need of unconventional manufacturing processes and its classification	6	10
02	Mechanical Processes: Abrasive Jet Machining (AJM): working principle, process parameters and their applications, advantages and disadvantages. Ultrasonic Machining (USM): working principle, process parameters and their applications, advantages and disadvantages. Abrasive Water-Jet Machining (AWJM): working principle, process parameters and their applications, advantages and disadvantages.	12	30
03	Thermo-Electric Processes: Electrical Discharge Machining (EDM): working principle, process parameters and their applications, advantages and disadvantages Laser Beam Machining (LBM): working principle, process parameters and their applications, advantages and disadvantages Electron Beam Machining (EBM): working principle, process parameters and their applications, advantages and disadvantages Plasma Arc Machining (PAM): working principle, process parameters and their applications, advantages and disadvantages	12	30



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04	Electro-Chemical Processes: Electro-Chemical Machining (ECM): working principle, process parameters and their applications, advantages and disadvantages Electro-Chemical Grinding (ECG): working principle, process parameters and their applications, advantages and disadvantages	6	15
05	Chemical Processes: Chemical Machining (CHM): working principle, process parameters and their applications, advantages and disadvantages.	6	15
	Total	42	100

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	20	-	-	-

R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Course Outcomes:

Sr. No.	CO Statement	Marks % Weightage
CO 1	To learn basic concepts Non-conventional Machining	10
CO 2	To understand the basic concept of mechanical based non-conventional machining.	30
CO 3	To understand the basic concept of thermos-electric based non-conventional machining.	30
CO 4	To understand the basic concept of electro-chemical based non-conventional machining.	15
CO 5	To understand the basic concept of chemical based non-conventional machining.	15

Reference Books:

- 1) Production Technology by R.K. Jain, Khanna Pub
- 2) Modern Machining Process, P.C. Pandey
- 3) Un-conventional machining, V.K. Jain

List of Open Source Software/learning website:

www.nptel.ac.in