



GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Bachelor of Vocation (B.Voc.), 4th Semester

Branch: Production Technology

Subject Name: Machining and Machine Tools-II

Subject Code: 21140304

Type of course: Core

Prerequisite: Machining and Machine Tools

Rationale: The course is intended to provide theoretical and practical knowledge about tool and work holding methods and devices. They are able understand the usefulness of Jig & Fixtures, Presses & Press work.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical		
				ESE(E)	PA(M)	PA(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
1.	Tool holders: Tool holding and tool mounting systems for conventional Lathe, Milling and Drilling machine tools, Tool holders for CNC turning and milling machine, ISO-designation of tool holder and insert.	6	10
2.	Locating and Clamping devices: Concept, meaning and definitions of location and clamping, Degree of freedom concept and importance, Use of locating and clamping principles, 3-2-1 principle of location. Locators-Types, Sketches with nomenclature, Working, applications, Fool proofing. Clamping devices- Types, Sketches with nomenclature, Working, Applications	10	25
3.	Jigs and Fixtures: Concept, meaning, differences and benefits of jigs and fixtures, Jigs-Types, sketches, nomenclature, working and applications. Fixtures- Types, sketches with nomenclature, working and applications.	8	20
4.	Press Tools: Classification of presses, Classification of dies, clearance, Blanking, Piercing, Drawing, Bending, scrap reduction, strip layout. Factors affecting press tool design, Shearing, Bending, Drawing, Combination tools, Progression tools, Rubber die formatting.	8	20



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5.	Non-conventional Machining: Introduction of non-conventional machining, need of non-conventional machining processes, classifications of non-conventional machining processes and considerations in process selection, limitations of conventional machining processes, application, advantages and limitations of non-conventional machining processes.	10	25
Total		42	100

Suggested Specification table with Marks (Theory): (For BVOC only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	20	10	00	00	00

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

Course Outcomes:

Students will be able to:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Learn the basic concept of tool holdings.	10
CO-2	Understand and apply the basic concept of Locating and clamping devices.	25
CO-3	Understand the basic concepts of Jigs and Fixtures	20
CO-4	Study the basic concepts of Press tools.	20
CO-5	Learn the basic concepts of Non-conventional Machining.	25

References:

1. Production technology, by R.K. Jain, Khanna publishers.
2. Production Technology by P.C. Sharma S Chand & Co Ltd.
3. Manufacturing Technology Vol-II, By P.N. Rao, Tata McGraw Hill.
4. Manufacturing Engg. And Technology By S. Kalpakajain, PHI/Pearson.

List of Open Source Software/learning website :

- 1) NPTEL tutorials