



# **C.U.SHAH UNIVERSITY**

## **WADHAVAN CITY**

**FACULTY OF:** - Technology & Engineering  
**DEPARTMENT OF:** - MECHANICAL ENGINEERING  
**SEMESTER:** - VI  
**CODE:** - 4TE06PTE1  
**NAME:** – Production Technology (PT)

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### **TEACHING & EVALUATION SCHEME:-**

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
4TE06PTE1	Production Technology (PT)	3	0	2	5	4	30	1.5	70	3	---	20	30	150

### **Objectives:-**

- This subject is primarily intended for studying the principles of machine tools and metal machining theories.
- Emphasis is given to the economics of machining operations and the design of components for economic machining.

### **Prerequisites:-**

- The mathematical content of the subject requires the knowledge of calculus and fundamentals of manufacturing processes.

### **Course outline:-**

Sr. No.	Course Content	No. of Hours
1	<b>Elementary treatment and mechanics of metal cutting theory:</b> Element of cutting process, Tool materials, Geometry of single point cutting tools, chip formation, types of chip, Forces acting on the cutting tool their relationship and their measurement, Mechanics of cutting methods, Theory of Ernst and Merchant's force diagram, Tool wear and tool life, Plowing force and size effect, Friction in metal cutting, Thermal aspects of metal cutting, Economics of cutting machinability ratings.	10
2	<b>Design of Press tools:</b> Press tool operations, Types of press & terminology, Press tool materials, General press information, Cutting forces and actions, Centre of pressure, Strip layouts, Design of blanking and piercing die, Design of bending and drawing dies	10
3	<b>Design of Jigs and Fixtures:</b> Principles of location and clamping, Methods and devices using	08

	for locating and clamping, General considerations in the design of drill jigs and milling fixtures.	
4	<b>Thread &amp; Gear manufacturing:</b> Introduction, materials, methods of thread manufacturing, Thread chasing, Thread rolling, Thread grinding, Methods of gear manufacturing by forming and generating methods, Gear hobbing, Different gear finishing processes and their features, Gear inspection.	<b>08</b>
5	<b>Advanced machining methods:</b> Introduction, Need for non traditional machining methods, USM, AJM, WJM, AWJM, ECM, EDM, WEDM, LBM, PAM, IBM, EBM etc processes their principle, process parameters and their applications.	<b>06</b>
6	<b>Automats:</b> Capstan and turret lathes, single spindle and multi spindle automats, bar type and chucking type machines, tool layout for automatic screw machines and bar stock feeding.	<b>03</b>

### Learning Outcomes: -

The study will provide the knowledge of different aspects of production processes in the field of manufacturing and related sectors. The idea of new product idea, design and development will be clear in the students' mind.

### Books Recommended:-

1. A Textbook of Production Engineering by **P. C. Sharma**, S. Chand & Company Ltd., Delhi.
2. Tool Design by **N. K. Mehta**, Tata McGRAW Hill, 1992.
3. Production Technology by **R. K. Jain**, Khanna Publishers, Delhi.
4. Production Technology by **O. P. Khanna and M. Lal**, Vol I & II, Dhanpat Rai Publications.

### Research reference:-

1. Fundamentals of Metal machining and machine tools by **G. Y. Boothroyd**, International Student Edition, McGRAW-Hill.
2. Production Technology by **HMT**, Tata McGRAW Hill, 1980.
3. Tool Design by **C. Donaldson**, Tata McGRAW Hill, New Delhi, 2005.
4. Jig and Fixtures by **M. H. A. Kempster**, Butterworth-Heinemann Ltd.
5. Metal Cutting by **Milton C. Shaw**, OXFORD University Press, New York.