

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Automobile Engineering

Semester: 3

Subject Code

Subject Name MANUFACTURING PROCESS & MATERIALS TECHNOLOGY

Sr. No.	Course content
1.	ENGINEERING MATERIALS : 1.1 Introduction and properties of engineering material 1.2 Classification of materials 1.3 Factors to be considered while selecting material 1.4 Specification of metals as per I.S. 1.5 Different body building materials
2.	HEAT TREATMENT PROCESSES : 2.1 Introduction of heat treatment 2.2 Define heat treatment and list various objects of heat treatment 2.3 Applications and Limitations of each heat treatment process 2.4 List various auto parts which need heat treatment process
3.	INTRODUCTION TO MANUFACTURING PROCESSES : 3.1 Nature, role and scope of manufacturing process 3.2 Classification of manufacturing processes 3.3 Introduction and application of each process 3.4 Types of production
4.	METAL WORKING PROCESSES : 4.1 Hot and cold working processes 4.2 Working principles and application of : Rolling, Drawing, Spinning, Forging, Bending, Embossing, Extrusion, Piercing, Squeezing 4.3 Defects in metal working processes 4.4 Remedial measures
5.	METAL CASTING : 5.1 Working principles of different methods of casting 5.2 Casting defects 5.3 Remedial measures
6.	METAL JOINING : 6.1 Introduction and classification of Metal Joining methods 6.2 Working principles, application, and limitation of <ul style="list-style-type: none">- Gas Welding- Arc Welding- Resistance Welding 6.3 Defects in Welding 6.4 Remedial Measures 6.5 Working principles & application of Brazing and Soldering 6.6 Safety precautions
7.	BASIC MACHINE TOOLS : 7.1 Introduction to Basic Machine Tools 7.2 Working principle of each Machine Tool

	7.3 Different operations carried out on each Machine tool 7.4 Factors affecting the selection of suitable Machine tool 7.5 Different surface finish operations 7.6 Working principle and different operations carried out on press
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SUGGESTIVE LIST OF LABORATORY EXPERIMENTS :

Sr. No.	Course content
1.	Perform hardening process on steel component and to determine the Hardness of that component
2.	Prepare a job using forging process
3.	Demonstration of casting procedure
4.	Prepare a job using gas cutting and gas welding
5.	Prepare a job using arc welding
6.	Demonstration of brazing and soldering
7.	Prepare a job on centre lathe as per the given drawing (Straight Turning, Taper Turning, Grooving, Knurling, Thread cutting)
8.	Demonstration of Shaper and Milling Machine
9.	Demonstration of surface finishing operations (Grinding Honning,Lapping)
10.	Demonstration of the body building work

Reference Books:

Sr.No.	Name of Book	Author
1.	Elements of Metallurgy	Dr. Swaroop
2.	Materials and Metallurgy	V. K. Manchanda & G.B.S. Narang
3.	Production Technology	R. K. Jain & S.C.Gupta
4.	Workshop Technology Vol-I, Vol-II	Hazra Choudhary
5.	Workshop Technology Vol-I, Vol-II	Raghuwanshi
6.	Manufacturing processes	M. L. Begman
7.	Manufacturing processes	Lindberg