

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Plastic Engineering

Semester: 3

Subject Code

Subject Name FUNDAMENTALS OF FABRICATION TECHNOLOGY

| Sr. No. | Course content |
|---------|---|
| 1. | INTRODUCTION OF ENGINEERING MATERIALS AND THEIR PROPERTIES : 1.1 Introduction of Engineering Materials 1.2 Properties of Engineering Materials 1.3 Classification of Engineering Materials 1.4 Application of Engineering Materials |
| 2. | FERROUS METALS AND ALLOYS : 2.1 Types of steels. 2.2 Composition and uses of cast iron. 2.3 Effect of silicon, sulphur and phosphorus on properties of steels. 2.4 Effects of alloying elements on steels such as chromium, nickel, 2.5 manganese, tungsten, vanadium, molybdenum. 2.6 Composition of tool steels/alloy steels. |
| 3. | CUTTING TOOLS : 3.1 Cutting tools : types & application 3.2 Tool geometry, tool material, tool parameters : Its properties and composition. 3.3 Tool life, tool wear and machinability. 3.4 Resharpening of cutting tools 3.5 Cutting fluids & their types |
| 4. | BASIC MACHINE TOOLS : 4.1 Define & Classify basic Machine tools. 4.2 Types, constructional features, transmission, working principle, detailed specification, various mechanisms used, selection criteria and applications of following basic machine tools. <ul style="list-style-type: none">• Lathe machine• Drilling machine• Shaping machine• Milling machine• Boring machine• Grinding machine 4.3 Polishing 4.4 Safety precautions. |
| 5. | HEAT TREATMENT OF STEELS : 5.1 Principle of heat treatment. 5.2 Annealing & Process Annealing 5.3 Normalising 5.4 Hardening |

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| | 5.5 Tempering 5.6 Case hardening such as <ul style="list-style-type: none"> • Pack Carburising • Gas carburising • Nitriding • Cyniding (Cabonitriding) • Flame hardening |
| 6. | SELECTION & SPECIFICATION OF METALS 6.1 Metal Specifications 6.2 Selection of metal for mould/machine Components 6.3 BIS for steel. 6.4 International standard for steels |

Reference Books:

| Sr.No. | Name of Reference | Author |
|---------------|---------------------------------|-------------------|
| 1. | Elements of Workshop Technology | Hajra & Choudhary |
| 2. | Elements to Metallurgy | Swaroop |
| 3. | Material Science & Processes | Hajra & Choudhary |
| 4. | Material Science & Metallurgy | O.P.Khanna |
| 5. | Basic Engineering Metallurgy | Keyser |
| 6 | Code of designation of steel | IS 1962-61 |
| 7 | A textbook on Metallurgy | Biley |
| 8 | Workshop Technology Vol 1 & 2 | Hajra Choudhary |
| 9 | Production Technology | Jain and Gupta |
| 10 | Production Technology | Rusinoff |
| 11 | Manufacturing Processes | Began |
| 12 | Production Technology | Lindsbury |