

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: I

Plastic Engineering

Subject Name: **PLASTICS MOULD MANUFACTURING  
TECHNOLOGY**

| Sr.No | Course content  |
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| 1.    | <p><b>Material for Moulds:</b></p> <p>Selection of steels – Properties of steels – common steels used for moulds – strength of materials, calculation of wall thickness for cavity – Insert size – Life of mould</p> <p>Non-ferrous metals for mould construction: Application – Zinc base alloys – Aluminium alloys – Beryllium copper</p> <p>Non-metallic materials for mould construction: Advantages and its applications – epoxies - polyester – silicon</p> |
| 2.    | <p><b>Surface Treatment of Mould Materials:</b></p> <p>Introduction – Heat treatment process – case hardening – through hardening – nitriding – tips on successful heat treatment – vacuum hardening – cryogenic heat treatment – Hard chrome plating – Nickel plating – chemical etching – Mould Polishing techniques</p>  |
| 3.    | <p><b>Mould Making Techniques:</b></p> <p>Pantograph engraving – Hydro copying – Jig boring – CNC machines – CNC Lathe – CNC Milling – CNC EDM – Advantages and its Applications – Assembly of moulds – Rapid prototyping .</p>   |
| 4.    | <p><b>Inspection and Quality Control of Moulds:</b></p> <p>Introduction to Tool Room measuring instruments – Vernier – Micrometer – Height Gauge – Slip Gauge – Dial Gauge – Measuring tapers and angles – CMM.</p>   |
| 5.    | <p><b>Mould Estimation, Repair and Protection :</b></p> <p>Procedure for estimating mould cost – General outline – Cost calculation – Basic moulds – Cavity – Basic functional components – Special functions etc.</p> <p>Introduction – Mould Repair and maintenance – scheduling mould maintenance – advantages – storage – corrosion protection – wear and lubrication – special consideration.</p>  |

## **Reference Books:**

1. Cyril Donaldson George H. Lecain V C Goold, Tool Design, TATA McGraw-Hill, 1998.
2. Richard R. Kibbe John E. Neele, Roland O Meyer, Warran T. White, Machine Tool Practices, Prentice Hall of India Pvt. Ltd., 1999.
3. Irwin Rubin, Injection Moulded Theory and Practice, Wisely Interscience Publication, 1972.
4. Society of Plastics Industry, Plastics Engineering Hand Book, Van Nostrand Reinhold Company, 1960.
5. Dominick V. Rosato, Donald V. Rosato, Injection Moulding Hand Book, CBC Publishers & Distributors, 1987.