

MME-: Manufacturing Technology 1

Programme: B. Tech
Third

Year: 2017

Semester:

Course: Core

Credits: 3.0

Hours: 40

Course Overview and Context:

The objective of the course is to expose students to basics of manufacturing as it plays a direct role in improvement of quality of human life and creating wealth for the nation. The second objective of the course is to expose students to hands-on practice with common manufacturing processes. It will cover: (i) Importance of manufacturing, (ii) Relation between materials and manufacturing, (iii) An overview of manufacturing processes, (iv) Product manufacturing.

Prerequisites Courses: Fundamental of Physics, Chemistry and Mathematics.

Text Books:

- [1] S. Kalpakjian, *Manufacturing Processes for Engineering Materials*, Pearson Education India, 2009.
- [2] P. N. Rao, *Manufacturing Technology", Volume I & II*, Tata McGraw Hill Publishing Co., New Delhi, 1998.

Reference books:

- [1] Amitabha. Gosh, *Manufacturing Science, 2e*, East West press, 2010.
- [2] HMT, *Production Technology*, Tata McGraw-Hill, 2001.
- [3] Philip F. Ostwald and Jairo Munoz, *Manufacturing Processes and systems*, John Wiley and Sons, 9th Edition, 2002.

Additional Resources: NPTEL, MIT Video Lectures, Web resources etc.

Course Outcomes (COs):

	On completion of this course, the students will have:	Linked Unit
CO 1	Acquire the knowledge of metal casting processes and equipment including solidification process of metals, cast structure, fluid flow and heat transfer and cast design.	1
CO 2	Acquire fundamentals of various fabrication processes, basic principle and their capabilities.	2,3

UNITS	COURSE TOPIC	Lecture Hours	Student development
UNIT 1	WELDING PROCESSES	18	Employability & Skill development
	Introduction to joining technology, Safety and hazards in welding, Power sources for arc welding, Welding consumables. SMAW, SAW, GTAW and related processes, GMAW, PAW, Gas welding, Soldering, Brazing. Resistance welding processes: spot, seam, butt, flash, projection, percussion etc, Surfacing and Friction welding.		
UNIT 2	Wear	4	Employability
	Abrasion, adhesion, corrosion, galling etc., Effect of wear on economy		
UNIT 3	METAL CASTING PROCESSES	18	Employability & Skill development
	Melting of metals, Solidification of castings, casting design considerations, mould designs for sand and die castings, gating system design, riser design, casting defects: their causes and their removal, cleaning of castings, quality control in foundries, various casting processes.		

Evaluation Methods:

Item	Weightage
Midterm	30
Assignment, Mini Project and Quiz	20
Final Examination	50

Prepared By: Dr. Manoj Kumar

Last Update: 26th July 2017