

IM 112 – Manufacturing Technology
COURSE INFORMATION

Course Title: Manufacturing Technology

Code: IM 112

Hours : Lecture- 1 Hr. Laboratory- 2 Hr. Credit-2

Prerequisite: None

Coordinators: Dr.Mona Fouad

G R A D I N G

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

The course provides an introduction to engineering materials and their properties; production of common metals.it covers types of manufacturing, basic manufacturing processes such as casting, metal forming, welding and machining. An overview of some advanced manufacturing processes is also introduced. In addition, it introduces measurement standards, instruments, deviations and methods.

TEXT BOOK

T.F. waters, “Fundamentals of Manufacturing for Engineers”, Taylor & Francis, latest edition.

REFERENCE BOOKS

- Roy A. Lindberg Processes and Materials of Manufacturing, Allen and Bacon, latest edition.
- E. Paul DeGarmo, et.al, Materials and Processes in Manufacturing, 8th ed, Prentice Hall, Inc., latest edition.
- L.E. Doyle, et.al, Manufacturing Processes and Materials for Engineers, latest edition.
- I.G. Kenaly and K.W. Harris, Manufacturing Technology, volume 1, Edward Arnolds, Publisher, 41 Bed for square, London, WC 1 B3 DQ, latest edition.
- Mikell P. Groover, Fundamentals of Modern Manufacturing, Prentice Hall, latest edition.

COURSE AIM

Introduce the different methods for processing engineering materials and get acquainted with the basic concepts and necessary information related to manufacturing techniques.

COURSE OBJECTIVES

Understanding the different stages or phases for engineering materials processing. Learning the basic concepts of metal forming and casting, Understanding the concepts of metal machining and welding techniques and associated applications. Learning different measuring techniques and how they can be used for quality control.

COURSE OUTLINE

Week Number 1: Production of steel and cast iron

Week Number 2: Forming operations (Rolling – Drawing – Extrusion –Forging).

Week Number 3: Heat treatment operations (Hardening-Annealing-Tempering-Nor realizing).

Week Number 4: Cutting tools (Geometry & materials).

Week Number 5: Mechanics of metal cutting and turning operations.

Week Number 6: Cutting fluids (Function – Type – Selection).

Week Number 7: Exam # 1

Week Number 8: Sand casting (Pattern design & mould preparations).

Week Number 9: Centrifugal casting, die casting and aspects of the casting process.

Week Number 10: Gas and Electric arc welding.

Week Number 11: Electric resistance and pressure welding and aspects of the welding process.

Week Number 12: Exam # 2

Week Number 13: Standards of measurements, Measuring Instruments

Week Number 14: Measuring Instruments (Vernier, micrometer, dial gauge, block gauges).

Week Number 15: Measuring methods (Indirect and comparative measurements).

Week Number 16: Final exam.