Industrial and Systems Engineering Courses (IM)

Industrial and Management Engineering Courses Group

IM 112 – Manufacturing Technology

COURSE INFORMATION

Course Title: Manufacturing Technology

Code: IM 112

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: None

GRADING

Class Performance/Attendance:	10%
Midterm # 1/Assignments – (7^{th} Week):	30%
Midterm # 2/Assignments – (12^{th} Week):	20%
Final Exam:	40%

COURSE DESCRIPTION

Introduction to engineering materials and their properties, production of common metals. Types of manufacturing firms, basic manufacturing processes; casting, metal forming welding and machining. An overview of some advanced manufacturing processes. Measurement; standards, instruments, deviations and methods.

TEXT BOOK &REFERENCES

Processes and Materials of Manufacturing by Roy A. Lindberg Publisher: Allen and Bacon

Materials and Processes in Manufacturing by E. Paul DeGarmo, et.al Publisher: Prentice Hall

Manufacturing Processes and Materials for Engineers by L.E. Doyle, et.al Publisher: Prentice Hall

Manufacturing Technology by I.G. Kenaly and K.W. Harris Publisher: Edward Arnolds Publisher

Fundamentals of Modern Manufacturing by Mikell P. Groover Publisher: Prentice Hall

Fundamentals of Manufacturing for Engineers by T.F. waters Publisher: UCL Press.

COURSE AIM

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

SPECIFIC OUTCOMES OF INSTRUCTION

- The students will be able to understand the different stages or phases for engineering materials processing.
- The students will learn 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 purposes..

COURSE OUTLINE

Week Number 1: Production of steel and cast iron.

Week Number 2-3: Forming operations (Rolling – Drawing – Extrusion –Forging).

Week Number 4: Heat treatment operations (Hardening-Annealing-Tempering-Nor realizing ...etc).

Week Number 5-6: Cutting tools (geometry & materials).

Week Number 7: Mechanics of metal cutting and turning operations.

Week Number 8: Cutting fluids (Function - Type – Selection).

Week Number 9: Sand casting (pattern design & mold preparations).

Week Number 10: Centrifugal casting, die casting and aspects of the casting process.

Week Number 11: Gas and Electric are welding.

Week Number 12: Electric resistance and pressure welding and aspects of the welding process.

Week Number 13: Standards of measurements, Measuring Instruments.

Week Number 14: Measuring methods (indirect and comparative measurements).

Week Number 15: Measuring Instruments (Vernier, micrometer, dial gauge, block gauges).

Week Number 16: Final Exam.

C O U R S E C O O R D I N A T O R A N D D E M A N D

Course Coordinator: Dr.Ahmed Elbakly.

Course Demand: *Required*