

IM 212 – Manufacturing Processes

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

Course Title: Manufacturing Process.
Code: IM 212.
Hours: Lecture – 2 Hrs. Laboratory – 2 Hrs. Credit – 3.
Prerequisite: IM 112

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%

C O U R S E D E S C R I P T I O N

This course is tailored for departments other than the department of industrial and management engineering and it covers the following topics: Chip type machining processes, cutting tools, work holding devices, mechanics of chip formation, and analytical study of machining processes. It also includes tool wear, process accuracy and product surface finish, precision measurements and metrology, and an overview of non-conventional machining processes.

T E X T B O O K S

Hassan El-Hofy, "Fundamentals of Machining Processes", CRC Press, *latest edition*.

R E F E R E N C E B O O K S

Daniel B. Dallas, "Tool and Manufacturing Engineers Handbook", McGraw Hill, *latest edition*.

C O U R S E A I M

To introduce students to fundamentals of different manufacturing processes applied in the manufacturing industry.

C O U R S E O B J E C T I V E S

- To understand the fundamentals of chip type machining processes.
- To be familiar with the different cutting tools used in machining processes.
- To understand the basics of non-traditional and computerized machine tools.
- To comprehend the importance of inspection and quality control measures.

COURSE OUTLINE

- Week Number 1:* Theory of Metal Cutting-introduction.
- Week Number 2:* Cutting Tools Geometry- Cutting tools materials.
- Week Number 3:* Chip Formation mechanisms- Phenomena accompanying chip formation.
- Week Number 4:* Cutting forces; components, measurements.
- Week Number 5:* Turning operation.
- Week Number 6:* Milling operation.
- Week Number 7:* 7th Exam.
- Week Number 8:* Shaping, Planning, Slotting operations-Drilling, boring operations.
- Week Number 9:* Broaching operation
- Week Number 10:* Grinding operation.
- Week Number 11:* Accuracy of manufacturing- accuracy of measurements and metrology principles.
- Week Number 12:* 12th Exam.
- Week Number 13:* CAM overview, Coordinate systems and datums.
- Week Number 14:* Introduction to non traditional manufacturing- Electrical discharge machining.
- Week Number 15:* Electro chemical, Laser, Electron beam, ultrasonic manufacturing methods.
- Week Number 16:* Final Exam. machining.
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