



FREDERICK UNIVERSITY CYPRUS

Department of Mechanical Engineering

Subject:	Manufacturing Processes – AMEM 201
Academic Year:	2007 – 08 (Fall Semester)
Lecturer:	Dr. Antonios Lontos
Number of periods per week:	3
Number of total weeks:	14

Course Outline:

- General Introduction
 - Design for Manufacture, The Design Process, Selecting Materials and Manufacturing Process, Product quality, Manufacturing automation, Economics of Manufacture
- Casting processes.
 - Solidification of Metals, Cast Structures, Casting Alloys, Ingot Casting and Continuous Casting, Casting Processes, Expendable Mold,
 - Permanent Mold, Processing of Casting and Casting Design
- Bulk deformation processes.
 - Forging, Rolling, Cold and hot Extrusion
 - Rod, Wire and Tube Drawing
 - Die Manufacturing Methods, Die Failures
- Sheet-metal forming processes.
 - Sheet-Metal Characteristics, Shearing, Bending of Sheet and Plate, Stretch Forming, Bulging, Deep-Drawing, Formability of Sheet Metals
- Material-Removal Processes: Milling, Turning.
 - Mechanics of Chip Formation, Tool Wear
 - Surface Finish and Integrity
 - Cutting-Tool Materials, Cutting Fluids
 - Cutting Processes and Machine Tools for Producing Round Shapes
 - Cutting Processes for Producing Various Shapes, Machining Centers
- Joining Processes
 - Oxyfuel Gas Welding, Thermit Welding,
 - Arc-Welding, Consumable and Nonconsumable Electrode, Resistance Welding, Solid-State Welding, Electron-Beam Welding
 - Laser Beam Welding
 - The welded Joint
- Introduction to Integrated Manufacturing Systems
 - Manufacturing Systems, Computer-Integrated-Manufacturing, Computer-Aided-Design, Group Technology, Cellular manufacturing, Flexible manufacturing systems, Just-in-time production

Assessment:

Final exam	60%
Coursework	40%

The passing mark is 50%. To pass the course you must get a 35% grade in both final exams and coursework.

Coursework:

Test 1: Test1 (March)
Test 2: Test 2 (April)

Note: The dates of the tests and assignments are likely to change slightly.

Grading system

Tests	100%
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Textbooks:

- Manufacturing Processes for Engineering Materials, Fourth Edition, [Serope Kalpakjian](#), [Steven R. Schmid](#), Prentice Hall, 2003.
- Manufacturing Engineering and technology, Fourth Edition, [Serope Kalpakjian](#), [Steven R. Schmid](#), Prentice Hall.

References:

- Fundamentals of Modern Manufacturing: Materials, Processes, and Systems by Mikell P. Groover, John Wiley & Sons, 2nd edition 2001.
- Metal Cutting and High Speed Machining by D. Dudzinski, A. Molinari, H. Schulz, Plenum Pub Corp, 2002.
- Applied Manufacturing Process Planning: With Emphasis on Metal Forming and Machining by Donald H. Nelson, George, Jr. Schneider, Prentice Hall, 1st edition, 2000.