

THREE RIVERS COMMUNITY-TECHNICAL COLLEGE
COURSE OUTLINE

Course Number/Title: MFG K102 Manufacturing Processes

Lecture 3 hrs Laboratory 0 hrs Credit 3 hrs Contact 3 hrs

Course Description: Manufacturing means to make goods and wares by industrial processes. This course will provide theoretical experience in the scientific, engineering and economic principles on which the various manufacturing processes are based.

Method: Lecture, video tapes

Text: Technology of Machine Tools; Krar

Prerequisites: None Co-Requisites: MFG K103

COURSE TOPICS/CONTENT

		HOURS
1.	Conditions of metal cutting-metal cutting tool shapes and forms	3
2.	Economics of metal cutting-cutting speed, feed, depth of cut. Computing metal cutting parameters.	4
3.	The Lathe-turning operations and other lathe operations	2
4.	Economics of Process planning	2
5.	Drilling and Allied Operations - drills, boring tools and reamers	3
6.	Milling - milling cutters and machines - milling operations including indexing, and calculation of cutter R.P.M. and table feed.	6
7.	Grinding Machines and Methods - selection of abrasives, grinding wheels, grinding machines	4
8.	Computer applications to processes such as CAD/CAM, automation, robots, and Chemical and Electrical Methods removing materials -	3 of
9.	Foundry Processes - sand casting, shell mold casting, metallurgy of castings, design of castings	6
10.	Hard Mold Casting Processes-metal molds, plastic molds, precision investment casting	4
11.	Primary Metal working processes-rolling, cold, drawing, forging extrusion	3
12.	Powder Metallurgy	2
13.	Metal Shearing and Forming-bending, presses explosive forming	2
TOTAL HOURS		45

Date: February 13, 2008

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Program Coordinator: Robert Lantz

Department Chairperson: Tony Benoit

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Measurable Objectives

1. The student will prove his knowledge of the various metal cutting tools in current use.
2. The student will indicate comprehension of the function of the various parts of a drill press, milling machine, and engine lathe.
3. The student will be able to accomplish the calculations necessary to determine the correct rotational speed for the engine lathe, drill press and milling machine.
4. The student will be able to correctly select an appropriate grinding process for both precision and non-precision applications.
5. The student will prove knowledge of various sand and permanent mold casting processes.
6. The student will indicate comprehension of metal rolling, forging and extrusion techniques.
7. The student will demonstrate a knowledge of metal shearing, bending and forming.
8. The student will demonstrate familiarization with the bonding concepts utilized in the powder metal fabrication process.
9. The student will prove knowledge of computer applications such as CAD/CAM automation and robots and EDM, ECM, and electrochemical grinding.