Three Rivers
COMMUNITY COLLEGE

Manufacturing Processes: Spring 2012
Course #MFG K102
Syllabus

Course Description:

Manufacturing methods of metals, plastics, and other materials including casting, forming, machining, conditioning, finishing, and welding. Through lecture and open discussion this course will develop a knowledge of production processes for the manufacturing engineer.

Instructor:

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Text Book:

Manufacturing Processes (2e) --- DuVall, J. ISBN 978-1-59070-780-7

Procedure:

The course will be delivered by lecture with open discussion, in which the students are encouraged to ask questions and relate their own experiences. The discussions will be conducted around the reading assignments and the comprehensive quizzes.

Lecture Outcomes:

- Students will describe concepts relating to manufacturing quality, timeliness, and continuous improvement.
- Students will know of a professional code of ethics.
- Students will describe how the concepts of materials manufacturing, statistucs, process automation, computer-aided design and manufacturing, and organizational management affects manufacturing operations.
- Students will illustrate an ability to think critically and identify, evaluate and solve complex technical problem solutions; and conduct and interpret experimental data and outcomes.
- Students will recognize the need to be lifelong learners.

Lecture Performance Criteria:

The above outcomes will be assessed using these performance criteria:

- Use of communication skills
  - Identify the reader/audience, assess their previous knowledge and information needs, and organize/design information to meet these needs.
  - Provide content that is factually correct, supported with evidence, explained with sufficient detail and properly documented.
  - Test reader/audience response to determine how well ideas have been relayed.
  - Submit work with a minimum of errors in spelling, grammar, and usage.
- Know code of ethics
  - Demonstrate knowledge of a professional code of ethics/conduct.
  - Evaluate the ethical dimensions of professional engineering practices
- Concepts relating to manufacturing quality, timeliness, and continuous improvement

- Identify the factors that influence manufactured products quality, cost, and timeliness.
- Demonstrate familiarity with concepts of ‘waste’ and ‘waste reduction’ processes as related to manufacturing.
- Determine systems required to ensure products/services are designed and produced to meet/exceed customer requirements.
- Apply the fundamentals and concepts of lean and just-in-time manufacturing during system design.

- Describe how the concepts affect manufacturing operations
  - Identify the elements of manufacturing automation commonly found in manufacturing enterprises, including CAD/CAM, CNC, machine vision and automated inspection, automated material handling and storage, and robotics..
  - Demonstrate familiarity with typical manufacturing processes and integrated manufacturing systems.
  - Show knowledge of key drivers of manufacturing system performance.
- Illustrate an ability to think critically and identify
  - Show an ability to evaluate the credibility of sources of information
  - Demonstrate the ability to refine generalizations, establish rational and pertinent assumptions, and avoid oversimplifications
  - Exhibit the ability to generate, analyze/evaluate, and assess multiple engineering problem solution options
- Lifelong learning
  - Demonstrate an awareness of what needs to be learned; formulate questions based on research need
  - Develop a research plan appropriate to the investigative method
  - Identify, retrieve, and organize information
  - Use a variety of methods and emerging technologies to keep current in the field

Instructor Assistance:

Seeking help from the instructor outside of class is encouraged if you are having difficulty understanding class material. Feel free to email or call.

Academic Integrity:

Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person’s ability to succeed in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. In this class, and in the course of your academic career, present only your own best work; clearly document to sources of material you use from others; and act at all times with honor.

Comprehensive Exams:

The exam material is from the assigned reading and lectures.

Attendance:

Attendance will be taken and although it is not intended to be used for grading purposes, it may be used for decision on the final grade.

Grading Policy:

Several exams will be given during the semester. The dates of the exams are noted in the Lecture Schedule. Approximately one hour will be devoted in the specified session for each exam. Final grades will be based on a normal distribution of all students taking the course.

Withdrawal:

A student who finds it necessary to discontinue a course must complete a "Withdrawal Request Form" available in the Registrar's office within the limits of the semester calendar. Students who do not withdraw but stop attending will be assigned an "F" signifying a final grade. The last day to withdraw from classes is May 7, 2012.

Disabilities Statement:

If you are a student with a disability and believe you will need accommodations for this class, you must contact Disabilities Counseling Services at 860-823-2830. To avoid any delay in the receipt of accommodations, you should contact the counselor as soon as possible. The instructor cannot provide accommodations until an accommodation letter from the Disabilities Counselor is received.

Date	Class #	Lecture #	Topic	Reading
23 - Jan	1	**1**	Introduction to Manufacturing Processes	Chap 1-2
30 - Jan	2	**2**	Behavior and Characteristics of Materials	Chap 8-13
6 - Feb	3	**3**	Forming Materials	Chap 14-19
13 - Feb	4		**Exam I (Chap 1,2, 8-19)**	
27 - Feb	5	**4**	Separating Materials	Chap 19-23
5 - Mar	6	**5**	Fabricating Materials	Chap 24-28
12 - Mar	7	**6**	Conditioning Materials	Chap 29-33
26 - Mar	8	**7**	Finishing Materials	Chap 34-38
2 - Apr	9		**Exam II (Chap 9-38)**	
9 - Apr	10	**8**	Just-In-Time and Lean Manufacturing	Chap 3
16 - Apr	11	**9**	Planning and Improving Production	Chap 4
23 - Apr	12	**10**	Automation in Manufacturing	Chap 5-6
30 - Apr	13	**11**	Packing/Packaging	Chap 39
7 - May	14	**12**	Ethics in Engineering	
14 - May	15		**Exam III (Chap 3-6, 39)**	