IME 2540: MACHINING Fundamentals- ABET Syllabus

1) Course Number and Name: *IME 2540- Machining Fundamentals*

2) Credits and Contact Hours: 3-5(2-3)

3) Instructor's or Course Coordinator's Name: *Instructor- Dr. Pavel Ikonomov*, Associate Professor: Industrial and Manufacturing Engineering Coordinator- Professor Fred Z Sitkins: Industrial and Manufacturing Engineering

4) Textbook *title, author and year*: Machine Tool Practices, by Kibbe R.R., Meyer R.O, Neely, J.E., and White W.T. (any edition)

5) Specific Course Information:

a) *Description:* Introduction of both traditional and non-traditional methods of machining of materials. Relationship of machines, jigs and fixtures, and productive tooling to the machining of discrete components. Introduction to measuring and gauging as it relates to machining practices. Hands on experience with traditional CNC equipment, including production techniques.

b) *Prerequisite and co-requisites:* Recommended, IME 1500.

c) Required

6) Specific goals for the course:

Students who successfully complete this course will be able to do the following:

	Course Objectives	**ABET/ TAC Outcomes**	**Performance Criteria**
1	Be able to analyze machine setup and operation techniques	F	F1- Defines technical problems, compares alternative options, and designs a solution.
2	Be able to apply productivity principles as a product production tool.	C	C3- Use decision making tools to analyze or improve a process or system
3	Understand the basic principles and techniques of chip removal applied to near net shaping of a variety of materials.		
4	Understand the dimensional characteristics of interchangeable parts.		
5	Develop an appreciation of both traditional and non-traditional machining theory and practice		
6	Understand basic CNC principles		

*Tracked to course notebook. Performance criteria shown for tracked items in this offering.

7) Brief list of topics to be covered

Semester Schedule Fall 2010

Week or day of: *Lecture/exercise Topics:*

9 Introduction, History, Safety, Course requirements
11 Metal turning Lathe, Lathe accessories, (Assignment described)
18 Group assignment
25 Cutting theory & tools (assignment due on 27th)
10 ***Test #1****, (50 points)* Reviewed on the 4th, (assignment described)
09 Group assignment
16 Productivity & process theory
18 Milling machines, accessories & cutters (assign Described)
23 Class exercise
25 ***Test #2*** *(50 points)*
11 Material selection, drilling, tapping, threading, fasteners
Optional Exercise presentation (50 points)
13 Abrasives, sawing, CNC theory, broaching
20 catch up
22 Thanksgiving recess begins at noon
27 ***TEST #3*** *(50 points) & Group exercise presentations **
29 *Final group presentations (200 points)*
Performance Criteria F1 Graded Assignment (Group Productivity Exercise)
12 Course and final exam review (additional presentations as nec.)
12/16 ***Final Exam 10:15 am-12:15 pm***
Performance Criteria C3 Graded Assignment (Final Examination Exercise Problem)

Performance Report Summary

IME 2540 C3 - Uses decision making tools to analyze or improve a process or system.

Prepared by: Fred Sitkins
Date: 1/19/2011

EDT Program Objective	1. Use technological tools effectively in engineering design
MFT Program Objective	2. Understand and use technology to control and monitor processes and systems to solve production problems
UEM Program Objective	N/A
TAC Student Outcome	c. Ability to conduct standards tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
Performance Criterion	C3 - Uses decision making tools to analyze or improve a process or system.
Activity	Final Examination Exercise Problem
Description	
Metric	75% score 70 or higher
Performance against metric	
Date of last measurement	
Continuous improvement actions to be taken	

Attachments:

Edited: 1/26/11 DB