

Course No: MET 4999
Course Name: Senior Project Seminar
Credits: 1 semester credits, (0 – 1 – 0)
Semester: Spring 2008
Section: R01
Day / Time: Recitation F 9:05 - 9:55 (07-330A)

Instructor: Mark A. Johnson Ph.D.
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Office Hours: M,W 10:00 – 12:00
 F 10:00 – 11:00

Textbook:

Rufe, Philip D. (2002). Fundamentals of Manufacturing, 2nd edition, Society of Manufacturing Engineers, ISBN#087263524-4.

Rufe, Philip D. (2005). Fundamentals of Manufacturing Supplement, Society of Manufacturing Engineers, ISBN 087263747-6.

Rufe, Philip D. (2005). Fundamentals of Manufacturing Workbook, Society of Manufacturing Engineers, ISBN 087263845-6.

Prerequisites: Senior Standing

Additional Materials/References: There may be additional reading, homework, etc. distributed via email or on reference in the library. Even though it is not listed on the syllabus, it is your responsibility to make sure that you review the material.

Course Description: This course is designed to review and evaluate the program objectives linked with industrial partners and our accreditation body. Focus given to preparing the student to take the Certified Manufacturing Technologist, CMfgT

Course Objectives: After completing this course, you should be able to:

- Understand and master the skill set required to pass the certification program offered through the Society of Manufacturing Engineers.
- Obtain a passing score on the CMfgT Exam 60%.
- Understand some additional topics not covered in our current program.
- Provide feedback for program through exit surveys and informal session.
- Gain a competitive edge as a result of the certification process
- Professional recognition

Class Sessions:**Instructional Methods**

- Class Discussion
- Student Review of Sample Problems
- Weekly skill review

Skills

You will be using many different skills in this course. There are several prerequisites prior to taking this course, which serve as the foundation for topics covered. It is important to have completed the prerequisites prior to taking this course. You will use the following skills:

- Problem solving skills
- Critical thinking skills
- Analytical skills

Course Evaluation: Grades will be based on the following:

- | | | |
|----------------|------|----------|
| • SME Exam | 50% | 500 pts |
| • Quiz (Nine) | 25% | 250 pts |
| • Attendance | 10% | 100 pts |
| • Homework | 15% | 150 pts |
| • Total Points | 100% | 1000 pts |

Grading Scale:

This course is Pass/Fail

Pass 70% and above (700 -1000)

Fail Less than 70% (0-699)

Homework:

Homework should be done neatly and on Engineers Computation Pads or using a word processor. Quizzes are based on knowledge gained working these problems. If you have any questions, please feel free to contact the instructor for further information or direction.

Quiz:

There will be unannounced quizzes. They will consist of a combination of multiple choice, short answer, and problems. There will be no makeups except in extreme, documented circumstances.

Cheating or Plagiarism:

Proper professional and ethical behavior is expected of all students in this class. If cheating is suspected the Dean of Students will be notified and standard MTU policies will be followed.

Student Expectations:

The most important expectation would be to learn about manufacturing process that you could use in your working life. However, to be able to be successful in this course, the following are expectations I have to ensure your completion and a good grade:

- Attend every class (except under extreme circumstances that you should provide documentation to instructor).
- Read the required material prior to attending the course.
- Participate in class and group discussions.
- Be prepared for class.
- Abide by the Academic Integrity policy.
- Interact with class members and be respectful of other's opinions.
- Apply continuous improvement and make recommendations to instructor.

This class is designed for you to participate in the learning experience. You are responsible for being a learner and a teacher of information. You can learn as much from the instructor as you can from exchanges and discussions with other students in the class. Many of the students bring valuable work experience that is relevant to the subjects being discussed.

If you are not in class, it is hard to participate. If you have an extreme situation, which prevents you from attending the course, please document the circumstance and provide the written notice to the instructor. Universities excused absences include documented plant trips and other university related business. Please provide **written notice of absence in advance** of missing class. Class participation includes full attendance, being prepared for in-class group work and discussions, and responding to discussion topics.

Notice:

If you have any special needs because of personal circumstances, please feel free to meet with me in the beginning of the semester or as soon as possible. MTU complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disability Act of 1990 (ADA). If you have a disability and need reasonable accommodation for equal access to education or services at MTU, Associate Dean of Students at 487-2212. For other concerns about discrimination, you may contact your advisor, department head, or the Affirmative Action Office at 487-3310.

Time Management

This course is one of several courses you are required to complete for your degree. It is always helpful to have an idea of the time requirements associated with a particular course. It is estimated that outside of class you will need to spend approximately, on average, 2-3 hours per credit hour or 3 hours a week to complete the recommended assignments. It is possible in some weeks that it will be more and other weeks it will be less.

Web

All current material will be found on the WebCT / Blackboard

Date Chapter/Required Reading/Suggested Problems**Week 1**

01/18 Course Introduction
Review of course syllabus

Week 2

01/25 Chapter 1-8 review of Math Fundamentals, Units of measure, Light, Sound, Electricity/Electronics, Statics & Dynamics, Strength of Materials.
Workbook – Mathematical Fundamentals & Physics and Engineering Pages 1-13
Submit Review Problems 1-25
Quiz #1
SME Applications Filled Out and returned

Week 3

02/01 Chapter 9-15 review of Thermodynamics, Heat Transfer, Fluid Power, Material Properties, Metals, Plastics, Composites & Ceramics.
Workbook –Physics and Engineering & Materials Pages 13-40
Submit Review Problems 26-40
Quiz #2

Week 4

02/08 Chapter 16 – 22 Engineering Drawing, GD&T, Computer-Aided Design, Product Design Tools, Cutting Tool Technology, Machining & Metal Forming
Workbook – Pages 19-29
Submit Review Problems 41-75
Quiz #3

Week 5

02/15 Chapter 23 – 31 Sheet Metalworking, Powdered Metals, Casting, Welding/Joining, Finishing, Plastics Processing, Composite Processing.
Workbook – Pages 30-32
Submit Review Problems 76-95
Quiz #4

Week 6

02/22 Chapter 32 – 41 Production Planning and Control, Lean Production, Process Engineering, Material Management, Computer Applications/Automation, Manufacturing Networks, CNC Machining, PLC's, Robotics, Automated Material Handling & Identification
Workbook – Pages 33-43
Submit Review Problems 96-145
Quiz #5

Week 7

02/29 Chapter 42 – 50 Personal Effectiveness, Machining Process Analysis, Forming Process Analysis
Workbook – Pages 45-58
Submit Review Problems 146-200
Quiz #6

Week 8

03/07 Chapter 51 – 53 Joining and Fastening Analysis, Deburring and Finishing Analysis, Fixture and Jig Design
Quiz #7

Spring Break (March 8th – 16th)**Week 9**

03/21 Chapter 54 – 56 Advanced Quality Analysis, Engineering Economics Analysis, Management Theory and Practice
Quiz #8

Week 10

03/28 Chapter 57 Industrial Safety, Health, and Environmental Management
Quiz #9

Week 11

04/04 SME Exam Review (WebCT)

Week 12

04/11 SME exam (Requires 3 hours) To be scheduled outside of class period

Week 13

04/18 No Class

Week 14

04/25 No Class