ETME 215 – MANUFACTURING PROCESSES SPRING 2017

Barnard Hall 103
Tuesday & Thursday 10:50 – 12:05

Instructor: Dr. John R. Davis
Phone: 994-6294 Office
581-6530 Cell
Office Hours: See Web Site

Office: Barnard Hall 136A
E-Mail: johnd@ie.montana.edu

Web Site: http://www.montana.edu/jdavis/
Follow the like to ETME 215

Prerequisites: EMAT 251 or EMCE 250

Goals/Objectives:

To provide an overview of the concepts, theory, operation, and application of manufacturing processes with an emphasis on the production of durable goods from engineering materials. The student will apply quantitative analysis techniques to the solution of manufacturing problems, as well as gain an understanding of the appropriate processes to specify while designing products for manufacture.

Specific Objectives:

- Develop understanding of basic manufacturing processes and capabilities of each.
- Extend basic knowledge to solve manufacturing process related problems.
- Develop an understanding of Concurrent Engineering and importance to manufacturing industries.
- Improve team working skills through group assignments.
- Enhance ability to determine what is given and what to find.
- Learn to make engineering judgments.
- Require adherence to assignment deadlines.
- Expect a high level of honesty and integrity from students.
- Improve homework written presentation.
- Learn the impact that modern manufacturing techniques have on human advancement.
- Understand what manufacturing process references are available.
- Discuss current manufacturing issues.
- Emphasize the problem solving process and application techniques.

STUDENT CONDUCT:

Each student is expected to conduct themselves in accordance with prescribed university regulations. A full review of the "Student Academic & Conduct Guidelines & Grievance Procedures" can be made available at the offices of the Dean of Students or at:
www.montana.edu/wwwfachb/policy/acguide.html

Grading:

Homework	20%
Quizzes	20%
Tests (2)	40%
Final (Comprehensive)	20%
TOTAL:	**100%**

Homework: ALL assigned homework is due the next class meeting at the beginning of the class period. No homework will be accepted late or at the end of the class period.

Quizzes: Quizzes will be taken at the beginning of the class period and will be announced at the previous class. No quiz make-ups will be given unless a very good reason is given to the instructor.

Tests (2): There will be two tests (exams) given during the semester. They will be given during a normal class period. They will be open book / close notes with (1) 8 ½ X 11" note sheet allowed. No electronic communication devises (lap tops, cell phones, tablets, etc.) will be allowed and a calculator is required.

Final Exam: The final exam will be administered at the assigned exam day and time for the course. It will be a 2 hour exam and will be comprehensive of the course material. It will be open book / close notes with (1) 8 ½ X 11" note sheet allowed. No electronic communication devises (lap tops, cell phones, tablets, etc.) will be allowed and a calculator is required.

The following grades will be applied based on the student average attained during the course:

Average	Letter Grade
100 – 93	A
92 – 90	A-
89 – 87	B+
86 – 83	B
82 – 80	B-
79 – 77	C+
76 – 73	C
72 – 70	C-
69 – 67	D+
66 – 63	D
62 – 60	D-
59 – 0	F

~ Lecture Schedule ~

Section #1

Introduction to Manufacturing

1/12	Intro to Manufacturing	Ch. 1
1/17	Manufacturing Engineering	Ch. 2
1/19	Dimensions, Tolerances, Surfaces	Ch. 3

Solidification Processes

1/24	Fundamentals of Metal Casting	Ch. 5
1/24	Metal Casting Process	Ch. 5
1/26	Glass Working	Ch. 8
1/31	Shaping Processes for Plastics	Ch. 6
2/2	Rubber Molding & Composites	Ch. 7

Particulate Processing

2/7	Powder Metallurgy	Ch. 9
2/9	Processing of Ceramics & Cermets	Ch. 10
2/14	Review for 1st Test on Section #1	
2/16	*First Test on Section #1*	

Section #2

Metal Forming & Sheet Metal

2/21	Fundamentals of Metal Forming	Ch. 11
2/21	Bulk Deformation in Metal Forming	Ch. 12
2/23	Sheet Metal Working	Ch. 13

Metal Removal Processes

2/28	Theory of Metal Machining	Ch. 14
2/28	Cutting Tool Technology	Ch. 14
3/3	Machining Ops. & Machine Tools	Ch. 15
3/7	Grinding & Abrasive Machining Processes	Ch. 16
3/9	Non-Traditional Machining Processes	Ch. 17
3/13 – 3/17	***Spring Break***	
3/21	Machining Economics & Design Considerations	Ch. 18

Finishing & Property Enhancing Processes

3/23	Heat Treating of Metals	Ch. 20
3/28	Cleaning & Surface Treatments	Ch. 21
3/28	Coatings & Deposition Processes	Ch. 22
3/30	Measurement & Inspection	Ch. 4
4/4	Review for 2nd Test on Section #2	
4/6	*Second Test on Section #2*	

Section #3

Joining & Assembly

4/11	Welding Fundamentals	Ch. 23
4/11	Welding Processes	Ch. 23
4/13	Brazing, Soldering & Adhesive Bonding	Ch. 24
4/18	Mechanical Assembly	Ch. 26

General Manufacturing Related Topics

4/20	Quality Control	Ch. 27
4/25	Numerical Control & Robotics	Ch. 28
4/27	Course Review	

~ Final Exam: Monday, May 1st 2:00 – 3:50pm ~