

LEC / REC 001 – T, 10:00 – 11:50 EPS 129**LAB 002 – Th, 10:00 - 11:50 EPS 134**

Instructor: Kevin Cook/Kevin Love
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Office Hours: (TBD)

COURSE OBJECTIVE: This course is intended to equip students with the ability to utilize industry standard computer graphics software, and critical thinking skills for communicating design intent to manufacturing. The design process as it pertains to manufacturability, and the role of graphical communications in the design process, are emphasized, so that students can successfully complete and manage design project documentation. Students will create graphical packages that communicate their own designs in detail, with the intent that they will build the designed item(s), based on the manufacturing limitations posed to them. The course will be project based and integrated with later courses (ETME 310).

PREREQUISITE: EMEC 103 (MET 119) or equivalent

TEXTBOOKS: *Machinery's Handbook*, Twenty-ninth edition, Industrial Press.

Optional text: Introduction to Solid Modeling Using SolidWorks 2014, Howard, W. E., and Musto, J. C., McGraw-Hill.

TOOLS: A USB “thumb drive” is recommended. .

COURSE TOPICS: The following topics will be covered this semester:

1. Relationships in drawing, design, and mfg.
2. Design process / Design for Manufacturing
3. 3-D CAD modeling techniques
4. Fit and Function in design and drawing
5. Drawing standards
6. G, D, & T standards in design and drawing
7. Production of working drawings
8. Product Data Lifecycle Management

Specific Objectives:

Upon successful completion of this course, students will have demonstrated the ability to:

- Demonstrate a working understanding of the design process and its importance to quality design.
- Understand the relationship between design and manufacturability.
- Detailed product specifications will be written for projects
- Students review tools, machinery and materials available for manufacturability / production
- Assembly and critical part sketches are made of each proposed design and checked against specifications and manufacturability
- Apply fits and tolerances to achieve desired functionality of a design.
- Demonstrate the ability to use 3-D CAD modeling techniques and tools in designing mechanical assemblies and components.
- Apply correct Geometric Dimensioning and Tolerancing to documentation of designed components.
- Complete production ready documentation of the class project.
- Drawing standards and drawing details are studied (combined class projects help to learn methods)
- Drawings are checked for clarity and completeness of information and marked up for revision.
- Understand the concepts of Product Data Management and Product Lifecycle Management, as well as the need for engineering ethics in design.

STUDENT EVALUATION:

rev. 8-25-2014

Student grades will be normally based upon the following scale:

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

Alternatively, the instructor reserves the right to utilize an “Inspection Model” final course grade where the score distributions are evaluated at the end of the semester for natural breaks or cut-offs. Note that this is not a “curve” grading system. Your final grade will be based upon where you fall in the score distributions and my subjective evaluation of total class performance. Grading will be distributed as follows:

1. Work Product	55%
Homework & Quizzes (15%)	
Project Drawings (40%)	
2. Preliminary Exams (15% each)	30%
3. Final Exam	15%

C- Policies:

Effective Fall 2005, a “C-“ or better must be achieved for all courses (core courses and required courses), except free electives, in order to earn credit in that course toward graduation.

Exams: **Look at the exam schedule now.** Send your exam schedule home to your family if necessary. If you have a prescheduled conflict that cannot be altered, let the instructor know during the first week of classes – do not expect any exceptions to the scheduled exam time for conflicts that are not brought to the instructor during the first week of class. Make-up exams will only be given for documented emergency absences.

Attendance: Role will not be taken at every class, but if you miss a class, it is your responsibility to get the notes, assignments, and announcements, or other material that you missed. Students are expected to be prepared for each class.

Quizzes: Quizzes will be given in class at random, unannounced. Quizzes over the reading material will likely be given at the beginning of class.

Homework Problem Assignment Schedule: The full schedule for Spring 2013 will be detailed as the course progresses. Each student is expected to keep abreast of all assignments as they are given. Students are expected to be prepared for each class.

STUDENT CONDUCT:

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

Cell Phones and other Personal Communication Devices: Finish your calls and text messaging before class time so that you can turn these devices *off prior to the start of class*. ***No Phone use during class!***

Internet use on Lab Computers: You may *not* have an internet connection established on one of the lab computers after the start of the scheduled class time without the instructor’s permission.

Special Needs and Accommodations: If you require special accommodations or assistance, please speak to the instructor or contact MSU’s office of Disability, Re-entry, and Veteran Services at: <http://www.montana.edu/wwwres/disability/index.shtml>

Homework Problem Assignment Schedule:

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The schedule for Fall 2014 will be detailed as the course progresses. Each student is expected to keep abreast of all assignments as they are given. Students are expected to be prepared for each class.

ETME 203 –Graphics for Design Assignment Schedule:

Date	Discussion Topic	Reading Assignment	Homework Assignment	Due	Comments
8/26	1. Course Introduction, Tools and Materials		Skills Assessment Vise Project	9/2	
8/28	2. Quality in Design, Robust and Optimal Designs				
9/2	3. Needs Assessment, Problem Formulation, Background		#1	9/4	
9/4	4. Design Goals, Specifications		#2	9/9	
9/9	5. Concept Design Modeling and Synthesis		#3	9/11	
9/11	6. Analysis of Alternative Solutions		#4	9/16	
9/16	7. Review Interactions, DFMA, Optimize		#5	9/18	
9/18	8. Beginning the Detail Design		#6	9/23	
9/23	9. Detail Design		#7	9/30	
9/25	Test #1				

Some assignments may have multiple parts - these parts may be due at different times so be sure to check each assignment for full information on due dates.

Test #1 – September 25, 2014