

**ME 302 – INTRODUCTION TO ENGINEERING DESIGN & GRAPHICS
&
ME 210 – ENGINEERING DESIGN GRAPHICS**

SPRING - 2013

**For
BILLY WOOD**

Students Name: _____ Unique#: 17535
Lecture/Manual Lab Day: TUESDAY Time: 4:00 – 6:00 Desk#: _____ Room: ETC 3.108
Computer Lab Day: THURSDAY Time: 3:00 – 6:00 Room: ETC 3.142
Instructor: **BILLY WOOD** Office: ETC 3.156 Days/Hours: See Attached
Office Phone Number (512) 554-3484 Or by Appointment

ME 210 & 302 Course Objectives:

To instruct students on modern graphics and modeling fundamentals for engineering design. Students will become proficient in freehand sketching, geometric modeling, and its application to computer-aided drafting and design (CADD). They will learn graphic geometry, projection theory, visualization methods, pictorial sketching, geometric (solid) modeling techniques, documentation practices, and data reporting. They will also become familiar with the application of geometric modeling to engineering design analysis, manufacturing, and construction. The course will include an introduction to the modern engineering design graphics process through a team project resulting in the creation of 3D rapid prototype models.

J. H. Earle: GRAPHICS FOR ENGINEERS, Addison-Wesley Publishing Company, (latest edition).

Barr, et al, ENGINEERING DESIGN GRAPHICS SKETCHING WORKBOOK, 5th Edition. Schroff Development Corporation, Mission, Kansas.

Barr, et al, ENGINEERING & COMPUTER GRAPHICS WORKBOOK, using SolidWorks 2012, Schroff Development Corporation, Mission, Kansas.

See separate list.

Time Required- BOTH ME 210 & ME 302:

On a weekly basis there will be 2 hours of lecture and manual sketching lab, 3 hours of CADD lab, and 3 hours of sketching and reading to be done at home. The time for work at home is estimated for an average student; some may need less time and some may need more time. **** (ME 302 Students are assigned an additional lecture hour on Mondays from 3:00 - 4:00PM or 4:00 – 5:00 PM).**

Absences:

Only absences due to a good reason and supported by a written statement from your physician, minister, or clerk of court are excused absences. The statement should include the writer's name, function and phone. A student with an excused absence will get full attention and help to make up the missed work. Each unexcused absence will reduce the final grade by 1%. Coming to the class late or leaving the room early will as a rule count as an absence.

Sheet Deadlines:

Your instructor will assign specific deadlines when manual sheets are due. CADD sheets are due at the end of that CADD Lab. Late sheets will be excused under the same conditions as absences. Unexcused late sheets will get a grade reduced 20% if one period late, and no credit if more than one period late. Excused late sheets should be made up outside of regularly scheduled time, so that the current work can be kept up.

Class Conduct:

- No food or beverages in the labs or classrooms at any time.
- Please remember to practice courtesy in the classroom.
- You may leave the room temporarily without permission, but you are responsible for any announcements, etc., that may take place while you were out.

Miscellaneous:

- Found materials should be turned in to your instructor.
- Put your name on all your textbooks, notebooks, equipment, etc. Your telephone number in textbooks would allow us to notify you if they are turned in to our office. If you lose or leave any book or piece of equipment in a classroom, check with your instructor or with Dr. Krueger in ETC 3.154.
- All quizzes should be returned to instructor before leaving classroom. Taking them out of the classroom or leaving them unattended in the classroom will be considered as scholastic dishonesty resulting in an F-grade for the course.

Scholastic Dishonesty - UT Honor Code (or statement of ethics) and an explanation or example of what constitutes plagiarism (Link to University Honor Code: <http://registrar.utexas.edu/catalogs/gi09-10/ch01/index.html>)

Goals:

This course is a combination of lectures, projects and graphics instruction to help prepare you for your career as an engineering student and a professional engineer. A design graphics team project will be assigned and will require integrating various aspects of the course into a final team project.

Knowledge, Abilities, and Skills Students Should Have Before Entering This Course: Mathematics at the level of Elementary Functions and Coordinate Geometry (M 305G)

Knowledge, Abilities, and Skills Students Should Gain From This Course: Introductory knowledge of Mechanical Engineering professional practices. Graphical communication skills including sketching and computer modeling. Team work, ethics, student work habits, and technical reporting skills.

Impact on Subsequent Courses in Curriculum: Lays foundation for subsequent design courses in Kinematics (ME324), Machine Elements (ME338), and Design Methodology (ME366J).

ABET EC2000 PROGRAM OUTCOMES ACHIEVED:

This course contributes to the following ME Program Outcomes (✓).

| Outcome | | Outcome | |
|--|---|---|---|
| 1. Knowledge of and ability to apply engineering and science fundamentals to real problems. | | 6. Ability to communicate in written, oral and graphical forms. | ✓ |
| 2. Ability to formulate and solve open-ended problems. | | 7. Ability to work in teams and apply interpersonal skills in engineering contexts. | ✓ |
| 3. Ability to design mechanical components, systems, and processes. | | 8. Ability and desire to lay a foundation for continued learning beyond the baccalaureate degree. | ✓ |
| 4. Ability to set up and conduct experiments, and to present the results in a professional manner. | | 9. Awareness of professional issues in engineering practice, including ethical responsibility, safety, the creative enterprise, and loyalty and commitment to the profession. | ✓ |
| 5. Ability to use modern computer tools in mechanical engineering. | ✓ | 10. Awareness of contemporary issues in engineering practice, including economic, social, political, and environmental issues and global impact. | |

ASME PROGRAM CRITERIA OUTCOMES ACHIEVED (✓):

| Mechanical Engineering Criterion | |
|--|--|
| a. Knowledge of chemistry and calculus-based physics with in-depth knowledge of at least one. | |
| b. The ability to apply advanced mathematics through multivariate calculus and differential equations. | |
| c. Familiarity with statistics and linear algebra. | |
| d. Ability to work professionally in both the thermal and mechanical systems areas | |

Professionalism Topics:

1. Professional Communication
2. Teamwork
3. Professional Ethics

Computer Usage:

- SolidWorks Parametric Design Software
- SolidWorks Simulation Analysis Software

Design Assignments:

Integrated Reverse Engineering and Design Graphics Project

Laboratory Projects:

Ten Individual CAD Laboratory Assignments

Instituted College Policy

- "An undergraduate in the College of Engineering may not enroll in any course required in his or her engineering degree plan more than once without written consent of an advisor in his or her department."
- "If you fail to secure written consent to repeat a course and are enrolled in the course, your registration may be deleted."
- "If you are denied approval to repeat a required course, you will be placed in the undeclared major code and must consider other degree options."

Required University Notices and Policies

University of Texas Honor Code

The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.

Documented Disability Statement

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact Services for Students with Disabilities at 471-6259 (voice) or 232-2937 (video phone) or <http://www.utexas.edu/diversity/ddce/ssd>

Use of E-Mail for Official Correspondence to Students

E-mail is recognized as an official mode of university correspondence; therefore, you are responsible for reading your e-mail for university and course-related information and announcements. You are responsible to keep the university informed about changes to your e-mail address. You should check your e-mail regularly and frequently—I recommend daily, but at minimum twice a week—to stay current with university-related communications, some of which may be time-critical. You can find UT Austin's policies and instructions for updating your e-mail address at <http://www.utexas.edu/its/policies/emailnotify.php>

Religious Holy Days

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, I will give you an opportunity to complete the missed work within a reasonable time after the absence.

Behavior Concerns Advice Line (BCAL)

If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit <http://www.utexas.edu/safety/bcal>

ME 302 – Spring 2013
Schedule for Monday Large Lecture/Team Project/Machine Shop Activities

| Date | Topic | Homework Assignment | Due Date |
|-------------|--|--|-----------------|
| 1/14 | Review of Course Handout Grading Policy and Attendance Policy Project Assignment #1 <i>Graphics Survey (PRE)</i> | Project Assignment #1 - Team Questionnaire (I) | 1/28 |
| 1/21 | MLK Day Holiday - No Large Lecture Class | | |
| 1/28 | Shop Presentation I and Sign-Up <i>Outcomes Survey (PRE)</i> | Machine Shop Assignment #1 – Training Certificate (I) | TBD |
| 2/4 | Introduction to Reverse Engineering Team Project Assignments <i>Teamwork Survey (PRE)</i> | Project Assignment #2 – Reverse Engineering Project Proposal (T) | 2/18 |
| 2/11 | Project Connections - Dr. Harovel Wheat <i>What Mechanical Engineers Do Survey (PRE)</i> | Connections Assignment #1 (T) | TBD |
| 2/18 | Tips for Teamwork Team Planning Charts and Diagrams <i>Graphics Survey (MID)</i> | Project Assignment #3 - Planning Charts and Diagrams (T) | 3/4 |
| 2/25 | Guest Speaker <i>Outcomes Survey (MID)</i> | | |
| 3/4 | Mechanical Dissection Sketching Assignment and Parts List <i>Teamwork Survey (MID)</i> | Project Assignment #4 – Project Dissection Sketches (T) | 3/19* |
| 3/11 | Spring Break – No large lecture Class | | |
| 3/18 | Mathematical and Computer Modeling <i>ME Code of Conduct Survey</i> | Project Assignment #5- Computer Solid Modeling (T) | 4/1 |
| 3/25 | Shop Presentation II <i>Machine Shop Survey</i> | Machine Shop Assignment #2 – Shop Part (I) | TBD |
| 4/1 | Materials and Manufacturing Processes <i>ME Retention Survey</i> | Project Assignment #6 - Materials and Manufacturing (T) | 4/15 |
| 4/8 | Guest Speaker <i>Teamwork Survey (POST)</i> | | |
| 4/15 | Project Connections - Dr. Harovel Wheat <i>What Mechanical Engineers Do Survey (POST)</i> | Connections Assignment #2 (T) | TBD |
| 4/22 | Team Project Report Writing Handouts <i>Outcomes Survey (POST)</i> | | |
| 4/29 | Final Team Project Review Class Evaluation (CIS) <i>Graphics Survey (POST)</i> | Project Reports <u>Due</u> in ETC 3.106 Thursday, May 2, at 5:00 PM | |

Notes:

1. Lecture slides and assignments are available for the class at the UT **Blackboard** website.

Grading Distribution for ME302 Large Lecture Class *Turn Over for Grading Policy* Spring 2013

Instructor of Record: **Dr. Ronald Barr**
 Office: ETC 3.162
 Hours: Tues & Thurs. 3:00-5:00 PM
 Email: rbarr@mail.utexas.edu

| <u>Unique No.</u> | <u>Large Lecture</u> | <u>Room</u> |
|-------------------|----------------------|-------------|
| 17505 | Monday 3-4 PM | ETC 2.136 |
| 17510 | Monday 4-5 PM | ETC 2.136 |
| 17515 | Monday 4-5 PM | ETC 2.136 |
| 17520 | Monday 3-4 PM | ETC 2.136 |
| 17525 | Monday 3-4 PM | ETC 2.136 |
| 17530 | Monday 4-5 PM | ETC 2.136 |
| 17535 | Monday 3-4 PM | ETC 2.136 |
| 17537 | Monday 4-5 PM | ETC 2.136 |
| 17539 | Monday 3-4 PM | ETC 2.136 |

Large Lecture Grading

| Points | Max. Possible |
|--|----------------------|
| Attendance (I)..... | 50 |
| Project Assignment #1: Team Questionnaire (I)..... | 50 |
| Project Assignment #2: Project Proposal (T)..... | 50 |
| Project Assignment #3: Planning Charts and Diagrams (T)..... | 50 |
| Project Assignment #4: Sketches (T)..... | 50 |
| Project Assignment #5: Computer Models (T)..... | 50 |
| Project Assignment #6: Materials and Manufacturing (T)..... | 50 |
| Machine Shop Assignment #1: Training Certificate (I)..... | 50 |
| Machine Shop Assignment #2: Machine Shop Part (I)..... | 50 |
| Connections Assignment #1 (T)..... | 50 |
| Connections Assignment #2 (T)..... | 50 |
| Final Team Project (T)..... | 250 |
| TOTAL: 800* | |

KEY

(I) - Individual Assignment
 (T) – Team Assignment

*Total Points are added to Graphics Lab Portion to Yield Final Grade.

Note: Your Final Letter Grade Will Be Assigned by the Graphics Lab Instructor.