Rev. 1 1/18/2013

COURSE OUTLINE

Course Prefix and Number	SYEN 2233
Course Title	Solid Modeling and Design
Credit	2 Hours
Semester and Year	Spring 2013
Instructor	Dr. Andrew Wright
Class Time	T 1:40-2:55 (lecture/supervised lab), R 1:40-2:55 (open lab)
Class Location	EIT 224
Office Location	EIT 522
Telephone	569-8071
Email	abwright@ualr.edu

Prerequisite: SYEN 2117 or equivalent

Course Description: Modern engineers use Computer Aided Design and Engineering (CAD/CAE) programs to improve the design process. This course will introduce the concepts of three-dimensional part modeling and assembly for analysis and manufacturing. The principle method for design communication is through two-dimensional standard drawing practices which can be easily extracted from three dimensional models. This course will cover the basic nomenclature to allow engineers to communicate with manufacturers. Some focus will be applied to the intersection of tolerances, as expressed on engineering drawings, with design and manufacturing processes. The course will introduce how to interface solid models with CAE simulations, such as a Finite Element Analysis program.

Learning Objectives
The student will be able to:

1. use a solid modeling program to model basic parts and assemblies
2. apply drawing standards and practices to produce engineering technical drawings
3. communicate design tolerances through engineering drawings
4. communicate design ideas through sketching
5. analyze CAD models with CAE software, such as performing stress analysis with FEA

Texts, Readings, and Instructional Resources
Required Text: Howard, Musto, Introduction to Solid Modeling Using Solidworks 2011, McGraw-Hill, 2011. ISBN: 978-0-07-337545-8

Recommended Text: Giesecke, et al, Technical Drawing with Engineering Graphics, 14th ed., Prentice-Hall, 2012.

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Assignments, Evaluation Procedures, and Grading Policy

The course requirements consist of:

1. **Homework and Lab assignments:** Homework assignments will be given periodically to supplement the reading material and lectures. Assignments are graded pass/fail. Homework will be due one week after it is assigned.
2. **CAD Exam:** a CAD exam will be given in class. This exam will involve using the CAD software to develop a solid model, drawing, and extract engineering data from the model.
3. **Final Project:** A CAD assembly of a complex mechanism will be required as the final project. The graded portion of the project will be a report which includes engineering drawings and data extracted from the solid model. A key component in the project will be the manufacturability of the model (and may require an actual product to be fabricated using techniques developed in the student's prior fabrication experience). The project will be due on the date of the final exam.

Grading

1.	Homework	20 points
2.	CAD Exam	40 points
3.	Final Project	40 points

Grades $A \geq 90\ points > B \geq 80\ points > C \geq 70\ points > D \geq 60\ points > F$

Bonus Points are given based on superior performance on some task. These points are added onto the final score in determining grades.

Policies

Attendance will be taken periodically. If a student is absent for four times his/her final grade will be reduced by one letter grade (i.e., from A to B or B to C). Students who do not attend during the first eleven days of class may be administratively dropped from the course.

A student who misses more than six classes or labs will receive a final course grade of an F and may be administratively withdrawn prior to the drop date at the discretion of the instructor.

Tardiness is disruptive, so please be respectful of your peers and instructor and get to class on time. If you are tardy, please come into the room quietly and sit in the nearest available seat to the door.

Cell phones can be disruptive. Please turn off your cell phone (i.e. airplane mode) before class. If you forget and receive a call in class, please immediately disable your ringer/buzzer and terminate the call. Do NOT answer the call and have a conversation as this may classified as disruptive behavior.

Disruptive Behavior may result in your being administratively dropped from the class, especially if it is persistent.

Sickness or Emergency is a legitimate excuse to make up a graded assignment (attendance or exam). However, to guarantee that no late penalties are applied, the student should notify the instructor in advance or provide an independent written excuse (e.g., a doctor's note) after the fact.

Make up policy: Exams may be made up on the date of the final exam provided that the student notifies the instructor in writing at least two weeks prior to the date of the final exam. There will be an 80% maximum for any exam for which a legitimate excuse was not provided for the absence.

Mid-Term Grades will be assessed based on homework/lab to date (total points/total possible points *44) and the midterm exam (total points/100*56). Missed assignments will be entered as 0 points, although they may be

made up at the end of the term. A mid-term grade of D or F should result in a consultation either with the instructor or an academic counsellor. Three or more unexcused absences will require a deduction of one letter grade for determination of the mid-term grade.

Late assignments are any homework or lab assignment that is turned in after the official due date. The assignment will receive a 20% deduction unless excused for some sickness/emergency. Any assignments turned in after the final exam will receive an additional, cumulative 10% per day deduction. No assignments will be taken after 5:00 the day before grades are due, unless prior permission has been given.

Modifications to Syllabus may be made to improve delivery of the course content. The instructor will provide an updated syllabus at least one week prior to any changes taking effect and no modifications will be done within two weeks of the final exam.

Students with Disabilities: It is the policy of the University of Arkansas at Little Rock to create inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or to accurate assessment of achievement–such as time-limited exams, inaccessible web content, or the use of non-captioned videos–please notify the instructor as soon as possible. Students are also welcome to contact the Disability Resource Center, telephone 501-569-3143 (v/tty). For more information, visit the DRC website at http://ualr.edu/disability/.

The UALR Student Handbook is available at
http://ualr.edu/deanofstudents/assets/archive/HANDBOOK.pdf.