



Instructor: Dr. John Heathcote

Lecture/Labs:

M: 1:00 pm - 2:50 pm
W: 1:00 pm – 3:50 pm
and online

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Room: FEM-3

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Office Hours:

MW 12:00-12:50 pm
TTh 11:00-11:50 am
F 10:00-10:50 am

These are my official office hours, but you can find me at many other times! If you see me there, I am available to answer your questions or discuss any topic. Please come by!

Welcome to Engineering Graphics!

I would like to welcome you to ENGR 2, in which you will learn to use the tools of computer-aided drafting (CAD) and solid modeling in order to describe designs of parts and assemblies. This is a fun class from which you will emerge with very marketable skills!

I look forward to working with you in learning this material. If you stay on top of completing your assigned drawings, you will enjoy yourself and learn quite a bit!

Prerequisite: Math 4A

Advisories: English 125 and 126

Required Text: Introduction to Solid Modeling using SolidWorks 2021, William Howard and Joseph Musto, McGraw Hill.

You do not need to purchase this textbook yourself. It is available for check-out from the library.

Software that will be used in this course:

AutoCAD is a free download, available at

<https://www.autodesk.com/education/edu-software/overview?sorting=featured&filters=individual>

(Downloads are available for both Windows and Mac.)

A student edition of SolidWorks can be downloaded onto your own computer. Details on how to obtain this software will be provided soon.

Computer File Storage: You will be completing one to six computer files during each lab session. You will want a place to store these files for later access. You may use a USB flash drive or a cloud storage location. Do not use the “My Documents” location on the lab computers. Files saved here will be regularly deleted.

Online Labs:

A portion of this course is online. That means that outside of the scheduled class-time each week, you are required to spend your own time completing the laboratory assignments. You will need to use certain on-campus computers (FEM-3, the math center, or the library computer lab) or download the drawing software onto your own computer. In addition, you can access the Canvas course website for class notes, assignments, and schedules. You will also submit work electronically at this site.

Typical Weekly Schedule (subject to change):

Even though we will meet only twice a week, there will usually be three laboratory assignments each week. The deadlines for each assignment will be clearly stated.

Monday Lab (“Lab A”):	Wednesday Lab (“Lab B”):	Online Lab (“Lab C”):
<ul style="list-style-type: none"> • Start assignment during class. • Assignments are due by Wednesday night. 	<ul style="list-style-type: none"> • Start assignment during class. • Assignments are due by Friday night. 	<ul style="list-style-type: none"> • Complete assignments on your own. • Assignments are due by Monday night.

Catalog Description: This course covers the principles of engineering drawings in visually communicating engineering designs and an introduction to computer-aided design (CAD). Topics include the development of visualization skills, orthographic projections, mechanical dimensioning and tolerancing practices, and the engineering design process. Assignments develop sketching and 2-D and 3-D CAD skills. The use of CAD software is an integral part of the course.

Grading:	Lab Assignments:	50%
	Skills Quizzes:	20%
	Assessments/ Projects:	20%
	Final Exam	10%

Grading Scale:	A: 90-100%
	B: 80-89%
	C: 70-79%
	D: 60-69%
	F: <60%

Lab Assignments: Each week, students must perform drawing activities to learn and practice concepts and techniques in engineering graphics. These drawings will be turned in each week (either electronically or on paper) and reviewed by the instructor. Assignments should be turned in on time in order to get full credit.

Lab Grades and Corrections: Every lab drawing/activity will be graded based upon accuracy and meeting the deadline. After submitting your file, it will be graded and comments will be returned to you. You then have the opportunity to make corrections to your work in order to improve your grade. As long as you submit a fair first attempt before the deadline, you can reach full credit after making corrections. **However, if you do not turn in your file on-time, you will not be able to receive full credit on the assignment.** Corrections are due two weeks after the original due date of each lab.

Skills Quizzes: Approximately four skills tests will be given during the term. These quizzes will be held during the regular class period. These will involve computer skills and understanding of engineering graphics concepts.

Assessments and Projects: Assessments and projects will be similar to lab assignments except that corrections will not be allowed. The drawings must be performed accurately the first time that they are submitted. These assignments will be either review assignments to test understanding of previous content or applied projects to test students' ability to apply these ideas to practical work.

Final Exam: A cumulative final exam will be given during finals week. This exam will involve both written work and work on the computer to test students' understanding of concepts from the entire course

Cheating and Plagiarism: All work is to be done by each individual student. Any act involving submission of work that is not your own (this could involve copying files from another student or any other act of deception) will result in penalties to all students involved. These penalties may include a failing grade on that assignment, failing grade for the course, and/or referral to the Dean of Students.

Accommodations for Students with Disabilities:

If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

Attendance: If there is a reason that will cause you to miss class, please let me know so that I can make sure you are able to keep up with the course. If you miss more than four class sessions, you may be dropped. Course withdrawals, however, are ultimately the responsibility of the student.

Add Date:	Friday, January 28	Last day to add a course
Drop Date:	Friday, March 11	Last day to drop this course
Holidays:	Monday, January 17	Martin Luther King Jr. Day
	Friday-Monday, Feb. 18-21	Presidents' Day Holidays
	Monday-Friday, April 11-15	Spring Recess Holidays
Final:	Wednesday, May 18, 1:00-2:50 pm	

COURSE OUTCOMES:

Upon completion of this course, students will be able to:

- A. graphically represent three-dimensional objects using accepted engineering practices.
- B. communicate graphically using computer tools and freehand sketching.
- C. design a solution to an engineering problem, using CAD and solid modeling software.

COURSE OBJECTIVES:

In the process of completing this course, students will:

- A. use computer-drawing software to geometrically construct two-dimensional shapes.
- B. use computer-drawing software to construct multi-view orthographic projections of three-dimensional objects.
- C. create auxiliary and sectional views of objects.
- D. use proper dimensioning and tolerance techniques to fully define an object.
- E. demonstrate proficiency at freehand technical sketching.
- F. use solid modeling software to represent a three-dimensional object.
- G. design solutions to engineering challenges by use of engineering drawings.
- H. apply the principles of orthographic projection, isometrics, and descriptive geometry to the solution of engineering problems.

Course Schedule (Subject to change):

Week #:	Topics:
1	Introduction to SolidWorks
2	SolidWorks Part modeling
3	Additional Part Modeling Techniques
4	2D CAD Constructions
5	More 2D Constructions, Architects' scales; Quiz #1
6	More 2D Constructions, Engineers', Metric scales
7	Multi-view Drawings
8	Multi-view Drawings and 3-D pictorials
9	Visualization skills and Review
10	SolidWorks Drawing Files and Quiz #2
11	Section Views and Auxiliary Views
12	Auxiliary Views and Tolerances / Fits
13	Clearance and Interference Fits, Quiz #3
14	SW Assemblies, Subassemblies
15	Advanced Assemblies, Assembly Drawings
16	Advanced Assemblies / Project Work
17	Quiz #4 / Project Presentations
18	Final Exam