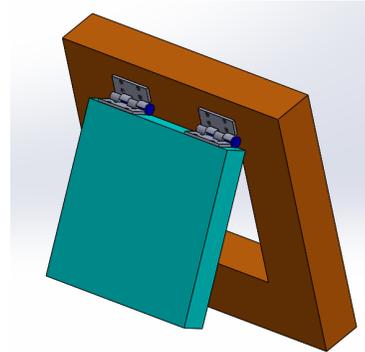
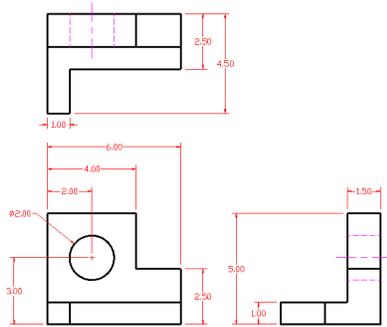


# Graphics

Spring 2024

## Engineering 2 (Section 54553)



**Instructor:** Dr. John Heathcote

**Lecture/Labs:**

T/Th: 12:00 pm - 1:50 pm  
and online

**Office:** PHY-78

**Room:** PHY-77

**Phone:** (559)494-3000 ext. 3215

**e-mail:** [john.heathcote@reedleycollege.edu](mailto:john.heathcote@reedleycollege.edu)

**Office Hours:**

MTWThF 11:00-11:50 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

**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 download this software is posted on Canvas.

**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 save documents on the lab computers. Files on lab computers 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 (PHY-78 or the math center) 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.

<b>Tuesday Lab (“Lab A”)</b>	<b>Thursday Lab (“Lab B”)</b>	<b>Online Lab (“Lab C”)</b>
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You will submit your assignments as you finish them. After I have graded each assignment, you have the opportunity to make corrections. Corrected lab assignments should be submitted by the assignment deadline, which is two weeks after the lab during which it was assigned.

**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.

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

<b>Grading Scale:</b>	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.

**Lab Grades and Corrections:** Every lab drawing/activity will be graded based upon accuracy. 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. If you correct all of your errors, you can reach full credit after making corrections. Corrections are due two weeks after the original date of the lab. Labs submitted or corrected after the deadline will not receive full credit.

**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 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.

<b>Add Date:</b>	Friday, January 26	Last day to add a course
<b>Drop Date:</b>	Friday, March 8	Last day to drop this course
<b>Holidays:</b>	Monday, January 15	Martin Luther King Jr. Day
	Friday, February 16	Presidents' Day
	Monday, February 19	Presidents' Day
	Monday-Friday, March 25-29	Spring Break
<b>Final:</b>	Tuesday, May 14, 12:00-1:50 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	2D CAD Constructions, Architects' Scales
2	More 2D Constructions, Engineers' and Metric scales
3	Blocks and Three-View Drawings
4	Three-View Drawings and Pictorial Views
5	Basic SolidWorks Part Modeling
6	SolidWorks Parts and Quiz #1
7	SolidWorks Parts and Stress Analysis
8	Parametric Modeling and Equations
9	SolidWorks Drawing Files
10	Quiz #2
11	Section Views
12	Auxiliary Views
13	Secondary Auxiliary Views
14	SW Assemblies and Quiz #3
15	Subassemblies and Advanced Assemblies
16	Motion Studies and Assembly Drawings
17	Quiz #4 / Project Presentations
18	Final Exam