



Glendale Community College

Engineering Department

Course Syllabus: ENGR 101 Engineering Drafting and Basic Design

3-Units, Fall 2023

Mirrored Course with STV 151

Instructor Contact Information

- Christopher Herwerth, M.S., P.E.
 - MS Mechanical Engineering
 - BS Mechanical Engineering
 - CA Professional Engineer, License No. M 34433
- GCC Email: cherwerth@glendale.edu
- **818-240-1000 ext. 5628**

Course Meeting Time and Office Hours

- **Course Meeting Time: In-person Tues and Thurs 9 AM to 12 PM in AT-211**
- **Online Office Hours: Mon, Wed, 10 am – 11:15 am, and Tues, Thurs, 3 PM to 4:15 PM via Zoom ID 7044608855**
 - I will be holding online Synchronous Office Hours every **Mon, Wed, 10 am – 11:15 am, and Tues, Thurs, 3 PM to 4:15 PM** starting Aug 28, through "Zoom". This means, I will be online providing instant feedback during this time.
 - If students cannot make these hours and would like to talk another time, they may request an appointment to chat by sending me a message through CANVAS or email cherwerth@glendale.edu.
 - Students may also message me any questions and allow 24 hours for a response.
 - Inquiries sent on Fridays may not be returned until the following Monday.
 - There are also Q&A discussion forums where other students may help answer questions before I get there to do so.
 - Students are strongly advised to exchange contact information, as peer-to-peer discussion about technical content is frequently a highly successful learning activity.

Course Communication

Email

If you ever have any questions, please email me through Canvas by clicking on "Inbox" on the left side of your homepage. Click on "Compose a new message", select this course and then select "Teachers"



under the "To" field and you will find my name, Christopher Herwerth. This is email inside Canvas :-) I am not supposed to receive any personal email...Canvas email only, please! I will respond to your email within 24 hours, M-F. If you do not hear back from me within this time, please assume I did not receive your email and resend it.

Course Description

This introductory course covers the fundamentals of traditional board drafting, projections, descriptive geometry, graphical communication of technical engineering information and Computer Aided Drafting (CAD). Topics include freehand drawing, lettering, and theory of orthographic and multi-view projections. Basic drafting skills, industry standards and technical graphics practices, and engineering/architectural scales are presented. The fundamentals of auxiliary views, pictorial views, coordinate systems, sectioning, dimensioning, lines, planes, intersections and visibility are taught. Coordinate dimensioning and geometric dimensioning and tolerancing (GD&T) subjects are covered including form tolerance, location tolerance, datum reference, tolerance symbols and feature control frames. An introduction to both 2-D and 3-D CAD, in two separate software packages is given. CAD instruction includes drawing set up and settings, creating templates, title blocks, layers, drawing basic geometric objects, extrusion, dimensioning and creating basic engineering drawings such as part and assembly drawings as well as orthographic multi-view drawings.

Prerequisites: NONE.

CSU Transferable

About This Class

- **This course is an in-person class. We will meet on Tuesdays and Thursdays in room AT-211.**
- **Attendance for this in-person course means that you participate in class or are logging into Canvas and completing assignments, quizzes and projects.**
- **This regular semester, in-person course officially starts Tuesday August 29 and ends Thursday December 14.**
- **Students should log into CANVAS during the first week of this class and complete two assignments:**
 - **1. the [Icebreaker discussion](#) (self-introduction) and**
 - **2. [the syllabus quiz](#), both before Sunday 11:59 pm, September 3.**
- **Students who do not log in and complete both the Icebreaker discussion and Syllabus Quiz, or who do not come to class during the first meeting, will be dropped from the course by the following Sunday 11:59 pm.**



- Syllabus Quiz: Click on the syllabus assignment after carefully reading the course syllabus, and follow the steps to answer the questions of the quiz.
- For more information on course drops, See Refund/Payment Policy: <https://www.glendale.edu/home/showdocument?id=25858> (Links to an external site.) [REFUND/REPAYMENT POLICY A. Refund Policy for All Students - glendale.edu](#) (Links to an external site.)
- Below are a few resources for students about what it means to drop a class:
 - [It's okay to drop a class, really! \(Links to an external site.\) \(Links to an external site.\)](#)
 - [Should I Drop a Class? \(Links to an external site.\) \(Links to an external site.\)](#)
 - [To Drop or Not to Drop? \(Links to an external site.\)](#)

Browser Compatibility:

You can access Canvas using Google Chrome, Firefox, Safari or Microsoft Edge as your browser.

Student Learning Outcomes

Upon successful completion of the required coursework the student will be able to:

1. apply the standards of orthographic projection in computer aided designs to efficiently communicate detailed drawing information by creating completely defined drawings without excess information.
2. evaluate engineering design needs and use judgement to include proper dimensioning and tolerances in a CAD design for efficient manufacturing of the part, construction or machine.
3. demonstrate the engineering design process in a computer aided drafting and design project.

Textbook(s) and Required Materials

Engineering Graphics Principles with Geometric Dimensioning and Tolerancing, E. Max Raisor FIAE, SDC Publications, 2017.

ISBN 978-1-63057-121-4 [SDC Publications](#)

A new edition of the textbook is required as it includes significant electronic downloads

Alternative Textbook Source <https://www.redshelf.com/> (Links to an external site.)

- Please let me know right away if any materials are not accessible in this course and I will ensure access in a timely matter.
- [Glendale Community College Bookstore Website \(Links to an external site.\)](#)



Software

Computer Aided Design Software will be made available to students in this course. GCC Engineering Students may download free student versions of SOLIDWORKS. AutoCAD software is free to all students through AutoDesk. These products have specific computer system requirements so if your computer can't run these software packages then browser-based software such as Onshape and Fusion 360 are acceptable. Additional Virtual Log in to GCC Engineering computers may be available as well. Look for more information in Canvas for the CAD software solutions. **Students are not required to purchase CAD software for this course.**

Coursework

Important Dates

The due dates for your assignments can be found in the *syllabus* in the global navigation links at the top of your screen. Please review these. In addition, I will post reminders prior to the due dates in the *Announcements*.

Weekly Assignments

Each week you will need to complete the following:

- Read the chapter in the textbook being covered that week
 - Watch the lessons or videos in the Weekly/Chapter Module. This will be available by the Friday before the weekly module.
 - Take the Quizzes available per the schedule below and complete by the posted due date.
 - Complete the assignments in each course lesson at your own pace. **There is plenty of time but a limit of 10 assignments per week is accepted.**
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Grading

This course will be grading using a competency-based model. Students will work at their own pace and earn grades as they complete work for each milestone. The course will proceed through several topics that are aligned with the chapters of the textbook and each assignment must earn a minimum of 90% to be counted towards the milestone. General grading is as follows:

Grade of C – complete a minimum of 30 drawings or assignments with a grade of 90% or better

Grade of B – complete a minimum of 50 drawing or assignments with a grade of 90% or better.

Alternate qualification for a B is completion of 30 drawings or assignments and completion of the final project

Grade of A – complete a minimum of 50 drawings or assignments and complete the final project

Quizzes count as assignments and must have a grade of 90% or better



The check-in discussion counts as an assignment.

Feedback will be readily available from the instructor to ensure that the drawings/assignments that are submitted meet the 90% threshold. Resubmission will be allowed until until the drawing is acceptable (grade of 90% or higher)

Each drawing or assignment is available in the textbook (workbook) or available on Canvas. To complete drawings, tear out the drawing from the workbook and complete the drawing or create the drawing using the available computer aided design software.

Final Project The final project consists of three parts of about 4 to 5 drawings each. The final project is to draw the components of a machinist's vise by;

1. Hand drawings
2. AutoCAD or other 2D software
3. SOLIDWORKS or other 3D software

Each drawing set will be complete with respect to the requirements of an engineering drawing that a machinist or manufacturing technician can use to create the part.

Note on grading - while competency-based grading is fairly easy and low pressure there is a fair amount of work expected in the class to earn a high grade. Grading deadlines have long lead times such as 3 to 4 weeks.

Submission Policy

Plan for success! Submit your work by the requested due date and time. **In general, late work will not be accepted because there are long lead times to submit assignments.** If you have an extenuating circumstance, please contact me by private message before the assignment is due to make alternate arrangements. Submitting work on-time is an important aspect of engineering. Late work, if allowed, may be penalized 10% per day. Submissions are limited to 10 assignments per week.

Verbal discussions do not supersede the contents of this syllabus. Canvas grading calculation may not be 100% accurate. Assess your grade based on the method specified in the syllabus.

Attendance/Participation/Refund Policies

- Students should complete the Syllabus Quiz and Check-in Discussion by Sunday September 3
- Attendance for this in-person course means that you participate in class or are logging into Canvas and completing assignments, quizzes and projects.
- Any student that is added as a 'late add' student has until Sunday September 10, 11:59 pm to complete the Check-In Assignment
- Students who miss two or more weeks of assignments, quizzes and discussions may be dropped from the course.



Additional Policies and Resources

Academic Honesty

It is expected that all work submitted for grading is original, not copied from others and that the work being graded is indeed done by the student who is receiving the grade. Cheating and plagiarism are serious violations of the student conduct code. Cheating or plagiarizing will result in a zero on the assignment or test and may result in other disciplinary action taken by the College. All incidents of cheating or plagiarizing are reported to the Dean of Students. For more information, please refer to the [Glendale Community College Academic \(Links to an external site.\) Honesty Policy](#).

Students with Disabilities

- All students with disabilities seeking accommodations are responsible for making arrangements in a timely manner through the [Center for Students with Disabilities \(Links to an external site.\)](#). Please let me know right away if you will need accommodations so we can pre-plan together.
- Please let me know if you have adaptive software and hardware to assist you with taking this course or if you have any specific needs of which I should be aware. You can find more information about Disabled Students Programs and Services (DSPS) or call the office at 818-240-1000 x5905.
- Students with disabilities have the right to receive reasonable academic adjustments in order to create an educational environment where they have equal access to instruction without fundamentally altering any course, educational program or degree. (GCC Board Policy, 2000)
Any student who feels they may need an accommodation based on the impact of a disability should contact Disabled Students Program and Services (DSP&S) at (818) 240-1000 ext. 5905 or visit the DSP&S office in the San Rafael Building, 2nd Floor.
- Please allow 24 hours for the instructor to make necessary adjustments for accommodations requested through DSPS.

Non-discrimination and Equal Opportunity Policy:

“Glendale Community College District is a multicultural community of people from diverse racial, ethnic, linguistic and class backgrounds, national origins, religious and political beliefs, physical and mental abilities, gender identities, and sexual orientations. The activities, programs, classes, workshops/lectures, and everyday interactions of this district are enriched by our acceptance of one another, and we strive to learn from each other in an atmosphere of positive engagement and mutual respect.” Please see the Glendale College Catalog, page 19.

Harassment Policy:

“All forms of harassment are contrary to basic standards of conduct between individuals and are prohibited by state and federal law, as well as this policy, and will not be tolerated. The district is committed to providing an academic and work environment that respects the dignity of individuals and groups. The District shall be free of sexual harassment and all forms of sexual intimidation and



exploitation including acts of sexual violence. It shall also be free of other unlawful harassment, including that which is based on any of the following statuses: race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, genetic information, marital status, sex, gender, gender identity, gender expression, age, or sexual orientation of any person, or because he or she is perceived to have one or more of the forgoing characteristics.” Please refer to the Glendale College Catalog, page 19.

Student Technical Support

Go to the [Student Tech Support \(Links to an external site.\)](#) page if you are having Canvas tech issues or check out the resources below:

- Canvas Questions ONLY: 24/7 Assistance at 1-844-600-4951
- Student Support through [Live Chat \(Links to an external site.\)](#)
- Student Support [On-Campus \(Links to an external site.\)](#)(SM 266)
- Student [Canvas Guides \(Links to an external site.\)](#)
- Student Distance Education [Success Tips \(Links to an external site.\)](#)

Student Online Services

There are many additional services to help you during this course. A few of these include:

- [Free Online Tutoring \(Links to an external site.\)](#), which can be accessed through the website or through Canvas.
- [GCC Library \(Links to an external site.\)](#) (Databases & Online Chat), which can be accessed through the website or through Canvas.

Additional services can be found on the [GCC Student Services Webpage \(Links to an external site.\)](#)

Course Schedule (Tentative)

ENGR 101 Schedule Fall 2023 Tentative			
Week	Date	Topics	Assignments
Week 1	29-Aug	Introduction to Engineering Graphics	Assignment A Lettering
	31-Aug	Geometric Construction	Assignment B Geometric Construction
Week 2	5-Sep	Unit 1 Principal Views	Assignment 1
	7-Sep	Orthographic Projection	Assignment 2
Week 3	12-Sep	Line types	Assignment 3, 4
	14-Sep	Glass Box Theory & 3rd & 1st Angle Projection	Assignment 5, 6
Week 4	19-Sep	Miter Line & Compass Techniques Industry Standards	Assignment 7, 8
	21-Sep	Perspective drawing, Isometric, Axonometric	Assignment 9, 10
Week 5	26-Sep	Measure & Transfer Technique	Assignment 11, 12, 13
	28-Sep	Pictorials, Orthographic Projection Practice	Assignment 14, 15, 16, Quiz 2
Week 6	3-Oct	Unit 2 Auxiliary Views, Normal and Edge Views	Assignment 17, Assignment C
	5-Oct	Auxiliary Views	Assignment 18
Week 7	10-Oct	Inclined & Oblique Surfaces True Length, Size and Shape	Assignment 19
	12-Oct	True Angle, Slope Angle	Assignment 20
Week 8	17-Oct	Auxiliary View Review	Assignment 21, 22
	19-Oct	Unit 3 Sectioning Conventions	Assignment 23, 24
Week 9	24-Oct	Full, Half, Revolved sections	Assignment 25, 26
	26-Oct	Offset, Broken Out, Aligned, Breaks, Hatching	Assignment 27 - 35
Week 10	31-Oct	Unit 4 Coordinate Dimensioning and Tolerancing	Assignment 36, 37
	2-Nov	General Rules, Applications & Types, Arrowheads	Assignment 38, 39
Week 11	7-Nov	Feature, Feature of Size, Material Condition	Assignment 40, 41
	9-Nov	Basic Hole, Basic Shaft, Standard Fits	Assignment 42 - 44, Quiz 3
Week 12	14-Nov	Unit 5 Introduction to Geometric Dimensioning and Tolerancing	Assignment 45, 46
	16-Nov	Datums, Geometric Characteristic Symbols	Assignment 47
Week 13	21-Nov	Feature Control Frames	Assignment 48
	23-Nov	Holiday No Class	Holiday No Class
Week 14	28-Nov	Final Project	Assignments 49, 50
	30-Nov	Work on Project	Assignment D Industry Organizations
Week 15	5-Dec	Project	Assignment E Measurements
	7-Dec	Project	Assignment F Fasteners
Week 16	12-Dec	Final Exam Week No Class	
	14-Dec	Final Exam Time Period / Project Due 9:10 – 11:30 AM	Final Project Due