

THE UNIVERSITY OF ARIZONA
Department of Biosystems Engineering
BE220 Engineering Graphics and Design with
AutoCAD Fall Semester 2021

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TA/Grader: N/A

Course Description

This course is an introduction to computer-aided design using AutoCAD. It offers students aspects of AutoCAD program's tools from basic concepts to the most powerful tools used in design and engineering. The course will also allow students develop skills to design and model prototypes in AutoCAD ready to be printed in 3D printers. Topics covered include fundamental CAD concepts, drafting with AutoCAD, editing techniques, working with complex objects, annotating drawings, outputting CAD work, working with external references, drawing management tools and utilities, and 3D printing.

Course Prerequisites or Co-requisites

Prerequisites: None

Co-Requisites: None

Course TextBook

Technical Drawing 101 with AutoCAD 2020.

A Multidisciplinary Guide to Drafting Theory and Practice with Video Instruction

Douglas Smith, Antonio Ramirez, Ashleigh Fuller. SDC Publications.

SBN: 978-1-63057-284-6

It comes with an access code to the Video tutorials from the Publisher's website

Software

AutoCAD 2019/2020/2021 from AutoDesk will be required for this class.

Students can register an account and download AutoCAD for free on personal devices through the Autodesk Education Community.

<https://www.autodesk.com/education/free-software/autocad>

AutoCAD is available for Windows and macOS operating systems.

If you experience any issue downloading/installing it, you can get help from the 24/7 university service

<https://it.arizona.edu/service/247-it-support>

Course Goals and Outcome

This is an introductory computer-aided design course for engineers and others using AutoCAD. AutoCAD includes a wide variety of user tools. The goal of the class is to teach students how to use AutoCAD to render two- and three-dimensional objects.

This is a projects-based learning class in which students will learn by practicing the skill sets introduced each week, and then apply them to three projects

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

1. Demonstrate basic object and geometric construction and editing tools.
2. Describe object properties and organization.
3. Recognize orthographic and multi-view drawings.
4. Demonstrate the ability to annotate drawings in AutoCAD.
5. Apply assembly drawings and blocks.
6. Demonstrate advanced drawing and construction methods.

Help Sessions, Locations and Times

This is a hybrid online course and as such there are not required meeting times. The time on the schedule of class is dedicated to help sessions where students attend to get help about specific assignment, get clarifications, fix any issues with projects, etc.

Face to face meetings are held every week at Shantz Building, room 338.

Day	Place	Time
Tuesday	In person Shantz 338 & Virtual Zoom Meeting	11:00am-1:00pm
Thursday	In person Shantz 338 & Virtual Zoom Meeting	1:00pm-3:00pm

Additionally, from time to time, students may request help by appointment outside the normal help sessions when schedule allows it.

For in person meetings, COVID19 guidelines and requirements must be followed per University policies such as Physical distancing and Face covering in the classroom (See below details on COVID19 guidelines)

Teaching Method

BE 220 is developed as a hybrid online course. The course will be managed via the D2L learning management system. A textbook containing follow-along tutorials will be used as the main resource for the class, along with some additional materials and problems that will be posted on D2L. It is recommended that students refrain from simply following each instruction in the tutorials but, instead, to understand the principle upon which each step depends. This approach will help prepare the student for the scheduled quizzes over each chapter.

Each week there will be textbook readings, tutorial videos and two to three problems that students have to complete at your own convenient time. These problems will be developed by the instructor or could be from the textbook. Additionally, every week, lab hours will be available where students can meet with the professor or TAs to get help, ask questions and receive additional instructions for completing their assignments for that week.

As this is an online course, individual reading and doing the assignments/projects is the primary method. Individual help is provided by email and if necessary face-to-face meeting by appointment. If you can not make it to a face-to-face, you can meet virtually during the online office hours using zoom.

Assignments and Examinations

Every week there will be two to three homework problems to complete and must be submitted to d2l on time. There will be no exams for this course; instead, there will be quizzes to be completed in D2L. There will also be three individual projects during the semester to be completed that replaces the exam. Homework and projects should be regarded as learning experiences, during which CAD skills can be both demonstrated and improved. Note: Projects are used in lieu of examination, therefore, the expectation is for students to do projects individually without anybody's help-- even a paid tutor. For this reason there will not be help sessions on the weeks the projects are assigned. Failure to abide by this rule i.e., using help from a classmate, a tutor, and anyone of the assistants will be considered as integrity violation and will result a serious consequence according to the university's policy on cheating.

Both homework and projects should be completed on time and submitted to D2L Assignment folders on or before the deadline. Assignments turned in late will be severely penalized. Any homework or project turned in late within a week of the deadline will receive 50% of the score; Zero credit after that. The D2L Assignments timestamp will be used to determine when an assignment was submitted.

Grading Policy

Graded work will include quizzes, homework assignments and Projects. Every assignment has a specific number of points that contribute to the final grade.

Quizzes	15%
Homework	50%
Projects	35%
Total	100%

The final letter grade is assigned based on the following scale:3

A greater or equal to 90%

B 80% to 90%

C 70% to 80%

D 60% to 70 %

E less than 60%

Course Outline

Week	Activity
Aug 23	Class rules, Syllabus and Software Installation
Aug 30	Technical Drawing
Sep 6	Multiview Concepts
Sep 13	Introduction to AutoCAD commands
Sep 20	AutoCAD basics I
Sep 27	AutoCAD basics II
Oct 4	Project #1
Oct 11	Dimensioning Mechanical Drawings
Oct 18	Dimensioning Mechanical Drawings II
Oct 25	Dimensioning Architectural Drawings
Nov 1	Isometric Drawings
Nov 8	Sections
Nov 15	Auxiliary Views
Nov 22	Project #2
Nov 29	Blocks & Mechanical Assembly
Dec 6	3D Modeling basics

Course Policies:

Missed or late assignments cannot be made up without a good cause and adequate proof.

Withdrawals: It is the responsibility of the student to become familiar with the University course withdrawal policy at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop> Please note, there are different policies based upon whether you are an undergraduate or graduate student and whether you are a main campus or on-line student.

Academic Integrity: The University's Code of Academic Integrity (Section 2.1a) states that students shall not "represent the work of others as their own". This policy will be applied to all work submitted for grade: exams, homework, computer work, and writing assignments. Any student submitting homework solutions or computer project reports with part(s) copied from solutions provided by the instructor(s) in previous semesters, or from the text solutions manual, or from students who took the course in previous semesters, will automatically receive zero credit for ALL homework/computer work for the entire semester. In other words, all work must be original. The minimum penalty for cheating on exams and quizzes is an E grade.

DRC Students: Need for Assistance: If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as outlined, or which will require academic accommodations, please notify us as soon as possible.

Incomplete Policy: Students will not be given an incomplete grade in the course without sound reason and documented evidence as described in the university's catalog. In any case, for a student to receive an incomplete, he or she must be passing and must have completed a significant portion of the course.

Discrimination & Bullying: Discrimination and bullying will not be tolerated. Students and instructors have a shared responsibility to foster a positive learning environment. We all want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed.

Disruptive Behavior: Students are expected to be familiar with the UA Policy on Disruptive Behavior in an Instructional Setting (<https://policy.arizona.edu/printpdf/92>)

COVID19 guidelines and Requirements

- Face coverings are required in the classroom: Per UArizona's Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn

in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the learning space until the matter is resolved. Students who forget or refuse a face covering will be given a disposable mask to wear. Refusal to wear a face covering (mask) will then involve asking the student to leave the room and connect remotely. Refusal to wear a face covering or leave the room may result in class-session cancellation.

- Physical distancing is required in the classroom: During our in-person class meetings, we will respect CDC guidelines, including restricted seating to increase physical distancing and appropriately worn face coverings. Per UArizona's Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space, and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the learning space until the matter is resolved.

The Disability Resource Center is available to explore face coverings and accessibility considerations if you believe that your disability or medical condition precludes you from utilizing any face covering or mask option. DRC will explore the range of potential options as well as remote course offerings. Should DRC determine an accommodation to this directive is reasonable, DRC will communicate this accommodation with your instructor.

- Classroom attendance:

- If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel.
- Notify your instructors if you will be missing an in person or online course.
- Campus Health is testing for COVID-19. Please call (520) 621-9202 before you visit in person.
- Visit the UArizona COVID-19 page for regular updates.

- Academic advising: If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the Advising Resource Center can guide you toward university resources to help you succeed.

- Life challenges: If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office can be reached at 520-621-2057 or DOS-deanofstudents@email.arizona.edu.

- Physical and mental-health challenges: If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

- Remain flexible: If pandemic conditions warrant, the University may require that we return to remote operations. If that is the case, we will notify you by D2L Announcement and email that we are moving to remote operations.

- Remote / online only after Thanksgiving: After the Thanksgiving holiday, we are scheduled to move to remote teaching. This means we will meet via Zoom during scheduled class time during the weeks after Thanksgiving.

Wildcat Wellcheck

<https://wellcheck.arizona.edu> (Instructions for signing up for Wellcheck)

Text JOIN to 1-833-339-0504

Questions on Wellcheck:

1. Do you have a temperature of 100.4 or above?

Yes, 100.4 or above

No, below 100.4

Don't know/don't have a thermometer

2. Do you or close contacts have any of the following symptoms that could be related to COVID-19?

Fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, diarrhea.

Reporting Positive COVID-19 test:

Information Website: <https://health.arizona.edu/SAFER>

Have you tested positive for COVID-19? <https://redcap.link/CovidReporting>
