

**1: Course Number and Name**

- a. **ENGR 1307:** Engineering Graphics, Spring 2022
- b. Section 020, VIN 245, M 10:30 am – 12:20 pm  
Section 02Z, VIN 245, W 10:30 am – 12:20 pm

**2: Credits and Contact Hours**

- a. **Credits:** 4
- b. **Contact Hours:** 4 hours/week (classroom)

**3: Instructor Information**

- a. **Course Coordinator:** Dr. Dick Apronti
- b. **Instructor:** Dick Apronti, 325-486-5512, [dick.apronti@angelo.edu](mailto:dick.apronti@angelo.edu). Office: VIN 275.
- c. **Office hours:** MTWRF 5:00 pm – 6:00 pm (Online on Blackboard Collaborate); office meetings by appointment only.

**4: Required Course Materials**

- a. **Textbooks:**
  - Technical Drawing 101 with AutoCAD 2021: A Multidisciplinary Guide to Drafting Theory and Practice with Video Instruction by Antonio Ramirez, Ashleigh Fuller, and Douglas W. Smith. More recent editions of this textbook are acceptable. This textbook is referred to as TD101 in Table 3.
  - Engineering with Excel by Ronal W. Larsen. ISBN-13: 978-0134589664; ISBN-10: 0134589661. This textbook is referred to as EwE in Table 3

**5: Other Supplemental Materials**

- a. You will need access to Lynda.com. You can get this access for free with a Tom Green County library card. You have to visit a library branch in person to get your card. If you want you can pay for access either directly to Lynda.com or via LinkedIn. More info on these options is posted on Blackboard.
- b. To participate in one of ASU's distance education programs, you need this technology:
  - A computer capable of running Windows 7 or later, or Mac OSX 10.8 or later
  - The latest version of one of these web browsers: Internet Explorer, Firefox, or Safari
  - Microsoft Office Suite or a compatible Open Office Suite
  - Adobe Acrobat Reader
  - High-Speed Internet Access
  - Ethernet adapter cable required (wireless connections can drop during tests and Collaborate sessions)
  - Webcam

**6: Technology Requirements**

To successfully complete this course, you need to have internet access and the ability to use the following online tools: Blackboard, Gradescope, Blackboard Collaborate, Adobe Acrobat (or another pdf maker), YouTube. No specific hardware is required, but access to a computer with webcam is highly encouraged.

- Microsoft Excel: You can access Word, Excel, PowerPoint with your ASU email. Angelo State has partnered with Microsoft to make Office 365 available to students.
- Autodesk AutoCAD: A free student software is available at the Autodesk website when you register with your student email.
- Autodesk Revit: Free student software is available on the Autodesk website when you register with your student email.
- Autodesk Inventor: When you register with your student email, free student software is available on the Autodesk website.
- Solidworks: This software is not accessible for students but is available at the Engineering Computer Lab is VIN 245. It is an expensive piece of software, so you are not required to purchase it for your personal computer.

### 7: Specific Course Information

- a. **Catalog Description:** As a future professional engineer, you will be required to understand the workings of Computer Aided Drafting and Design (CADD) and have the ability to produce reports and present results to clients, employers, the public, and other stakeholders. Additionally, you will be introduced to using tools such as Microsoft Excel, to analyze and present data plots. The primary objective of this course is to provide you with the essential tools and knowledge of CADD.
- Modern engineers use CADD in every aspect of planning, design, and estimation. The CADD tools are essential for the accurate and timely design of all engineering projects. However, traditional drafting knowledge remains necessary for implementing CADD operations and tools. The drafting theory portion of this course includes the application of sketching, multi-view projections (orthographic and isometric), descriptive geometry (representation of three-dimensional objects in two dimensions), and dimensioning. This course will provide you with the proper drafting background for future use in any engineering discipline you may pursue.
- c. **Prerequisites:** Accessing Internet websites, using ASU Library resources, and proficiency with Microsoft Word and/or PowerPoint are expectations of Engineering Graphics.
- d. **Required or elective:** Required.

### 8: Specific Goals for the Course

- a. Course Learning Outcomes:
1. Demonstrate proper documentation, data reporting, and plotting skills.
  2. Demonstrate proficiency in visualization techniques, including freehand sketching.
  3. Apply common geometric constructions to the drawing of instrumental figures and practical designs.
  4. Communicate design solutions through CADD software using the accepted industry graphical representation methods.
  5. Derive a three-dimensional (3-D) drawing from multi-views of an object and multi-views from a three-dimensional image.
  6. Working as a team, apply drafting and design skills to create and present a technical drawing project to meet predefined requirements.
  7. Apply different learning strategies to learn a CAD program to complete a given project.

b. Course Learning Outcome Mapping to ABET Criterion 3 Student Outcomes:

**Table 1: Course Learning Outcomes mapped to ABET Student Outcomes**

ABET Student Outcomes	1	2	3	4	5	6	7
1. Solve Problems	X				X	X	X
2. Design				X		X	X
3. Communication	X	X	X	X	X	X	
4. Ethics & Professionalism							
5. Teamwork						X	
6. Experimentation							
7. Acquire New Knowledge							X

**9: Topics Covered**

1. Spreadsheets and documentation
2. Scales and drafting
3. Basics of Computer Aided Drafting and Design
4. Three-dimensional modeling in CAD

**10: Course Delivery and Communications**

**10.1: Delivery Method(s)**

This is a face-to-face course with learning resources and supplemental materials posted in [Blackboard](#)<sup>1</sup>. Accommodations will be made for students who are in quarantine or isolation and are unable to attend.

**10.2: Communications**

The primary means of communication during this course are Blackboard and Piazza. Lesson materials will be delivered via Blackboard. Piazza will be used for announcements and discussion of course materials. Please do not email your instructor with questions about class—instead, post your questions on Piazza. One reason for using Piazza is for you to benefit from the collective knowledge of your classmates and instructors. You are encouraged to ask questions when you are struggling to understand a concept—you can even do so anonymously or send private messages to the instructor.

The instructor will respond to Piazza messages within six to twelve hours during working hours Monday through Friday. Weekend messages may be responded to within 24 hours or until Monday. Messages posted on Piazza will be sent to your ASU email address. Check frequently for announcements and policy changes.

When face-to-face office hours are not possible, office hours or advising may be arranged with the assistance of Collaborate, Zoom, or another web meeting platform.

**11: Professionalism**

Professional engineering standards apply in this class. You are expected to demonstrate a behavior consistent with the conduct of an individual practicing in the engineering profession. You are expected to: (1) come prepared for class; (2) respect faculty and peers; (3) demonstrate responsibility and accountability for your own actions; (4) demonstrate sensitivity and appreciation for diverse cultures,

backgrounds, and life experiences; (5) offer and accept constructive criticism in a productive manner; (6) demonstrate an attitude that fosters professional behavior among peers and faculty; (7) be punctual to class meetings; (8) maintain a good work ethic and integrity; and (9) recognize the classroom as a professional workplace.

## **12: Graded Material**

### **12.1: Class Attendance, Participation, Timeliness and Teamwork**

You are expected to meet every class meeting on time and prepared. Attendance will be taken. Should you find it necessary to miss a class for any reason, you are expected to notify your instructor as early as the absence is known—preferably before the absence.

Your online assignments will be due at the time specified on Blackboard. Assignments submitted in hard copy are due at the beginning of class on the due date. Your instructor may assess penalties for late work.

Nearly all worthwhile accomplishments from raising a family to launching the space shuttle are the work of teams. Civil and mechanical engineering are no exception. All significant civil engineering projects are completed by teams. You will be assigned to a team for the projects. The purpose of the teams are to give you practice working together and to provide a support group for you within the class. Outside of class, please collaborate and work with anyone you wish.

### **12.2: Quizzes & Participation**

There may be in-class quizzes used for checking attendance. The quizzes will be unannounced and unscheduled. The quizzes are intended to assess your comprehension of the basic concepts of topics covered, and to determine whether you have completed the pre-class work and are prepared for class.

### **12.3: In-class Exercises**

There will be some exercises in this course that will be categorized as in-class exercises. The exercises will be assigned in class and you may be required to complete them outside class time. The in-class exercises require completion of some computations or providing extensive explanations on a topic covered during a class lecture. The exercises will be due on the dates indicated on Blackboard. Your lowest submission will be dropped.

### **12.4: Homework**

There will be four homework assignments that will cover major topics. Each homework is an individual effort that may require reading or researching beyond the discussions presented by the instructor in class. Homework assignments will be due on the dates indicated on Blackboard.

**Resubmittals:** If your homework is submitted on time and is complete, but you are not satisfied with the grade you received, you may make corrections and resubmit together with your original graded homework for regrading within a week of receiving your graded homework. If your homework was submitted late, you lose the opportunity to resubmit corrections. Resubmission deadlines are one week after receiving the graded work.

### **12.1: Portfolios**

Portfolios will be checked before the final project is completed. Portfolios should include your syllabus, handouts, quizzes, graded homework and in-class submittals (original submittals placed before the resubmittals), and projects. Please label all tabs according to the sections described in the previous statement.

### 12.2: Exam

There will be two online exams. Exam 1 will be 120 minutes and scheduled to take place during lab sessions. The final exam will be 120 minutes and scheduled per the university final exam calendar. All exams will be closed book and will require the Respondus browser and Blackboard Monitor.

### 12.3: Grades: Weighting and Letter Grades

The weighting system shown in Table 2 will be used in determining final grade for this course.

**Table 2: Grade Weighting**

<u>Item</u>	<u>Percent</u>
Homework	20%
Participation	20%
Exam 1	15%
Final exam	15%
<u>Projects (three)</u>	<u>30%</u>
Total	100%

The instructor will determine letter grades for the course using his professional judgment, and the following standards as described in the University Catalog:

A = excellent work      B = good work      C = average work      D = poor work      F = failing work

### 12.4: Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)<sup>2</sup> for more information.

## 13: Classroom and University Policies and Student Support

All students are required to follow the policies and procedures presented in the [Angelo State University Student Handbook](#)<sup>3</sup> and [Angelo State University Catalog](#)<sup>4</sup>.

### 13.1: Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at [ADA@angelo.edu](mailto:ADA@angelo.edu). For more information about the application process and requirements, visit the [Student Disability Services website](#).<sup>5</sup> The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
[dallas.swafford@angelo.edu](mailto:dallas.swafford@angelo.edu)  
Houston Harte University Center, Room 112

### **13.2: Title IX at Angelo State University**

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)<sup>6</sup>  
Face to Face: Mayer Administration Building, Room 210  
Phone: 325-942-2022  
Email: [michelle.miller@angelo.edu](mailto:michelle.miller@angelo.edu)

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).<sup>7</sup>

### **13.3: Student Absence for Observance of Religious Holy Days**

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for [Observance of Religious Holy Day](#)<sup>8</sup> for more information.

### **13.4: Information About COVID-19**

Please refer to ASU's [COVID-19 \(Coronavirus\) Updates](#)<sup>9</sup> web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

### **13.5: Student Conduct Policies**

#### ***13.5.1: Academic Integrity***

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

### 13.5.2: Plagiarism

Plagiarism is a serious topic covered in ASU's [Academic Integrity policy](#)<sup>10</sup> in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin or SafeAssign. Resources to help you understand this policy better are available at the [ASU Writing Center](#)<sup>11</sup>.

### 13.5.3: Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

## 14: Course Outline

The tentative course outline is presented in Table 3. Detailed reading and homework assignments along with updates to this schedule will be provided via Bb. The following schedule may be modified as the semester progresses.

**Table 3: Course Lesson Outline**

Week	Date	Topic	Reading	Due
1	Jan 18	Course intro; spreadsheet references		
	Jan 20	Spreadsheet functions & computation	EwE Ch. 1	In-class 1
2	Jan 25	Plotting		
	Jan 27	Technical Report Writing & Project 1		In-class 2
3	Feb 1	Introduction to technical drawings		HW01
	Feb 3	Scales	TD101 Ch. 1	In-class 3
4	Feb 8	Multi-view drawing - terminologies		In-class 4
	Feb 10	Multi-view drawing (continued)	TD101 Ch. 2	
5	Feb 15	Multi-view drawing (continued)		In-class 5
	Feb 17	Project 1 Presentation		HW02
6	Feb 22	<b>Exam 1</b> online (Respondus Online Browser and Monitor)		Exam 1
	Feb 24	CAD Basics – Coordinate systems	TD101 Ch. 4	In-class 6
7	Feb 29	CAD Basics – lines & layers		In-class 7
	Mar 3	CAD Basics – blocks, styles & Layouts		In-class 8
8	Mar 8	CAD Basics – mechanical dimensions	TD101 Ch. 5	In-class 9

Week	Date	Topic	Reading	Due
	Mar 10	CAD Basics – architectural dimensions	TD101 Ch. 6	In-class 10
9	Mar 15	Spring Break		
	Mar 17	Spring Break		
10	Mar 22	Project 2 Assignment	TD101 Ch. 10	HW03
	Mar 24	3D Modeling Basics		
11	Mar 29	3D Modeling Basics (continued)	Handout	In-class 11
	Mar 31	Intro to Solidworks		
12	Apr 5	Solidworks exercise		
	Apr 7	Solidworks exercise		Project 2
13	Apr 12	Project 3 Assignment		HW04
	Apr 14	Project discussion		
14	Apr 19	3D Modeling		
	Apr 21	Project discussion		
15	Apr 26	Interim Project Report		
	Apr 28	Project discussion		
16	May 3	Project Presentation		<b>Project 3</b>
	May 5	Project Presentation		
17	May 12	<b>Final (8:00 am – 10:00 am)</b>		

## 15: End Notes

<sup>1</sup> [angelo.blackboard.com](http://angelo.blackboard.com)

<sup>2</sup> <https://www.angelo.edu/content/files/14197-op-1011-grading-procedures>

<sup>3</sup> <http://www.angelo.edu/student-handbook/>

<sup>4</sup> <https://www.angelo.edu/academics/catalog/>

<sup>5</sup> <https://www.angelo.edu/current-students/disability-services/>

<sup>6</sup> <https://www.angelo.edu/incident-form>

<sup>7</sup> <https://www.angelo.edu/title-ix>

<sup>8</sup> <http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of>

<sup>9</sup> <https://www.angelo.edu/covid-19/>

<sup>10</sup> <http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php>

<sup>11</sup> [http://www.angelo.edu/dept/writing\\_center/academic\\_honesty.php](http://www.angelo.edu/dept/writing_center/academic_honesty.php)