1: Course Number and Name
   a. **ENGR 1304**: Engineering Graphics, Spring 2021
   b. Section 010, VIN 245, M 02:00 pm – 03:50 pm
      Section 01Z, VIN 245, W 02:00 pm – 03:50 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. Office: VIN 275.
   c. **Office hours**: TR 7:00 pm – 9:00 pm (online on Microsoft Teams using link posted on Blackboard); F 11:00 am – 12:00 pm (face to face in VIN 275).

4: Required Course Materials
   - Technical Drawing 101 with AutoCAD 2020 by Antonio Ramirez, Ashleigh Fuller, and Douglas W. Smith.
   - Additional readings will be posted on-line.

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
   c. Drafting materials including the items listed below.
      - Ruler with both inch and centimeter divisions--at least 6 inches or 15 cm long
      - 30-60-90° triangles
      - Protractor
      - Compass
      - 45° triangle – 5” to 10” size
      - Engineers scale (10, 20, 30, 40, 50, 60)
      - Mechanical Engineer’s Scale (1/4 size, 3/8 size, 1/2 size, 3/4 size, 16)

6: Technology Requirements
   - 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: There is a free student software available at the Autodesk website when you register with your student email.

• Autodesk Revit: There is a free student software available at the Autodesk website when you register with your student email.

• Autodesk Inventor: There is a free student software available at the Autodesk website when you register with your student email.

• Solidworks: This software is not free for students but is available at the Engineering Computer Lab in 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 absolutely 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. The primary objective of this course is to provide you with the basic tools and knowledge of CADD. Additionally, you will be introduced to using tools such as Microsoft Excel, to analyze and present data plots.

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 essential 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 the Engineering Graphics.

d. Required or elective: Required for the BSCE and BSME Majors.

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

<table>
<thead>
<tr>
<th>ABET Student Outcomes</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Solve Problems</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Design</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Communication</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Ethics &amp; Professionalism</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5. Teamwork</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6. Experimentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7. Acquire New Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

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 blended course with roughly 50% of the course delivered online via Blackboard. To maintain academic quality while accommodating social distancing needs this semester, this course will use a split delivery model that combines face-to-face teaching with remote instruction.

The goal is to provide face-to-face instruction to students who want to return to campus, while also allowing students who may need to learn remotely to participate via virtual class sessions.

This class will be divided, and you will be placed into a smaller group of students to maintain physical distancing requirements in our assigned classroom space.

Table 3 contains the course schedule. The second column indicates when your assigned group will have their in-person class meetings. This schedule is not flexible. For instance, if you are supposed to attend class on a Monday, you cannot elect to go on Wednesday with another class group instead.

When you are not in the physical class, you will be responsible for completing assigned coursework in Blackboard. This work can be completed any time before the posted deadline. Please refer to this Health and Safety web page for updated information about campus guidelines as they relate to the COVID-19 pandemic.

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. Message posted on Piazza will be sent to your ASU email address. Check frequently for announcements and policy changes.

Virtual communication: Office hours and/or advising may be done with the assistance of the Microsoft Team.

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

The number one complaint of engineering clients is the timeliness of deliverables (reports, drawings, specifications, etc.). As a professional engineer you will be expected to arrive at scheduled meetings on time and prepared. Late proposals are not generally accepted. Late specifications or drawings may cost the engineer a monetary penalty. Professional engineering standards apply in this course.

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. It is important that you communicate clearly to your instructors.

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

12.2: Reading Assignments and Homework

Reading and homework assignments will be distributed via the Blackboard. Reading assignments will come from the assigned textbooks or other materials provided or available via the web. In-class assignments will be completed in class or on the same day the work is assigned. Homework will be due a week after the date of the assignment. Check Blackboard for specific due dates. Late Homework or in-class submissions will not be accepted unless consent has been sought and given by the instructor prior to the indicated deadline.

12.3: Quizzes

In-class assignments will be completed during the class time on the same day the work is assigned. Check Blackboard for specific instructions and due dates for each in-class exercise. Zero points will be awarded for missed exercises. These exercises cannot be made up.
12.4: In-class Exercises

In-class assignments will be completed during the class time on the same day the work is assigned. Check Blackboard for specific instructions and due dates for each in-class exercise. Zero points will be awarded for missed exercises. These exercises cannot be made up.

12.5: Exams

There shall be three exams. The weights for the three exams are 5%, 10%, and 15% respectively. Make-up exams will only be given for extenuating circumstances unless prior arrangements with the instructor are agreed upon. Proof, such as a doctor’s note or other official documents, may be required for unexcused absences during an exam.

12.6: Projects

There will be two projects for this class requiring some hands-on design work. Project 1 is an individual work where you will apply 2D drafting techniques. Project 2 is a team project work and will involve 3D modeling techniques and 3D printing your design. Projects one and two shall be worth 10% and 15%, respectively, of your final score.

12.7: Grades: Weighting and Letter Grades

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

Table 2: Grade Weighting

<table>
<thead>
<tr>
<th>Item</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>15%</td>
</tr>
<tr>
<td>In-class Exercises</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Exams (three)</td>
<td>30%</td>
</tr>
<tr>
<td>Projects (two)</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

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

13: Classroom and University Policies and Student Support

13.1: General Policies

All students are required to follow the policies and procedures presented in the Angelo State University Student Handbook⁵ and Angelo State University Catalog⁶.

13.2: Student Disability Services

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. For more information about the application process and requirements, visit the Student Disability Services website. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
dallas.swafford@angelo.edu  
Houston Harte University Center, Room 112

13.3: Title IX at Angelo State University

The University prohibits discrimination based on sex, which includes pregnancy, sexual orientation, gender identity, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination including: sexual assault, sex-based discrimination, sexual exploitation, sexual harassment, public indecency, interpersonal violence (domestic violence and/or dating violence), and stalking. As a faculty member, I am a Responsible Employee meaning that I am obligated by law and ASU policy to report any allegations I am notified of to the Office of Title IX Compliance.

Students are encouraged to report any incidents of sexual misconduct directly to ASU’s Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator at:

Michelle Boone, J.D.  
Director of Title IX Compliance/Title IX Coordinator  
Mayer Administration Building, Room 210  
325-486-6357, michelle.boone@angelo.edu

You may also file a report online 24/7 at www.angelo.edu/incident-form.

If you are wishing to speak to someone about an incident in confidence you may contact the University Health Clinic and Counseling Center at 325-942-2173 or the ASU Crisis Helpline at 325-486-6345.

For more information about resources related to sexual misconduct, Title IX, or Angelo State’s policy please visit: www.angelo.edu/title-ix.

13.4: Required Use of Masks/Facial Coverings by Students

As a member of the Texas Tech University System, Angelo State University has adopted the mandatory Facial Covering Policy to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that covers the nose and mouth areas. Therefore, in compliance with the university policy students in this class are required to wear a mask/facial covering before, during, and after class. Faculty members may also ask you to display your daily screening badge as a prerequisite to enter the classroom. You are also asked to maintain safe distancing practices to the best of your ability. For the safety of everyone, any student not appropriately wearing a mask/facial covering will be asked to leave the classroom immediately. The student will be responsible to make up
any missed class content or work. Continued non-compliance with the Texas Tech University System Policy may result in disciplinary action through the Office of Student Conduct.

**13.5: Observance of Religious Holy Day**

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](#) for more information.

**13.6: 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](#) for more information.

**13.7: Student Conduct Policies**

**13.7.1: 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.

**13.7.2: Plagiarism**

Plagiarism is a serious topic covered in ASU’s [Academic Integrity policy](#) 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](#).

**13.7.3: 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 course outline is presented in the table next page. 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

<table>
<thead>
<tr>
<th>Week</th>
<th>Group</th>
<th>Date</th>
<th>Topic</th>
<th>Materials</th>
<th>Assignment Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>Jan 25</td>
<td>Intro and learning strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Jan 27</td>
<td>Learning strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A</td>
<td>Feb 1</td>
<td>Spreadsheets and documentation</td>
<td>Microsoft Excel</td>
<td>Homework 1</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Feb 3</td>
<td>In-class assignment 1</td>
<td>Microsoft Excel</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A</td>
<td>Feb 8</td>
<td>Introduction to technical design</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Feb 10</td>
<td>In-class assignment 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A</td>
<td>Feb 15</td>
<td><strong>Exam 1</strong></td>
<td>Exam 1 includes: Intro, spreadsheet and documentation, Intro to technical design</td>
<td>Homework 2</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Feb 17</td>
<td>Scales &amp; Drafting</td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>A</td>
<td>Feb 22</td>
<td>In-class assignment 3</td>
<td>AutoCAD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Feb 24</td>
<td>Scales &amp; Drafting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>A</td>
<td>Mar 1</td>
<td>In-class assignment 4</td>
<td>AutoCAD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Mar 3</td>
<td>CAD Basics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>A</td>
<td>Mar 8</td>
<td>In-class assignment 5</td>
<td>AutoCAD</td>
<td>Homework 3</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Mar 10</td>
<td>Project 1 Presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>A</td>
<td>Mar 15</td>
<td>Project 1 Presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Mar 17</td>
<td><strong>Exam 2</strong></td>
<td>Exam 2 includes: CAD basics, Scales &amp; Drafting and 2D sketching</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>A</td>
<td>Mar 22</td>
<td>In-class assignment 6</td>
<td>3D CAD software</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Mar 24</td>
<td>3D Modeling</td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>A</td>
<td>Mar 29</td>
<td>In-class assignment 7</td>
<td>3D CAD software</td>
<td>Homework 4</td>
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<tr>
<td></td>
<td>B</td>
<td>Mar 31</td>
<td>3D Modeling</td>
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<tr>
<td>11</td>
<td>A</td>
<td>Apr 5</td>
<td>In-class assignment 8</td>
<td>3D CAD software</td>
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<tr>
<td></td>
<td>B</td>
<td>Apr 7</td>
<td>3D Modeling</td>
<td></td>
<td></td>
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<tr>
<td>12</td>
<td>A</td>
<td>Apr 12</td>
<td>In-class assignment 9</td>
<td>3D CAD software</td>
<td>Homework 5</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Apr 14</td>
<td>3D Modeling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Group</td>
<td>Date</td>
<td>Topic</td>
<td>Materials</td>
<td>Assignment Due</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>13</td>
<td>A</td>
<td>Apr 19</td>
<td>In-class assignment 10</td>
<td>3D CAD software</td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Apr 21</td>
<td>3D Modeling</td>
<td>3D CAD software</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>A</td>
<td>Apr 26</td>
<td>Project 2 Discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Apr 28</td>
<td><em>Review</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>A</td>
<td>May 3</td>
<td>Project 2 Presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>May 5</td>
<td>Project 2 Presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>May 10</td>
<td><strong>Exam 3</strong> (3:30 am – 5:30 pm)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**15: End Notes**

2. angelo.blackboard.com
3. [https://blackboard.angelo.edu/](https://blackboard.angelo.edu/)
6. [http://www.angelo.edu/catalogs/](http://www.angelo.edu/catalogs/)
7. [http://www.angelo.edu/services/disability-services/](http://www.angelo.edu/services/disability-services/)
8. [http://www.angelo.edu/incident-form](http://www.angelo.edu/incident-form)
9. [http://www.angelo.edu/title-ix](http://www.angelo.edu/title-ix)
11. [http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of](http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of)
12. [https://www.angelo.edu/content/files/14197-op-1011-grading-procedures](https://www.angelo.edu/content/files/14197-op-1011-grading-procedures)