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### Instructor

Mr. Scott Wassermann  
Instructor  
Office: IT 101  
Phone: 837-8137

email: [jwassermann@sulross.edu](mailto:jwassermann@sulross.edu)  
Office Hours: MW 11-12  
TR 8-12  
Or by appointment

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### Time and Location

Class: MWF 9:00– 9:50 am  
Lab: MWF 10:00– 10:50 am  
Industrial Technology Building rm 111

### Course Description

This is a beginning course in drafting designed to provide students with the fundamentals and principles of Engineering Drafting and Design. Emphasis is placed on developing a clear understanding of working drawings and on the skills necessary to produce high quality working drawings. This is accomplished through the use of American National Standards Institute symbols and conventions, techniques of freehand sketching; accepted styles and practices of lettering; and the relationship between points, lines and planes through multi-view drawing principles and pictorial drawing principles.

### Course Objectives

- Describe the role of the various members on a design team, especially the draftsman.
- Give the names of the two forms of technical drawings and identify each when shown examples.
- Explain why standards are important and apply basic ANSI standards to actual drawings.
- Define *plane of projection* and *projectors*.
- Identify uses of the graphic language.
- Describe the difference between mechanical drawing and sketching and demonstrate competence in completing each type.
- Identify, select, and use correctly, basic tools used by the drafter.
- List the four objectives of drafting.
- Select and use the proper lines in completing a technical drawing.
- Correctly form standard single stroke Gothic lettering in lines of text and numbers.
- Explain why effective lettering is important.
- Explain why guideline and construction lines are important on a technical drawing.
- Read, evaluate, and understand a title block on a technical drawing.
- Use lettering devices in the correct way and for the correct purposes.
- Evaluate a sketch of an object, or an actual object, and plan, organize, and complete a clean and technically correct engineering drawing using pencil and/or ink.
- Read and measure correctly with the architect's scale, engineer's scale, and metric scale.
- Draw lines, arcs, and circles of specific sizes and in specific positions using drawing instruments correctly.
- Solve geometry problems using correct geometric construction procedures.
- Define terms relating to the geometry of a drawing.
- Neatly sketch a multiview (up to 6 views) drawing to scale using grid media and placing the views in the correct orientation.
- Neatly sketch and draw simple isometric, dimetric, trimetric, and perspective technical drawings to scale.
- Demonstrate an understanding of a section, half section, partial section, broken out section, and revolved section through assigned sketches and worksheets.
- Recognize and draw the correct section -lining symbols for several different materials.

- Construct depth, height, or width auxiliary views.
- Construct partial auxiliary and auxiliary section views.
- Given a sketch or an object, choose and construct the necessary auxiliary views for complete object description.
- Plot curves in auxiliary views.
- Find the true length of an oblique line by constructing an auxiliary view.
- Find the true size of an oblique plane by constructing auxiliary views.
- Describe the concept of first and third angle projections.
- Recognize and use revolutions correctly to make an engineering drawing more clear.
- Use look-up tables for fastener specification and complete fastener drawings correctly.
- Select and organize conventional dimensioning techniques to describe size and shape accurately on an engineering drawing.
- Draw detailed, schematic, and simplified threads in section and elevation.
- Understand typical thread specifications.
- Complete a set of working, and assembly drawings of a manufactured object.

### **Reading**

The text is required for this course:

### **Accessibility:**

Sul Ross State University is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact the Counseling and Accessibility Services, Ferguson Hall, Room 112. The mailing address is P.O. Box C-171, Sul Ross State University, Alpine, Texas 79832. Telephone: 432-837-8203.

### **Attendance**

Attendance is necessary! Attendance will be taken each scheduled class period in accordance with University and Departmental Policy. Attendance will count as part of the daily work grade. Everyone starts with 400 points at the beginning of the semester for class attendance - each unexcused absence (regardless of the reason) will cost 10 of those points. After 9 hours of absences (6 days) the instructor will drop the student from the course. In accordance with the Student Handbook, the student will receive a grade of 'F'. Attendance will be taken at the beginning of each class period and once taken, will not be changed. If a student is tardy and misses the roll call they will be charged with one absence.

Because much of the learning in this course takes place in the form of laboratory activities, time spent, in the lab will also be considered in the final grade. Attendance in the labs will be taken on lab sign-in sheets which will be available every day in the appropriate labs. Labs will count for an additional 390 points in attendance (10 points per hour in the lab, with a maximum of 390 points for lab grade).

### **Class Structure**

This course is designed to be a guided study with practical application of the material studied. Class will be run in a lecture/discussion/lab format with demonstrations and extensive laboratory activity. Lectures will be minimal and may utilize overhead slides, power point projections, demonstrations, photo slides, and videos. The lectures will be given primarily to enhance and answer questions about the material that should have been studied prior to the class period, and in preparation for the activities that will be completed in the labs. There may be some step-by-step guided practice and individual assistance during the scheduled class time. Students are expected to study, read, practice, and use problem solving skills to discern and apply the information assigned. It is essential that everyone be in attendance for the scheduled meetings so questions are answered and the shared information and demonstrations are not missed. Several of the scheduled class times may be reserved as research and/or lab time. It is also important that plans are made to work in the lab outside scheduled class time.

**Time Commitment – Successful completion of this course requires a significant time investment.**

Students should be prepared to spend at least 4-6 hours per week outside of class on assignments that will include: Homework, Reading Assignments, Lab work and studying for tests and quizzes.

**Phones & Electronic Devices**

No electronic devices other than calculators are allowed in the class or lab.

**Assignments**

Daily work will consist of reading, worksheet pages, and practice drawings in several of the technical areas of drafting. Some of the practice will be completed in the workbook. There will be several drawing assignments required for this course. Some of the laboratory exercises and projects will be completed together during the scheduled class time. Instructions regarding the format of any the written material will be distributed closer to the time of assignment. It essential that everyone be in attendance for the scheduled meetings because that is where the assignments will be given. It essential that you keep up with the assignments so they don't pile up at the end of the semester.

**Due dates** - All assignments and projects will be given due dates which must be met. All assignments will be due by 4:30 pm on the assigned day. Assignments and projects will still be accepted if they are turned in late. However, late assignments will lose 10 points per calendar day. Students are responsible for meeting the deadlines even if classes are missed.

**Grades**

Final grades will be determined by totals in these areas:

- 10% quizzes and unit tests
- 5% final exam (comprehensive)
- 65% daily work: assignments, lab work, and attendance
  - 35% workbook drawings
  - 45% drawings not from workbook
  - 10% non-drawing workbook and worksheets
  - 10% attendance
- 20% final working drawings (individual project)

All assignment points will be converted to percentages for individual assignment letter grades.

A=100-90; B=89-80; C=79-70; D=69-60; F= 59-0

Grades will be earned on the basis that "C" is average work, "B" is above average work, and "A" is well above average work. Barring unusual circumstances, there will be **NO INCOMPLETES** given at the end of this semester.

**Grading**

All work will be graded on specific criteria using the following guidelines. Any worksheets will be graded on a points-per-answer basis. Any sketches and drawings assigned will be graded on a 100 point (percentage) scale. Criteria for grading will include: accuracy of content, appropriateness of content for assignment, presentation, clarity. Projects in the lab will be graded on accuracy, neatness, content, adherence to standards, adherence to assignment, and workmanship. Graded items will be broken into specific categories and presented on grade sheets given at the time the assignments are given.

**Academic Honesty**

All students are expected to do their own work at all times. Any dishonest conduct will be promptly rewarded with an "F".

**Lab Time**

There will be required lab work in this course. In a normal long semester, a minimum of 6 hours outside of scheduled class time each week for researching, reading, and lab work is normally expected for college level work. Because of the compressed schedule during the summer, that amount is doubled. Obviously all of the required research and lab work, and practice will not be able to be

completed within the scheduled class time. There may be some release time from class to complete some of the work. For any extra time needed, the lab will be scheduled to fit students' needs as much as possible. Some of the lab work may be group work or work done in pairs, so plan time will also have to be scheduled around the schedules of other people. The lab will be open for use during open building hours (usually 8 - 5 daily). The lab may be open some evenings as well when the lab assistant schedules are complete. Those working during the evenings will be required to leave when the lab assistant leaves. No one will be left in the building without a lab assistant. Be advised that there may not be a knowledgeable lab assistant available at all times. No weekend hours are planned at this time.

**NOTE:** You should expect to be in the lab during your scheduled lab time. It will help you keep on top of your assignments. The labs will also be run as open labs so you will be able to schedule time on your own within the framework of the building hours.

### **Equipment and Supplies**

Most of the major equipment you will need for completing your assignments will be supplied by the department. However, there may not be enough equipment for everyone to use at the same time, so students may have to share or work together at times. Please be careful with the equipment. The school darkroom equipment will **NOT** be allowed out of the lab, which means all students must find time to be in the lab. Cameras, lenses, and other equipment used for taking pictures may be checked out from the department.

**Supplies** – Some of the supplies you need will be provided by the department. You will be required to purchase other supplies as needed or desired. Items student may want for this course include:

- Safety glasses or goggles (eye protection is important when working with chemicals). The department will supply a couple pair of goggles or glasses that may be shared.
- Gloves (if you have sensitive skin). Plastic or Latex gloves work well.
- Lab coat or apron for protecting clothing
- Pocket notebook for keeping track of picture information (required)
- Mounting material or sleeves for portfolio (required)
- Portfolio container of some kind (required)
- Extra Negative sleeves

**Materials Fee** - The materials fee is set at \$10.00 for Spring 2015. This is the fee for the assigned projects and practice. The materials fee will cover expendable supplies such as: erasers, leads, paper, and copies on the blue-ray machine. The fee may be paid in the departmental office if using cash or check. The fee may be paid in the departmental office if paid by cash or check; Cashier's office if paid by credit card. (You will be required to obtain the account number before you pay your fee at the cashier's office. If you pay at the cashier's office you will be required to show the receipt to the instructor prior to beginning any lab work.)

### **Storage**

The lockers in the hallway may be checked out and used for storing your equipment and supplies. These lockers must be signed out in the IT main office. You must supply your own lock. Do not leave projects or equipment out on the tables in the lab. You will lose them (and if they belong to the University, you will be financially responsible for them).

### **Quizzes**

Everything discussed in class and contained in the assigned reading, including laboratory material is fair game for quizzes. You will not be given notice for quizzes. They will be primarily written in nature, but may include practical components. There will be no make-up quizzes.

### **Tests**

Everything discussed in class and contained in the assigned reading, including laboratory material is

fair game for tests. You will be given notice for all unit tests. They will be primarily written in nature covering terminology, but you can expect some practical exercise portions on each exam. You must be in attendance for the tests. Makeup tests will not be given. The total number of tests will be determined as the course progresses.

**Midterm Exam**

There will be no midterm exam given.

**Final Exam**

The final exam is scheduled for Wednesday May 13 at 8 am. The test will include written, practical, and analytical portions, and will be comprehensive of the entire semester.

IT 1303 Engineering Drawing  
Spring 2015  
**Tentative Reading Schedule**

The following is a tentative reading schedule for the semester. The dates provided are the dates the reading is assigned and the reading is to be completed by the following class day.

<b>Date</b>	<b>Reading</b>
Wednesday, January 21 (1)	Chapter 1: The World Wide Graphic Language for Design Chapter 2: Layouts and Lettering
Wednesday, January 28 (4)	Appendix 6: Geometric Constructions
Wednesday, February 4 (7)	Chapter 3: Technical Sketching Chapter 4: Orthographic Projection Chapter 5: 2D Drawing Representation
Monday, February 16 (12)	Chapter 6: Sectional Views
Monday, February 23 (15)	Chapter 7: Auxiliary views
Wednesday, March 4 (19)	Chapter 8: Manufacturing Processes Chapter 9: Dimensioning Chapter 10: Tolerancing
Monday, March 23 (24)	Chapter 11: Threads, Fasteners, and Springs Chapter 12: Working Drawings Chapter 13: Drawing Management
Monday, April 6 (30)	Chapter 14: Axonometric Projection Chapter 15: Oblique Projection Chapter 16: Perspective Drawings
Monday, April 13 (33)	Chapter 22: Welding Representation
Friday, March 17 (35)	Chapter 18: Electronic Diagrams Chapter 19: Structural Drawing Chapter 21: Piping Drawing

IT 1303 Engineering Drawing  
Spring 2015  
**Tentative Test Schedule**

The following is a tentative test schedule for the semester. The dates provided are the dates the test will be given. You should have all the associated lab work completed by that date because it will be included on the test.

<b>Date</b>	
Test 1 Friday, January 30 (5)	Chapter 1: The World Wide Graphic Language for Design Chapter 2: Layouts and Lettering
Test 2 Monday, February 16 (12)	Appendix 6: Geometric Constructions
Test 3 Wednesday, March 4 (19)	Chapter 3: Technical Sketching Chapter 4: Orthographic Projection Chapter 5: 2D Drawing Representation
Test 4 Monday, March 23 (24)	Chapter 6: Sectional Views
Test 5 Monday, March 30 (27)	Chapter 7: Auxiliary views
Test 6 Wednesday, April 8 (31)	Chapter 8: Manufacturing Processes Chapter 9: Dimensioning Chapter 10: Tolerancing
Test 7 Friday, April 17 (35)	Chapter 11: Threads, Fasteners, and Springs Chapter 12: Working Drawings Chapter 13: Drawing Management
Test 8 Friday, April 24 (38)	Chapter 14: Axonometric Projection Chapter 15: Oblique Projection Chapter 16: Perspective Drawings
Test 9 Monday, May 4 (42)	Chapter 22: Welding Representation Chapter 18: Electronic Diagrams Chapter 19: Structural Drawing Chapter 21: Piping Drawing
Final Exam	Wednesday, May 13 8 am Comprehensive (use old tests as study guides)