

Angelina College
Technology and Workforce Division
STRUCTURAL DRAFTING ARCE 1452
Instructional Syllabus

I. BASIC COURSE INFORMATION:

- A. Course Description: *(as stated in the bulletin, including necessary pre-requisite courses, credit hours)*
Four hours credit. A study of structural systems including concrete foundations and frames, wood framing and trusses, and structural steel framing systems. Includes detailing of concrete, wood, and steel designed to meet industry standards including the American Institute of Steel Construction and the American Concrete Institute, with emphasis on framed and seated connectors, beam and column detailing, including units on concrete detailing conforming to the American Concrete Institute.
Two lecture and four lab hours each week. Lab fee. Prerequisite: DFTG 1409.
- B. Intended Audience: Second Year Student
- C. Instructor:
Name: Dallas McClelland
Office Location: TW-113
Office Hours: As Posted or By Prior Appointment
Phone: 936-633-5251
E-mail Address: dmcclelland@angelina.edu

II. INTENDED STUDENT OUTCOMES:

A. Core Competencies – (Basic Intellectual Competencies)

- 1. Critical Thinking Skills** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- 2. Empirical and Quantitative Skills** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- 3. Teamwork** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

B. Course Objectives for all sections –

Learning Outcomes:

1. Identify components of structural systems and use reference materials.
2. Produce drawings for concrete, wood, and steel framing systems.
3. Draw design details and connections for framing components, and draw column and beam details for manufacture and assembly utilizing various fastening methods.
4. Read and interpret printed instructions for use in Structural Drafting hardware and software.
5. Write answers to questions in clear and coherent manner using appropriate Structural Drafting technical terminology.
6. Use analytic and critical thinking relevant to CAD applications.

D. Course Objectives as determined by the instructor –

NA

III. ASSESSMENT MEASURES OF STUDENT LEARNING OUTCOMES:

A. Assessments for the Core Intellectual Competencies –

- 1. Critical Thinking Skills** to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- 2. Empirical and Quantitative Skills** to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- 3. Teamwork** to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

B. Assessments for the Exemplary Objectives–

NA

C. Assessments for Course Objectives for all sections –

Learning Outcomes:

1. Identify components of structural systems and use reference materials.
2. Produce drawings for concrete, wood, and steel framing systems.
3. Draw design details and connections for framing components, and draw column and beam details for manufacture and assembly utilizing various fastening methods.
4. Read and interpret printed instructions for use in Structural Drafting hardware and software.
5. Write answers to questions in clear and coherent manner using appropriate Structural Drafting technical terminology.
6. Use analytic and critical thinking relevant to CAD applications

D. Assessments for the Course Objectives as determined by the instructor –

NA

IV. INSTRUCTIONAL PROCEDURES:

A. Methodologies common to all sections

1. Lecture – 32 hours
2. Guided problem solutions in class – 54 lab hours
3. Test – 8 hours

B. Methodologies determined by the instructor

Same as above

V. COURSE REQUIREMENTS AND POLICIES:

A. Required Textbooks, Materials, and Equipment – a. Text – AutoCAD & Its Applications BASIC, by Terence M. Shumaker, David A. Madsen, Goodheart-Willcox, Release 2018.

Equipment:

1. A USB Jump Drive minimum of 2 gb.
2. One (1) – 1” – three ring notebook.
3. One (1) set of dividers.
4. Calculator that features.
 - a. Trig functions
 - b. Degree/Grad/Radian Mode
 - c. Degree/Minute/Second Input/Output

B. Assignments – *(Appropriate due dates, schedules, deadlines)*

1. Create geometry data base.
2. Edit geometry data base.
3. Output geometry data base to plotters and files.
4. Manage the database files.
5. Manage the system files and operating system.
6. Standardize the drawing variables.
7. Set-up the computer to do the structural drawings.

Draw and plot Column and Beam plans at a scale of $1/4" = 1' - 0"$.

Draw and plot Detail drawings at a scale of $1" = 1' - 0"$.

Draw and plot Detail drawings at a scale of $3/4" = 1' - 0"$.

Draw and plot Sectional drawings at a scale of $3/4" = 1' - 0"$.

Draw and plot Sectional drawings at a scale of $1" = 1' - 0"$.

Calculations

Using the Manual of Steel Construction, calculate the cut or coping.

Using the Manual of Steel Construction, calculate the beam, girder and column lengths.

Using Manual of Steel Construction, calculate the proper angle or clip for each beam and girder assigned.

Using Manual of Steel Construction, calculate the proper bolt size and length for the beam and girder assigned.

Using Manual of Steel Construction, calculate the gusset plats.

Types of drawings

Draw and dimension column and beam framing plan.
Draw and dimension beams, girders and column details.
Draw and dimension structural steel elevations.
Draw structural steel connection details.
Draw and dimension structural steel sectional views.
Draw and dimension gusset plates as assigned.
Plotting drawings
Plot "A" size paper at a plot scale of 48.
Plot "A" size paper at a plot scale of 16.
Plot "A" size paper at a plot scale of 12.
Plot "B" size paper at a plot scale of 48.
Plot "B" size paper at a plot scale of 16.
Plot "B" size paper at a plot scale of 12.
Plot "C" size paper at a plot scale of 48.
Plot "C" size paper at a plot scale of 16.
Plot "C" size paper at a plot scale of 12.

C. Course Policies – (This course conforms to the policies of Angelina College as stated in the Angelina College Handbook.)

Educational Accommodations – If you have a disability (as cited in Section 504 of the Rehabilitation Act of 1973 or Title II of the Americans with Disabilities Act of 1990) that may affect your participation in this class, you may fill out the Educational Accommodations application within your AC Portal, under the "Student Services" tab. A Student Success team member will contact you once the application is received. At a post-secondary institution, you must self-identify as a person with a disability in order to receive services; for questions regarding the application process you can visit the Office of Student Success and Inclusion in the Student Center (205A); text 936.463.8078; or email access@angelina.edu. To report any complaints of discrimination related to a disability, you should contact Mr. Steve Hudman, Dean of Student Affairs, in Room 101 of the Student Center. You may also contact Dean Hudman by calling (936) 633-5292 or by emailing shudman@angelina.edu.

Attendance – Attendance is required as per Angelina College Policy and will be recorded every day. Any student with three (3) consecutive absences or four (4) cumulative absences may be dropped from the class, this does not include absences for college-authorized activities, but it does include absences for illness. Attendance records will be turned in to the College Records Office at the end of the semester. Do not assume that non-attendance in class will always result in an instructor drop. You must officially drop a class or risk receiving an F. This is official Angelina College Policy.

Student's Responsibility For Attendance – (This is official Angelina College Student Handbook Policy)

1. It is the responsibility of the student to attend all classes and a record of attendance will be kept for all classes by the instructor.
2. It is the responsibility of the student to withdraw officially in the College Records Office from a class the student no longer desires to attend. Failure to do so may result in a failing grade.
3. Excessive absences are defined as three or more consecutive absences or four or more cumulative absences. Absences in online courses are based on an equivalent participation formula.
4. Students will not be dropped and will be allowed to make up work for absences because of college authorized and sponsored activities. It is the student's responsibility to arrange for make-up work with the instructor and to complete it within a reasonable time.
5. A student dropped because of excessive absences will be directed to seek the approval of the instructor to be reinstated.
6. All make-up work is at the discretion of the instructor and is defined in the course syllabus.

Additional Policies Established by the Individual Instructor –

Assignments are due on the date specified. Assignments turned in late will not receive full credit. Test must be taken on the scheduled date. Special arrangements must be made before the day of the test for exceptions covered in the college catalog.

VI. COURSE CONTENT:

A. Required Content/ Topics – *(common to all sections)*

The student will demonstrate intermediate math skills and exhibit knowledge of steel and concrete systems; use reference books' recognize basic types of connections used for structural drawings; produce structural steel drawings to include framing plans and connection details; and produce structural concrete drawings to include plan views and connection details.

B. Additional Content *(as required by the individual Instructor)*

Not applicable for courses in the Technology & Workforce Division.

VII. EVALUATION AND GRADING:

A. Grading Criteria *(percents, extra credit, etc.)*

- 1. Lab assignments -60%
- 2. Unit tests - 25%
- 3. Final exam - 15%

To receive credit for unit tests and final exams, they must be taken at the designated location and in the presence of the instructor.

B. Determination of Grade *(assignment of letter grades)*

- 90 – 100 - A
- 80 – 89 - B
- 70 – 79 - C
- 60 – 69 - D
- Below 60 - F

VIII. SYLLABUS MODIFICATION:

The instructor may modify the provisions of the syllabus to meet individual class needs by informing the class in advance as to the changes being made.

- IX.** As a student enrolled in a Technology & Workforce program, you will encounter certain risks while you are in a classroom, laboratory experience, or in a clinical or practicum setting. In the event that you sustain an injury and/or require any medical testing or care, all resulting medical expenses (hospital, ambulance, or physician fees), are your financial responsibility and not the responsibility of Angelina College or the clinical/practicum site.