



## **Structural Drafting (ARCE 1352)**

**Credit:** 3 semester credit hours (2 hours lecture, 4 hours lab)

**Pre-requisite/Co-requisite:** DFTG 1309

### **Course Description**

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 to meet industry standards including the American Institute of Steel Construction and the American Concrete Institute.

### **Required textbook and materials**

1. Structural wheel
2. Flash Drive – 1GB minimum
3. Access to computer with AutoCAD
4. Notebook
5. Basic sketch equipment
6. Calculator

### **Course Objectives**

Upon completion of this course, the student will be able to:

1. How to use AISC, ASD, LRFD standards
2. How to make a basic structural bill of material
3. How to read and use basic terms and formulas in structural steel
4. Understand organizations dealing with structural steel
5. Understand estimating steel
6. Understand basic considerations dealing with structural steel
7. Understand the AISC code of standard practice
8. Understand basic shop beam fabrication drawings
9. Understand basic design problems
10. Understand miscellaneous details and calculations in steel

### **Course outline**

#### **A. Introduction**

1. Introduction of faculty and staff
2. Review syllabus
3. Review class policies

#### **B. Describe the basic items needed to make a basic structural bill of material**

ARCE 1352  
Course Syllabus

1. W, S, M, T shapes
  2. C, MC shapes
  3. Angle, pipe shapes
  4. Plate, flat, rod, bar shapes
- C. Detail a basic simple beam and its connections using standard framed connecting systems.
1. Connection row chart
  2. Standard clip angles
  3. Beam length calculations
  4. Weld calculations
- D. Add standard cut and block to beam.
1. Standard cuts
  2. Standard blocks
  3. Dimensioning of cuts and blocks
- E. Add fasteners to beam.
1. Calculate connector quantity
  2. Calculate connector length
- F. Add panel points to beam.
1. Calculate tail dimensions to W shape connection
  2. Calculate tail dimensions to C shape connection
  3. Calculate tail dimensions to brace connection
  4. Calculate connections at different elevations
- G. Detail basic columns using standard connecting systems.
1. Standard base plate and section
  2. Calculate connection for beams
  3. Calculate connection for braces
- H. Erection drawings
1. Standard border
  2. Standard views
  3. Required details
  4. Specs and codes
  5. Revisions

### **Grade Scale**

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

### **Course Evaluation**

Final grades will be calculated according to the following criteria:

Approximately 14 tests will be averaged for the final grade. These tests will be open note test format except for the general notes test. If a student is present and takes each test then the lowest non-zero test grade will be dropped. Final cannot be dropped.

### **Course requirements**

1. Formulate and create standard bill of materials
2. Detail beams
3. Calculate cuts and blocks and fasteners
4. Calculate tail dimensions
5. Detail columns
6. Prepare erection drawings
7. Learn common terminology

### **Attendance Policy** (all work during absence must be made up)

1. 5 absences allowed – 4 tardies are equivalent to 1 absence
2. 2 points per absence off final grade after 5 initial absences

### **Course Policies**

1. No food, drinks or use of tobacco products in class.
2. No foul or harsh language will be tolerated.
3. Turn off all cell phones during lectures.
4. Do not bring children to class.
5. No cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result in expulsion from LIT.
6. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course you will earn an “F” in the course.
7. Back-ups  
It is the student’s responsibility to make back-up copies of their work. Do not rely on the server to be there 100% of the time. I cannot help you if you lose your work. Remember that in order for your work to be graded it must be turned in.
8. Internet usage
  - a. Classroom computers have access to the internet.
  - b. Student usage of the internet will be monitored.
  - c. Proper usage of the internet will be allowed to be used for classroom research or as directed.
  - d. Any unauthorized use of the internet will not be tolerated.
  - e. Improper usage of the internet, such as profanity, pornography, gambling, etc. will result in disciplinary action not limited to expulsion from LIT.

### **Disabilities Statement**

The Americans with Disabilities Act of 1992 and section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services in the Cecil Beeson Building.

**Course Schedule**

<b>Week</b>	<b>Topic</b>	<b>Reference</b>
1	Course introduction and policies a. Lecture b. Lab: standard drawing set-up	Handouts
2	Bill of materials a. Lecture b. Lab: create drawing with bill of material	Handouts
3/4/5/6/7/8	Beam a. Lecture b. Lab: create standard beam drawing	Handouts
9/10	Bracing a. Lecture b. Lab: bracing layout and drawing	Handouts
11/12	Column detail a. Lecture b. Lab: column drawing	Handouts
13/14	Erection drawing a. Lecture b. Lab: erection drawing, specs and revisions	Handouts
15	Terminology a. Lecture b. Lab: as assigned	Handouts
16	Final project a. Lecture b. Lab: as assigned	

**Contact information**

Contact info varies per instructor

**Refer to Calendar for important dates and course schedules!**