I. INTRODUCTION

This course is designed to provide the upcoming student drafter with a technical background in the structural detailing process necessary for production of basic structural drawings used in manufacturing, construction, engineering, and architectural firms. It also provides a useful source of review for drafters and technicians already in the related industries. The prerequisite for the course is DFTG 1409, Basic Computer-Aided Drafting.

The material to be presented portrays actual problems and practices prevalent in industry today. Structural design, which is the function of the professional architect or engineer will not be stressed but covered only as it applies to the design result and the environment solution. Many of the standards, practices, and manuals currently used by detailers are used as teaching aids throughout the course. References will furnish the student with sources for these factors, which may be used by those wishing to further enhance their studies.

This course is required for obtaining a two-year Associates Degree in Applied Science pertaining to Drafting and Design.

II. OVERALL OR GENERAL OBJECTIVES OF THE COURSE

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

A. Use the AISC’s Manual of Steel Construction.

B. Prepare plans, details, and shop drawings for steel construction.

C. Prepare the bill of materials for structural steel construction.

D. Prepare framing plans for precast concrete floors, walls, and roofs.

E. Draw the various sections and details in conjunction with fabrication drawing involved in concrete drafting.

F. Prepare respective engineering and placing drawings associated with poured in-place concrete structural systems.

G. Prepare plans, sections, and details unique to wooden structures.
III. INSTRUCTIONAL MATERIALS

The instructional materials identified for this course are viewable through www.ctcd.edu/books

Equipment and Materials

The following items must be obtained by the student before any drawing assignments may be attempted. These items need not be expensive but should be of professional quality. When any questions arise pertaining to the selection of equipment, the student should seek the advice from the instructor, an experienced drafter, or a reliable dealer.

   a. Pencils
   b. Paper
   c. Computer Flash Drive

IV. COURSE REQUIREMENTS

Students are encouraged to work quickly and efficiently. Their grades will depend upon their speed and skill as well as their knowledge of drafting techniques. Students should remember that requirements for a passing grade includes keeping up-to-date on all assignments. (See section VI for assignment grading)

All outside reading assignments must be read before discussion dates. Textbook, notebook and flash drive should be brought to each class meeting.

EXAMINATIONS

A. Examinations will generally consist of a combination of objective questions and drawing problems. The drawing portions shall be graded for accuracy, neatness, and speed.

B. Unannounced short quizzes shall be given at the discretion of the instructor. There are no make-up for unannounced quizzes. Students with an excused absence shall review the grading computation with the instructor.

C. Make-up examinations shall be given only to those students having an excused college absence. Excusable absences are those resulting from personal illness, emergencies arising within the family, official school sponsored trips, and military duties or orders requiring brief absences. The student must notify the instructor prior to the absence.

D. At the option of the instructor, any missed exams shall be: made-up at a time convenient to the instructor; or the following exam shall count additionally for the missed exam.

E. At no time shall a student use a cell phone or other personal communication or music device during a test, quiz, or any other evaluation type process. Any of
these devices should be turned off during the time of the test or quiz and should not be accessed until the student has completed the evaluation and has left the classroom. Violation of this policy shall result in the student receiving a failing grade for the course.

VI. SEMESTER GRADE COMPUTATION

Grades shall be computed on a total point basis as follows:

- Drawing Assignments: 300 points
- Tests: 3 at 100 points each 300 points
- Attendance: 50 points
- Total points possible: 650 points

The point breakdown for grades shall be as follows:

- A = 585 to 700 points
- B = 520 to 584 points
- C = 455 to 519 points
- D = 390 to 454 points
- F = 389 points or less

Students are advised to keep an accurate record of their assignments and test scores. By keeping track of the total points the student can calculate their grades as a percentage of their possible points at any time.

The drawing problems assigned will be graded on five major points: Speed, View placement, Accuracy, Line Type, and Text. In most cases, a number grade will be assigned to the drawing based on a one to ten range in .5 increments (one being the lowest and ten the highest).

Attendance points shall be deducted at a rate of 10 points per each unexcused absence after the first absence (excused or unexcused).

Unless otherwise instructed, all assignments shall be the individual work of the student. Although collaboration and assistance by other students is encouraged, the creation and production of the work must be that of the individual student. The electronic (or otherwise) sharing of assignments is to be considered collusion and shall result in disciplinary action.

All assignments are due per the course outline. Assignments are due at the beginning of class. Late assignments may be accepted at the instructor’s option. Late assignments will be penalized 1 point for every 24 hours the assignment is late.

VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM COURSE INSTRUCTOR
ATTENDANCE POLICY

Tardiness

For Face-to-face and blended courses, students are required to be in classrooms on time. Instructors may choose to lower a student's grade because of tardiness. Each three tardies may result in one absence. Excessive tardiness, since it is disruptive to the educational process, may result in disciplinary action. Due process and the right to appeal will be provided to students subjected to disciplinary action. Details can be found in the Student Handbook which is available at the Office of Student Services.

Class Attendance

Because absences for any reason negatively affect the learning process, the individual student, and the class, students are expected to attend all classes in which they are enrolled. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is expected, and the College reserves the right to deal at any time with individual cases of nonattendance.

A. The effect of absences on grades is determined by the instructor.

B. When absence from class is necessary for any reason, the student has the responsibility to arrange to make up assignments missed during the absence.

C. The decision to allow a student to make up work following any absence rests solely with the instructor.

D. The student who desires to be absent from classes for the observance of a religious holy day should submit a request to each instructor by the 15th calendar day after the first day of the semester. Although the student will be excused from classes, he/she will be responsible for make-up of all work or tests missed. A "religious holy day" means a holy day observed by a religion whose place of worship is exempt from property taxation under Section 11.20, Tax Code.

Excessive Absences

Absences from classes for any reason may be reflected in the student's performance in the course. The specific course objectives will be reviewed at the initial class meeting and may be different for different courses in the college or even within a department or program. The following shall apply to this course:
A. Students who have not attended class by the 12th class day will be dropped from the course by the instructor or the college.

B. Students who chose to withdraw from a course after the 12th day of class should do so before the deadline to withdraw. An instructor will be unable to drop any student from a course after the 12th day of class.

C. Any financial impacts of withdrawing from a course rests solely with the student. The student should check with the appropriate financial office or program to determine the impact of withdrawing from a course prior to withdrawing from any course.

The following specific rules apply to absences:

A. Instructors are required to keep attendance records.

B. Each faculty member will inform students of the attendance policy of the course at the initial class meeting.

C. Students are responsible for understanding the attendance policy for each course in which they enrolled and for meeting the attendance requirements.

D. Failure to meet the attendance requirements in a course may; impact the student’s performance in the course; may lower the grade for the semester; or may result in failure in the course.

E. Only the instructor can authorize an absence. Regardless of the reason for the absence, students are responsible for completing all course work covered during any absence. The decision to allow a student to make up work following any absence rests solely with the instructor.

Official Withdrawal Policy

It is the student's responsibility to officially drop a class if circumstances prevent attendance. Any student who desires to, or must, officially withdraw from a course after the first scheduled class meeting must file an Application for Withdrawal or an Application for Refund at the Records Office.

A. The withdrawal form must be signed by the student.

B. Application for Withdrawal will be accepted at any time prior to the deadline listed in the schedule bulletin for the semester.
C. Students using Financial Aid, Military Tuition Assistance, VA benefits or other than personal funds may be required to repay tuition and fees to the funding agency. For specific repayment requirements, students are referred to the Student Financial Aid Office, or the Veterans Services Office.

D. Other requirements may be required for course withdrawal. Refer to the Semester Schedule Bulletin, the College Catalogue, and the Student Handbook.

**Disability Support Services**

Disability Support Services provides services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is available to all students, regardless of location. Review the website at [www.ctcd.edu/disability-support](http://www.ctcd.edu/disability-support) for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.

**Civility**

Individuals are expected to be cognizant of what a constructive educational experience is and be mindful of that at all times. The learning environment should be treated as a workplace simulation and should be approached with respect and in a respectful manner to others participating in this environment. Proper etiquette and respect for others should always be displayed. Failure to do so can result in disciplinary action up to and including expulsion.

**Office Hours**

The instructor maintains regular posted office hours and should be available during these times but prior appointments and other students and/or meetings may limit availability during these posted times. Students are advised to make an appointment with the instructor or office staff to ensure meeting time and availability.

**VIII. COURSE OUTLINE**

A course outline and assignment sheet will be provided to each student as a supplement to this syllabus, prepared so as to reflect the most current date and state-of-the-art drafting assignments for the respective semester. As will be seen below, that outline divides the course into five units of studies, with information grouped according to the title of the respective unit.
Student activities through each unit will be essentially the same. Reading assignments are to be prepared prior to the scheduled class in order to better facilitate discussions and greater enhance understanding.

I. Unit One: Overview of Structural Drafting

A. Unit Objectives: Upon successful completion of this unit, the student will be able to:
   1. Define structural drafting
   2. Identify the different types of structural drawings.
   3. List the most common employers of structural drafters.
   4. Demonstrate proper structural drafting techniques in the areas of linework, lettering and scale use.
   5. Identify with the organizational structure of a typical structural drafting department, the job descriptions for entry-level structural drafters, and the primary duties of the various positions found in a typical structural drafting department.
   6. Explain the various steps a structural drawing passes through from its origin to the completed stage.
   7. Explain the fabrication processes for steel, poured-in-place concrete, and precast concrete, as well as how structural products shipped to the jobsite.
   8. Explain the various applications of the bolted, welded, riveted, split ring, and shear plate connections in heavy construction, and additionally, the student drafter will be able to construct and interpret weld symbols.

II. Unit Two: Structural Steel Drafting

A. Unit Objectives: Upon successful completion of this unit, the student will be able to:
   1. Sketch an example of common structural steel products, use the AISC’s Manual of Steel Construction, and construct structural steel framing plans.
   2. Prepare full, partial, and offset structural steel sections.
   3. Prepare structural steel baseplate, framed, and seated connections.
   4. Construct fabrication details for all structural members of a job.
   5. Prepare advance bills for structural steel jobs.

III. Unit Three: Structural Precast Concrete Drafting

A. Unit Objectives: Upon successful completion of this unit, the student will be able to:
   1. Construct framing plans for precast concrete floors, walls, and roofs.
   2. Construct full, partial, and offset sections for precast concrete jobs.
   3. Construct all types of precast concrete connections details.
4. Construct fabrication details for all types of precast concrete products.
5. Prepare bills of materials for all types of precast concrete products.

IV. Unit Four: Structural Poured-In-Place Concrete

A. Unit Objectives: Upon successful completion of this unit, the student will be able to:
   1. Prepare engineering and placing drawings of poured-in-place concrete foundations
   2. Prepare engineering and placing drawings of poured-in-place concrete columns and walls.

Unit Five: Structural Wood Drafting

B. Unit Objectives: Upon successful completion of this unit, the student will be able to:
   1. Prepare framing plans, sections, and details for structural wood systems.
   2. Prepare wall details and sections of structural wood walls.
   3. Draw roof configuration diagrams, use roof joist and truss tables, and perform roof slope and pitch calculations.
   4. Prepare framing plans, sections, and connection details for jobs involving posts, beams, girders, and other wood connections.