STRUCTURAL DETAILING I
CID 2190

Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Date Revised: Fall 2001

NOTE: This course is not intended for transfer credit.

Catalog Course Description:

This course builds on concepts covered in CID 1210. The structural requirements for buildings will be covered. The student will be expected to analyze beams, columns, base plates and connections and represent these components using a CAD system.

Entry Level Standards:

A basic understanding of architectural drawings will be required. Basic math skills and an understanding of at least one computer-drafting package are required.

Prerequisite:
CID 1210

Textbook(s) and Other Reference Materials Basic to the Course:

Required Text:
Structural Drafting, second edition, David Goetsch
Reference Books:
Southern Standard Building Code
AISC Steel Handbook

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Overview of basic structural components and load calculations, introduction to software</td>
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<tr>
<td>2</td>
<td>Preliminary layout of building structure</td>
</tr>
<tr>
<td>3</td>
<td>Foundation Systems &amp; Retaining Walls</td>
</tr>
<tr>
<td>4</td>
<td>Columns (bending)</td>
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<tr>
<td>5</td>
<td>Columns continued</td>
</tr>
<tr>
<td>6</td>
<td>Beams (moment, shear, and deflection)</td>
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<tr>
<td>7</td>
<td>Beams continued</td>
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</tbody>
</table>
II. Course Objectives*:

A. Understand and interpret codes and ordinances. III, IV, V, VI

B. Comprehend relationship of soil types, topography and foundation systems. I, III, IV, V

C. Analyze simple structures. III, IV, V, VII

D. Make rudimentary decisions about structural components, sizes and locations. III, IV, V, VII

E. Design steel and wood connections. III, IV, V, VII

F. Represent structural requirements on a drawing. I, II, III, IV, V

G. Understand simple economic considerations. V, VI

H. Understand professional office procedures and the use of computers in the office. V

*Roman numerals after course objectives reference goals of the CID program.

III. Instructional Processes*:

Students will:

1. Use the "graphic primitives" of MicroStation to generate common symbols used in the construction industry. *Technological Literacy Outcome*

2. Import graphic files, scale to standard industry requirements and use to generate standard construction details. *Numerical literacy, Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Active Learning Strategy*

3. Use standard industry reference materials in electronic format. *Technological Literacy Outcome, Communication Outcome, Active Learning Strategy, Information Literacy Outcome*

4. Use CAD applications to generate structural plans and structural details. *Technological Literacy Outcome, Active Learning Strategy*
5. Generate three-dimensional model using architectural application software. Use model to verify construction processes. Technological Literacy Outcome, Problem Solving and Decision Making Outcome, Active Learning Strategy

6. Use three-dimensional model to generate 2D drawing for production drawings. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Active Learning Strategies

7. Use dimensioning tools to completely and properly dimension final drawings as well as use annotation tools to completely annotate final drawing. Technological Literacy Outcome, Communication Outcome, Numerical Literacy Outcome, Transitional Strategy

8. Use word processor and spreadsheet to generate reports and memos and calculations. Communication Outcome, Active Learning Strategy, Technological Literacy Outcome, Numerical Literacy Outcome

9. Use CAD application to generate plots according to industry standards. Technological Literacy Outcome, Communication Outcome, Numerical Literacy Outcome, Personal Development Outcome

*Strategies and outcomes listed after instructional processes reference Pellissippi State’s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

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

1. Draw structural plans using structural grids. C,D
2. Determine foundation layout on a site plan. B,C,D
3. Know material symbology. F
4. Be familiar with basic concepts of structural shapes. F
5. Be familiar with structural requirements. A,B,C,D,E
6. Be familiar with structural load calculations. A,C,D,E
7. Draw typical welded connection details. B,C,D,E,F
8. Draw structural details if wood framing. B,C,D,E,F
10. Plot drawings at a given scale. C
11. Know basic concepts of drawing organization. C,D
12. Use computer to facilitate repetitive drawing. E
13. Use computer to annotate drawings following industry standards. C,E
14. Use computer to generate accurate drawings. C,E
15. Use computer to write proposals and reports. H
16. Use spreadsheet to compute structural calculations. H

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures: 10% of grade

There will be quizzes at the discretion of the instructor. (10%)

B. Laboratory Expectations: 70% or more of grade

This course is primarily a laboratory course. Lectures will be presented to explain various principles. While the majority of lab time will be dedicated to drawing it is expected the student will spend extra time outside of class to complete required drawings. Drawings will be the major portion (70% or more) of the student’s grade.

C. Field Work: 20% of grade

Students will be required to write reports and memos which will include a spreadsheet with structural calculations. (10%) A notebook will be required upon completion of the course. (10%)

D. Other Evaluation Methods:

N/A

E. Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100</td>
</tr>
<tr>
<td>B+</td>
<td>85-89</td>
</tr>
<tr>
<td>B</td>
<td>80-84</td>
</tr>
<tr>
<td>C+</td>
<td>75-79</td>
</tr>
<tr>
<td>C</td>
<td>70-74</td>
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<tr>
<td>D</td>
<td>60-69</td>
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<tr>
<td>F</td>
<td>59 and below</td>
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VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic and Student Affairs, may have requirements that are more stringent.

B. Academic Dishonesty:

It is expected that students will work together to solve problems, however students are expected to do their own work unless specifically assigned otherwise. Sharing or copying others work is un-ethical and will be discounted. A pattern of un-ethical behavior will result in the student being expelled from the class. Copying software will be considered theft.