Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Date Revised: Spring 02

Catalog Course Description:
A study in C language techniques beyond the introductory course. Emphasis will include development environment, code portability, modularity, efficiency, I/O, and techniques for solving common problems.

Entry Level Standards:
The entering student should have familiarity with the computer language C, editing C source code, and writing successful C programs.

Prerequisite:
CST 1540 or C programming experience

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

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Functions and Recursions</td>
</tr>
<tr>
<td>2</td>
<td>Arrays</td>
</tr>
<tr>
<td>3</td>
<td>Pointers, Relationships Between Arrays and Pointers</td>
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<tr>
<td>4</td>
<td>Character Strings and Pointers, Array of Pointers</td>
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<tr>
<td>5</td>
<td>Structures, Pointers to Structures</td>
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<tr>
<td>6</td>
<td>Self-Referential Structures, Linked Lists</td>
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<tr>
<td>7</td>
<td>Stacks, Queues, Trees</td>
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<tr>
<td>8</td>
<td>File Processing</td>
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<td>9</td>
<td>Preprocessor</td>
</tr>
<tr>
<td>10</td>
<td>Advanced Built-In Functions, Additional Capabilities</td>
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</table>
II. Course Objectives*:

A. Become familiar with the higher-level techniques of the C computer language. IV, VI, VII, XI

B. Create fairly complex C programs to solve fairly complex problems. III, V, VI, XII

C. Reinforce good programming habits introduced in earlier courses. II, III, VI, VIII

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

III. Instructional Processes*:

Students will:

1. Participate in a project development team. Communication Outcome, Problem Solving and Decision Making Outcome, Personal Development Outcome, Transitional Strategy, Active Learning Strategy

2. Use professionally accepted methods and materials in completion of a final project. Technological Literacy Outcome, Personal Development Outcome, Transitional Strategy

3. Use a variety of techniques to present a group project. Communication Outcome, Active Learning Strategy

4. Participate in a peer review of team projects. Problem Solving and Decision Making Outcome, Communication Outcome, Transitional Strategy, Active Learning Strategy

5. Practice the elements of work ethic such as punctuality, professionalism, dependability, cooperation and contribution. 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. Understand the C language development environment. B

2. Use advanced file I/O functions and techniques. A, B

3. Use typedefs, arrays, and dynamic allocation. A, B, C

4. Use queues, stacks, linked lists and binary trees. A, B, C
5. Understand sorting and searching techniques. A,B,C
6. Understand parsing and evaluation techniques. A,B,C
7. Use time and date functions. A,B
8. Understand portability, modularity, cohesiveness, and coupling. A,B,C
9. Understand C++ object oriented concepts. C

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

V. Evaluation:

A. Testing Procedures:

There will be two tests and a final exam:
Test 1  100 points
Test 2  100 points
Final    100 points

B. Laboratory Expectations:

There will be 8 to 10 lab assignments for a maximum of 80 points.

C. Field Work:

N/A

D. Other Evaluation Methods:

Students will work on a final project as a team (maximum of 20 points per team member). Each team will consist of two members. The team will design, code a program, and present their final findings to the class. The subject of the project must be approved by the instructor at least a month before the presentation of projects. Each team member will be assessed based on his/her participation in the project. Individual work is strongly discouraged. All team members MUST participate in coding the program.

E. Grading Scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td>93 - 100</td>
<td>A</td>
</tr>
<tr>
<td>88 - 92</td>
<td>B+</td>
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<tr>
<td>81 - 87</td>
<td>B</td>
</tr>
<tr>
<td>75 - 80</td>
<td>C+</td>
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<tr>
<td>70 - 74</td>
<td>C</td>
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<tr>
<td>60 - 69</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
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VI. Policies:

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.