Introduction to Programming Using C

CST 1540

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

Catalog Course Description:
A study of C programming language, problem solving and algorithm development. Topics include language structure, syntax, I/O techniques, functions, program development and applications.

Entry Level Standards:
The entering student should have a familiarity with computers. The student should be able to keyboard at least 23 words per minute. The student must have math, writing, verbal and English language skills at the college level.

Corequisite:
CST 1110

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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<tbody>
<tr>
<td>1</td>
<td>Introduction to Programming and Logic; Top-Down Program Development</td>
</tr>
<tr>
<td>2</td>
<td>Compile/Link/Execute/Print; Sequential Structure, Data Types; Declarations, Print( ) Functions</td>
</tr>
<tr>
<td>3</td>
<td>Modules; Hierarchy Charts and Documentation, Assignments</td>
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<tr>
<td>4</td>
<td>Addresses, Interactive Input, The Scanf( ) Function</td>
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<tr>
<td>5</td>
<td>Review, Test 1</td>
</tr>
<tr>
<td>6</td>
<td>Writing a Complete Program, Making Decisions, Relational Expressions</td>
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<tr>
<td>7</td>
<td>If/Else Statement, Nested If/Else</td>
</tr>
<tr>
<td>8</td>
<td>Looping, While/For/Do Statements</td>
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<tr>
<td>9</td>
<td>Looping (continued), Function Definitions</td>
</tr>
</tbody>
</table>
II. Course Objectives*:

A. Understand the syntax and semantics of C Programming language. II III IV VI VII VIII IX XI XII

B. Write C programs to solve a wide variety of problems. II III IV VI VII VIII IX XI XII

C. Reinforce structured programming concepts. I III V VI VII IX X XI

D. Acquire problem-solving and programming skills with top-down design principles. V, VI, IX, X, XII

E. Understand the basic logic of algorithms and apply them to programming. V, VI, X, XI, XII

F. Obtain the basic understanding of software development. III, IV, V, VI, VII, XI

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

III. Instructional Processes*:

Students will:

1. Gain proficiency in an industry standard operating system. Technological Literacy Outcome, Information Literacy Outcome, Active Learning Strategy

2. Gain proficiency in an industry standard high-level programming language. Technological Literacy Outcome, Information Literacy Outcome, Numerical Literacy Outcome, Active Learning Strategy, Communication Outcome

3. Learn to analyze and solve problems using structured analytical techniques. Numerical Literacy Outcome, Active Learning Strategy, Problem Solving and Decision Making Outcome

4. Use professionally accepted methods and materials in completion of applications. Technological Literacy Outcome, Personal Development Outcome, Transitional Strategy, Active Learning Strategy

5. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. Personal Development Outcome

6. Use the Internet as a medium for obtaining documentation and instruction. Communication Outcomes, Technological Literacy Outcome, Information Literacy Outcome, Transitional
Strategy

7. Use Computer-Based Training for obtaining instruction. Communication Outcome, Information Literacy Outcome, Technological Literacy Outcome, Transitional Strategy

8. Plan the logic for complete business programs. Technological Literacy Outcome, Information Literacy Outcome, Numerical Literacy Outcome, Problem Solving and Decision Making Outcome, Communication 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. Recognize basic data types. A, B
2. Use arithmetic, logical and conditional operators. A, B, D
3. Use data conversions and casts. A B
4. Use arrays, strings and pointers. A, B, D
5. Use program control structures. A, B, C, D
6. Use library and programmer developed functions. A, B, C
7. Use parameter passing. A, B, C
8. Understand storage classes and their usage. A, B, C
9. Use the preprocessor and macro substitution. A, B, C
10. Relate external files. A, B, C
11. Maintain portability of C programs. B, C
13. Learn fundamental algorithms. D, E
14. Write well-structured programs. A, D, E, F

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

V. Evaluation:

A. Testing Procedures:

Students are evaluated primarily on the basis of tests and laboratory assignments. Each instructor must provide full details the first week of class via a syllabus supplement. There will be three tests at 25% each. During summer sessions, there will be a mid-term and a final exam (37.5% each). Tests will cover material presented in the class. Tests are not to be missed without a valid excuse.
B. Laboratory Expectations:

There will be 7 to 9 lab assignments, one from each major C concept. The purpose is to teach the student how to integrate the features of the language into a complete and useful program. The student is expected to turn in source code, output and documentation for each lab.

C. Field Work:

N/A

D. Other Evaluation Methods:

Class participation, quizzes and homework will also comprise the final grade for the course.

E. Grading Scale:

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>925 - 1000</td>
<td>A</td>
</tr>
<tr>
<td>875 - 924</td>
<td>B+</td>
</tr>
<tr>
<td>825 - 874</td>
<td>B</td>
</tr>
<tr>
<td>775 - 824</td>
<td>C+</td>
</tr>
<tr>
<td>725 - 774</td>
<td>C</td>
</tr>
<tr>
<td>600 - 724</td>
<td>D</td>
</tr>
<tr>
<td>Below 600</td>
<td>F</td>
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VI. Policies:

A. Attendance Policy:

Pelissippi 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.

B. Academic Dishonesty:

Plagiarism, cheating and other forms of academic dishonesty are prohibited. Cheating may result in a grade of "F" for the course.

C. Other Policies:

Students who have excused absences must complete make-up work within two weeks.