INTRODUCTION TO COMPUTER SCIENCE TRANSFER
CST 1020

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

Catalog Course Description:

Problem solving and algorithm development. Organization and characteristics of modern digital computers. Emphasis on developing good programming habits. Building abstractions with procedures and data. Programming in a modern computing language. Program development using the Unix operating system. This course is intended for university parallel students.

Entry Level Standards:

The entry level student is not expected to have familiarity with computers. The student must have math, writing, verbal and English language skills at the college entry level.

Prerequisite:

None

Corequisite:

MATH 1730 or equivalent

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

Required:
Hanly, Jerri R. and Elliot B. Koffman; Problem Solving and Program Design in C; Addison-Wesley-Longman; 2000.

Recommended:

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overview of Computer Science</td>
</tr>
<tr>
<td>2</td>
<td>Overview of C, variables, arithmetic expressions, formatting output</td>
</tr>
<tr>
<td>3</td>
<td>Overview of C, variables, arithmetic expressions, formatting output</td>
</tr>
<tr>
<td>4</td>
<td>Functions</td>
</tr>
<tr>
<td>5</td>
<td>Selection Statements</td>
</tr>
<tr>
<td>6</td>
<td>Selection Statements, Repetition statements</td>
</tr>
</tbody>
</table>
II. Course Objectives*:

A. Use the Unix operating system and vi Editor. II, IV, VI, IX, XI

B. Understand the syntax and semantics of C programming language. III, IV, VI

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

D. Understand the dynamic nature of computer algorithms and apply them to programming. V, VI, X, XI, XII

E. Debug C programs. V, VI, IX, X, XI

F. Obtain a basic understanding of computer architecture and program execution. III, IV, VI, VII, XI

G. Obtain a 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. Use professional tools to produce software components and documentation. *Technological Literacy Outcome, Personal Development Outcome, Transitional Strategy*

2. Gain proficiency in an industry standard operating system. *Technological Literacy Outcome, Information Literacy Outcome, Numerical Literacy Outcome*

3. Gain proficiency in an industry standard high-level programming language. *Technological Literacy Outcome, Information Literacy Outcome, Active Learning Strategy, Communication Outcome, Personal Development Outcome*

4. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. *Personal Development Outcome*
5. Learn to analyze and solve problems using structured analytical techniques. *Technological Literacy Outcome, Information Literacy Outcome, Numerical Literacy Outcome, Active Learning Strategy, Personal Development Outcome, Problem Solving and Decision Making Outcome*

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

*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. Demonstrate proficiency in Unix and the vi Editor.  A
2. Use the vi Editor to create C source files.  A
3. Compile source files to create object files.  A
4. Learn C syntax and semantics of programs including program header, data types, variables, simple I/O, functions, and parameters, conditional statements, for and while loops, reading and tracing programs.  B, C, E
5. Learn C syntax and semantics of programs including arrays, structures, pointers, and linked lists.  B, C, E
6. Understand aspects of computer problem-solving.  C, D, E
7. Learn fundamental algorithms.  C, D, E
8. Write well-structured programs.  B, C, D, E
9. Develop the ability to debug C programs.  A, F

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

**V. Evaluation:**

A. Testing Procedures:  50% of grade

There will be four cumulative examinations counting 12.5% of the final grade each. Tests will be short answer/essay (writing code). Failure to make a passing exam average will result in a grade of F for the course. Tests may only be made up for excused absences. An excused absence is one that can be verified by supporting documentation.

**Grading Scale:**

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>
B. Laboratory Expectations: 50% of grade

There will be 7-9 lab assignments counting 50% of the final grade. Attendance is expected at each lab period. Failure to make a passing lab average will result in a grade of F for the course.

VI. Policies:

A. Attendance Policy:

Class attendance may affect your grade. 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.

B. Student Work:

You are expected to do your own work in this class. If you are unable to complete an assignment on your own, it is your responsibility to get help from the instructor (before the assignment is due).

C. Make-up Work:

In the event of an emergency beyond your control, notification of the instructor must be made in advance if at all possible.