PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

INTRODUCTION TO COMPUTER SCIENCE TRANSFER
CST 1020

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

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:
MTH 1020 or equivalent

Corequisite:
MTH 1255 or MTH 1410

Textbook(s) and Other Reference Materials Basic to the Course:
Hanly, Jerri R. and Elliot B. Koffman; Problem Solving and Program Design in C; Addison-Wesley-Longman; 2000.

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction, Overview of Computer Science</td>
</tr>
<tr>
<td>2</td>
<td>Binary Numbers, Number System Conversion, Arithmetic</td>
</tr>
<tr>
<td>3</td>
<td>Machine Representation of Numbers and Characters, Hardware &amp; Software Basics, Parts of the CPU, Memory, Parity</td>
</tr>
<tr>
<td>4</td>
<td>Secondary Storage, Programming Languages, Overview of Data Communication &amp; Operating Systems</td>
</tr>
<tr>
<td>5</td>
<td>Programming Concepts, Algorithms &amp; Problem Solving, System Tools, Exam I</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 Business and Computer Technologies department.

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: 75% of grade

There will be three comprehensive examinations counting 250 (25%) points each.

B. Laboratory Expectations: 25% of grade

Laboratory assignments will be given for each laboratory period. Lab assignments will count 250 points (25%). Attendance is expected at each period.
Lab Schedule:

Week 1-5:
Browsing the World Wide Web; Unix essentials: file system, naming conventions, metacharacters, login, logout, cd, pwd, ls, man, cat, more, cp, mv, rm, rmdir, mkdir, chmod, lp/lpr, redirection, piping; the vi editor; introduction to C program development: cc/gcc, ld

Week 11-15:
C program development projects

C. Grading Procedures:

<table>
<thead>
<tr>
<th></th>
<th>First Exam</th>
<th>250 (25%)</th>
<th>900-1000 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Exam</td>
<td>250 (25%)</td>
<td>800-899 B</td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>250 (25%)</td>
<td>700-799 C</td>
<td></td>
</tr>
<tr>
<td>Lab Assignments</td>
<td>250 (25%)</td>
<td>600-699 D</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1000</td>
<td>Below 600 F</td>
<td></td>
</tr>
</tbody>
</table>

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:

Students are expected to do their own work in this class. It is the student's responsibility to request help from the instructor prior to the assignment's due date.

C. Make-up Exams:

All exams are required, and make-ups will be allowed only in the rarest of cases. In the event of an emergency, notification of the instructor must be made in advance if at all possible.