A. Protocol

Course Name: Problem Solving and Programming Constructs
Course Number: CSC120
Credits: 3
Prerequisites: High School Algebra or Equivalent

Maximum Class Size (face-to-face): 35
Maximum Class Size (online): N.A.

B. Objectives of the Course:
Upon completion of this course the student will be able to:

1) Apply problem solving techniques.
2) Discuss data types, file types, constants and variables.
3) Use the various mathematical, logical and relational operators.
4) Construct statements (assignments, expressions and functions).
5) Perform program design techniques (flowcharts and pseudo-code).
6) Use programming constructs (repetition, selection and sequencing).
7) Discuss data structures (arrays and linked lists).
8) Design, write, run and debug introductory C programs.
9) Work in collaborative groups.

C. Catalog Description:
This course will provide the student with a basic literacy of computers, present problem solving heuristics and structured programming techniques, present language independent data types, operations, programming constructs and statements, introduce arrays and linked lists, and implement fundamental programs using an appropriate programming language. Prerequisite: High School Algebra or Equivalent. Three credits.

D. Outline of the Course:
1) Introduction to Problem Solving
2) Problem solving strategies
   a. Problem identification
   b. Problem understanding
   c. Algorithm development
   d. Solution planning (flowcharts, pseudo-code, etc.)
   e. Modular programming design
3) Programming Concepts
   a. Constants and variables
   b. Variable types
      i. Local
      ii. Global
   c. Data and file types
      i. Numerical
      ii. Character
      iii. Logical
      iv. Sequential files
      v. Random access files
   d. Operators
      i. Mathematical
ii. Logical
iii. Relational
iv. Tables (truth tables, etc.)
e. Statements
   i. Assignments
   ii. Expressions
   iii. Functions
f. Programming constructs
   i. Sequencing
   ii. Selection
   iii. Looping
   iv. Recursion
g. Arrays
   i. One dimensional
   ii. Two dimensional
   iii. Multidimensional
   iv. Data manipulation
      1. Data entry
      2. Sorting
      3. Searching
      4. Data output
h. Linked list concepts

4) Programming in the Presently Adopted Language (Fall 1992 "C")
a. [The following topics are to be integrated throughout the course, as appropriate.]
b. Header files and include statements
c. C syntax (punctuation, braces, etc.)
d. Data types (integer types)
e. Input/Output
   i. Scanf
   ii. Printf
f. Sequential
   i. Assignments
   ii. Expressions
   iii. Library functions (math functions, character functions)
g. Selection
   i. if..then..else
   ii. switch, case
h. Iteration
   i. While
   ii. For
   iii. Do/while
i. Compiling
j. Linking
k. Running
l. Debugging
m.

E. Teaching Methodology:

1) Traditional Classroom Methodology:
   This course will be taught using the lecture/discussion method and cooperative group method during appropriate sections of the course.

2) Online Methodology:
   This course will not be taught online.
F. Text:
Sprinkle Problems Solving & Programming Concepts (Custom Edition)
ISBN 1256186945

G. Assessment Activities:

1) Traditional Classroom Assessment
   The final grade will be determined as a percentage from the following evaluation methods
   with varying weights at the discretion of the instructor:
   a. Examinations
   b. Quizzes
   c. Assignments
   d. Programs
   e. Attendance
   f. Performance

2) Online Assessment
   No online assessments will be given.

H. Accommodations for Students with Disabilities:

   Accommodations for Students with Disabilities

   Students with disabilities:
   • Reserve the right to decide when to self-identify and when to request accommodations.
   • Will register with the Office for Students with Disabilities (OSD) each semester to receive
     accommodations.
   • Might be required to communicate with faculty for accommodations, which specifically involve the
     faculty.
   • Will present the OSD Accommodation Approval Notice to faculty when requesting
     accommodations that involve the faculty.

   Requests for approval for reasonable accommodations should be directed to the Office for Students with
   Disabilities (OSD). Approved accommodations will be recorded on the OSD Accommodation Approval
   notice and provided to the student. Students are expected to adhere to OSD procedures for self-identifying,
   providing documentation and requesting accommodations in a timely manner.

   Contact Information:
   • Location: Azorsky Hall – Room 105
   • Phone: (724) 938-5781
   • Fax: (724) 938-4599
   • Email: osdmail@calu.edu
   • Web Site: http://www.calu.edu/current-students/studentservices/disability/index.htm