California University of Pennsylvania
Guidelines for New Course Proposals
University Course Syllabus
Approved: Fall 2011

Department of Mathematics, Computer Science and Information Systems

A. Protocol

Course Name: Computer Programming I
Course Number: CSC 124
Credits: 3
Prerequisites: CSC 120 Problem Solving and Programming Constructs with C- or better

Maximum Class Size (face-to-face): 32
Maximum Class Size (online): N.A.

B. Objectives of the Course:
Upon completion of this course the student will be able to do the following items using the presently adopted language (Fall 2012: C):

1) Identify and use problem solving techniques and methods of abstract logical thinking to develop and implement a structured solution of given software design problems.
2) Identify and use the components of mathematics required to implement the solution of a given software design problem.
3) Design, produce, test and analyze possible solutions to problems for implementation using computer technology.
4) Demonstrate computer literacy by realizing the solution of a given software problem with a computer.
5) Write and execute well-structured programs, including interactive and file processing.
6) Effectively use arrays, structures, and recursive functions in programs.
7) Use sorting and searching algorithms.
8) Use pointers to dynamically allocate and delete memory in programs.
9) Effectively debug programs.
10) Work in collaborative groups.

C. Catalog Description:
This course builds on CSC 120. It gives the student a thorough understanding of the presently adopted language so that the student will develop the ability to program in the language. Emphasis is placed on efficient software development using structured programming techniques. Students are required to write, test and run programs. Prerequisite: CSC 120 Problem Solving and Programming Constructs with C- or better. Three credits.

D. Outline of the Course:
1) Review of Basic Concepts Taught in CSC 120
   a. Constants, variables and data types
   b. Arithmetic operators
   c. Relational operators
   d. Logical operators
   e. Assignment statements
   f. Header files and 'include' statements
   g. Input and output
   h. Selection (if/else and switch)
   i. Repetition (while, do/while, and for)

2) More on Looping
   a. Nested looping

b. The break and continue statements

3) Arrays
   a. Declaring, initializing and using
   b. Sorts (Bubble, Insertion and Selection)
   c. Searches (Linear and Binary)
   d. Two dimensions

4) Strings

5) File Processing

6) Functions
   a. Pass-by-value and pass-by-reference
   b. Local variables
   c. Return values
   d. Passing array elements
   e. Passing arrays
   f. Math library functions

7) Structs
   a. Creation and initialization
   b. Accessing members

8) Recursion

9) Dynamic Allocation
   a. Pointers
   b. Dynamic memory management
   c. Dynamic arrays

10) Additional Features
   a. Random numbers
   b. Enumerated types

11) Differences between C and C++

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

Kelley/Pohl. C by Dissection
ISBN 0201713748

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