Degree Applicable

Glendale Community College
March 2012

COURSE OUTLINE

COMPUTER SCIENCE/INFORMATION SYSTEMS 165
Computer Architecture and Assembly Language

I. Catalog Statement

Computer Science/Information Systems 165 introduces the student to computer architecture as well as the world of assembly language programming utilizing the PEP/7 assembly language simulator. This course is intended for the serious computer student as well as the computing professional.

Units –4.0 hours
Lecture/Demonstration – 4.0 hours

Prerequisites: Computer Science/Information Systems 112.

II. Course Entry Expectations

Skills Level Ranges: Reading 6; Writing 5; Listening/Speaking 6; Math 5.

III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:
1. Utilize an operating system;
2. Apply the basic commands of an assembly language;
3. Create computer programs using stacks, arrays, input and output operations and other instructions needed for entry level work in this field.

IV. Course Content — Total Contact Hours = 64

A. Computer Systems — 3 hours
   1. Levels of abstractions
   2. Hardware
   3. Software
   4. Database systems

B. C++ — 3 hours
   1. Variables
   2. Flow of Control
   3. Functions
   4. Recursion

C. Information Representation — 6 hours
   1. Unsigned binary representations
   2. Two's complementation representation
   3. Operations in binary
   4. Hexadecimal and character representation
   5. Floating point representation

D. Computer Architecture (generic machine) — 6 hours
   1. Hardware
   2. Character I/O and direct addressing
   3. von Neumann Machines
   4. Input/output (basic)
   5. Programming of a particular generic computer

E. Assembly Language — 9 hours
   1. Assemblers

2. Decimal I/O and immediate addressing
3. Symbols
4. Assignment statements

F. Compiling to the Assembly Level — 6 hours
1. Branching and flow of control
2. Procedures
3. Arrays
4. Data representation

G. Language Translation Principles — 6 hours
1. Language
2. Grammars
3. Parsing
4 Finite state machines

H. Operating System Topics — 3 hours
1. Loaders
2. Interrupts

I. Storage Management — 3 hours
1. Main memory
2. File management

J. Combinational Networks — 3 hours
1. Boolean algebra
2. Combinational analysis

V. Methods of Presentation

The following instructional methodologies may be used in the course:
1. lecture/demonstration;
2. computer examples;
3. multimedia;
4. online.

VI. Assignments and Methods of Evaluation

1. Programming projects.
2. Midterms.
3. Final exam.

VII. Textbook

J. Stanley Warford, Computer Systems, Current edition.
Sandbury, MA: Jones and Bartlett, 2009.
12th Grade Textbook Reading Level. ISBN: 0-7637-7144-9.

VIII. Student Learning Outcomes

Upon completion of this course, the student will be able to:
1. utilize an operating system;
2. apply the basic commands of an assembly language;
3. create computer programs using stacks, arrays, input and output operations and other instructions needed for entry level work in this field.