COMS 217 - Assembly Programming Course Outline

Approval Date: 03/12/2020
Effective Date: 08/16/2021

SECTION A

Unique ID Number	CCC000615971
Discipline(s)	Computer Science
Division	Career Education and Workforce Development
Subject Area	Computer Studies
Subject Code	COMS
Course Number	217
Course Title	Assembly Programming
TOP Code/SAM Code	0706.00 - Computer Science / E - Non-Occupational
Rationale for adding this course to the curriculum	The transfer model curriculum in computer science requires this course.
Units	3
Cross List	*N/A*
Typical Course Weeks	18

Total Instructional Hours

Contact Hours

Lecture	54.00
Lab	0.00
Activity	0.00
Work Experience	0.00
Outside of Class Hours	108.00

Total Contact Hours	54
Total Student Hours	162
Open Entry/Open Exit	No
Maximum Enrollment	30
Grading Option	Letter Grade or P/NP
Distance Education Mode of Instruction	On-Campus Hybrid

Entirely Online
Online with Proctored Exams

SECTION B
General Education Information:

SECTION C
Course Description
Repeatability May be repeated 0 times
Catalog The organization and behavior of real computer systems at the assembly-
Description language level. The mapping of statements and constructs in a high-level
language onto sequences of machine instructions is studied, as well as the
internal representation of simple data types and structures. Numerical
computation is examined, noting the various data representation errors and
potential procedural errors.

Schedule
Description

SECTION D
Condition on Enrollment
1a. Prerequisite(s): *None*
1b. Corequisite(s): *None*
1c. Recommended: *None*
1d. Limitation on Enrollment: *None*

SECTION E
Course Outline Information
1. Student Learning Outcomes:
   A. Write assembly language program segments and demonstrate how fundamental high-
   level programming constructs are implemented at the machine-language level.
2. Course Objectives: Upon completion of this course, the student will be able to:
   A. Write simple assembly language program segments
   B. Demonstrate how fundamental high-level programming constructs are implemented at
   the machine-language level
   C.
3. Course Content
1. Bits, bytes, and words

2. Numeric data representation and number bases

3. Fixed- and floating-point systems

4. Signed and twos-complement representations

5. Representation of nonnumeric data (character codes, graphical data)

6. Representation of records and arrays

7. Basic organization of the von Neumann machine

8. Control unit; instruction fetch, decode, and execution

9. Instruction sets and types (data manipulation, control, I/O)

10. Assembly/machine language programming

11. Instruction formats

12. Addressing modes

13. Subroutine call and return mechanisms

14. I/O and interrupts

4. Methods of Instruction:
    Discussion: Canvas Discussions for hybrid & online
    Lecture:
    Online Adaptation: Discussion, Group Work

2. Methods of Evaluation: Describe the general types of evaluations for this course and provide at least two, specific examples.
Typical classroom assessment techniques
    Exams/Tests --
    Projects -- Create a program that demonstrates Program Flow Constructs.
    Class Participation -- Post to Discussions a 1 page paper on chapter 7 Programming in Assembly Language.
    Home Work -- Read chapter 7 Programming in Assembly Language.

    Letter Grade or P/NP

3. Assignments: State the general types of assignments for this course under the following categories and provide at least two specific examples for each section.
    A. Reading Assignments
        Read chapter 7 Programming in Assembly Language.
    B. Writing Assignments
        Post to Discussions a 1 page paper on chapter 7 Programming in Assembly Language.
    C. Other Assignments
        Create a program that demonstrates Program Flow Constructs.

4. Required Materials
    A. EXAMPLES of typical college-level textbooks (for degree-applicable courses) or other print materials.
    Book #1:

Author:	Plantz, R.
Title:	Introduction to Computer Organization with x86-64 Assembly Language & GNU/Linux
Publisher:	Sonoma State University
Date of Publication:	2019
Edition:	1

Book #2:

Author: Microcontrollers: From Assembly Language to C Using the PIC24 Family

Title: Reese, R.

Publisher: Cengage

Date of Publication: 2015

Edition:

B. Other required materials/supplies.