

COMS-217: ASSEMBLY PROGRAMMING COURSE

Effective Term

Fall 2021

BOT Approval

03/12/2020

SECTION A - Course Data Elements
CB04 Credit Status

Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Computer Science (Master's Degree)	

Subject Code

COMS - Computer Studies

Course Number

217

Department

Computer Studies

Division

Career Education and Workforce Development (CEWD)

Full Course Title

Assembly Programming Course

Short Title

Assembly Programming Course

CB03 TOP Code

0706.00 - Computer Science (Transfer)

CB08 Basic Skills Status

NBS - Not Basic Skills

CB09 SAM Code

E - Non-Occupational

Rationale

The transfer model curriculum in computer science requires this course.

SECTION B - Course Description
Catalog Course Description

The organization and behavior of real computer systems at the assembly-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.

SECTION C - Conditions on Enrollment
Open Entry/Open Exit

No

Repeatability

Not Repeatable

Grading Options

Letter Grade or Pass/No Pass

Allow Audit

Yes

Requisites**SECTION D - Course Standards****Is this course variable unit?**

No

Units

3.00000

Lecture Hours

54.00

Outside of Class Hours

108

Total Contact Hours

54

Total Student Hours

162

Distance Education Approval**Is this course offered through Distance Education?**

Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content**Student Learning Outcomes**

Upon satisfactory completion of the course, students will be able to:	
1.	Write assembly language program segments and demonstrate how fundamental high-level programming constructs are implemented at the machine-language level.

Course Objectives

Upon satisfactory completion of the course, students will be able to:	
1.	Write simple assembly language program segments.
2.	Demonstrate how fundamental high-level programming constructs are implemented at the machine-language level.

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

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Discussion	Canvas Discussions for hybrid & online
Lecture	

Online Adaptation

Types	Examples of learning activities
Activity	
Directed Study	
Discussion	
Group Work	
Individualized Instruction	
Journal	
Lecture	

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
 Chat Rooms
 Discussion Boards
 E-mail Communication
 Telephone Conversations
 Video or Teleconferencing

Student-Initiated Online Contact Types

Chat Rooms
 Discussions
 Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
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.
Homework	Read chapter 7 Programming in Assembly Language.

Assignments

Reading Assignments

Read chapter 7 Programming in Assembly Language.

Writing Assignments

Post to Discussions a 1-page paper on chapter 7 Programming in Assembly Language.

Outside-of-Class Assignments

Create a program that demonstrates Program Flow Constructs.

SECTION F - Textbooks and Instructional Materials

Material Type

Textbook

Author

Plantz, R.

Title

Introduction to Computer Organization with x86-64 Assembly Language & GNU/Linux

Edition/Version

1st

Publisher

Sonoma State University

Year

2019

Material Type

Textbook

Author

Reese, R.

Title

Microcontrollers: From Assembly Language to C Using the PIC24 Family

Publisher

Cengage

Year

2015

SECTION G - Diversity, Equity and Inclusivity

Course Codes (Admin Only)

CB10 Cooperative Work Experience Status

N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status

Y - Credit Course

CB13 Special Class Status

N - The Course is Not an Approved Special Class

CB23 Funding Agency Category

Y - Not Applicable (Funding Not Used)

CB24 Program Course Status

Program Applicable

Allow Pass/No Pass

Yes

Only Pass/No Pass
No