JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Computer Organization

Course Abbreviation and Number: CSC 2670 **Credit Hours:** 4 **Course Type:** Lecture

Course Description: Upon course completion, students will demonstrate the ability to discuss the hierarchy of a computer system including digital-logic level, machine level, operating system level, and assembly level. Students will also be able to list major differences between various computer systems. Students work on projects that might include assembly language programming, internal organization of a typical PC, number systems, and digital logic.

Prerequisite: CSC 1590 or equivalent programming experience.

General Education Requirements Met

SUNY

Math

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Interpret and draw inferences from appropriate mathematical models such as formulas, graphs, tables, or schematics. [SUNY Gen Ed – Mathematics]
2. Represent mathematical information symbolically, visually, numerically, or verbally as appropriate. [SUNY Gen Ed – Mathematics]
1. Employ quantitative methods such as arithmetic, algebra, geometry, or statistics to solve problems. [SUNY Gen Ed – Mathematics] Design basic digital logic circuits
2. Simplify digital circuits and convert them to negative logic circuits
3. Identify the various machine language instruction formats
4. Decode assembly language instructions into their machine language representation
5. Write simple programs in assembly language
6. Convert from decimal to binary, octal, and hexadecimal

Topics Covered:

- General Computer Organization
  - Languages, levels, and virtual machines
  - Contemporary multilevel machines
  - Evolution of multilevel machines
  - Milestones in computer architecture
- Computer Systems Organization
  - Processors
  - Memory
  - Input/Output
- Digital Logic Level
  - Gates and Boolean Algebra
  - Basic digital logic circuits
  - Memory
  - Microprocessor chips and buses
  - Interfacing
- The Microprogramming Level
  - Review of digital logic level
  - An example of micro-architecture
  - An example of a micro-program
- The Conventional Machine Level
  - Examples of the conventional machine level
  - Instruction formats
  - Addressing
  - Instruction types
- The Operating System Machine Level
  - Virtual memory
  - Virtual I/O instructions
  - Virtual instructions used in parallel processing
  - Example operating systems
- The Assembly Language Level
  - Introduction to assembly language
  - The assembly process
  - Macros
- Advanced Computer Architecture
  - RISC machines
  - Parallel architectures

Information for Students

- Expectations of Students
  - Civility Statement
  - Student Responsibility Statement
  - Academic Integrity Statement

- Accessibility Services
  Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.
- Get Help: JCC & Community Resources
- Emergency Closing Procedures
- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0

- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Date: Fall 2023