JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Computer Programming SCI/ENR

Course Abbreviation and Number: CSC 1610 **Credit Hours:** 3 **Course Type:** Lecture

Course Description: Students will use a microcomputer as a computation and analysis tool in engineering and scientific calculations. Students will study problem solving, numeric data storage and precision limitations, structured algorithm design, and numerical analysis methods. Students will write computer programs in a C based language to solve mathematical problems specific to the science and engineering fields. The principles of program control structures will be explored, including: selection, loops, functions, and recursive functions.

Eligibility: MAT 1720 or higher.

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Write an algorithm that will solve a physical science or engineering problem.
2. Understand the basic syntax of a high-level programming language so that they can use that language to solve physical science and engineering problems.
3. Demonstrate the ability to design and write structured programs using common control structures including: selection, loops, functions, and recursive functions.
4. Understand and implement the basic algorithms of numerical computations, including: solutions of equations, numerical differentiation, and numerical integration.
5. Understand and apply the theory of convergence and error analysis for the above listed algorithms.

Topics Covered:

- Algorithm design
- Problem solving and program design basics
- Introduction to programming in C/C++
- Data types and their limitations
- Variables and constants
- Input and output
- Selection control structures
- Repetition control structures (looping)
- Function writing
- Addressing and pointers
- Solving equations using programmatic techniques
- Numeral differentiation and integration
- Limitations of programmatic techniques

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 2024