SOFTWARE DEVELOPMENT, CERTIFICATE OF ACHIEVEMENT

This certificate prepares students with practical skills in computer programming and software development, suitable for entry-level employment in a number of areas where new software is needed. Students master the fundamentals of programming in both structured and object-oriented contexts across several different languages; work with techniques of abstraction, algorithms, and data structures; and develop readable, maintainable, and efficient moderately sized programming solutions. Some students may find this a suitable path to further academic study in Computer Science or Computer Engineering.

Learning Outcomes

Upon successful completion of the program, students will be able to:

- Write programs that use each of the following data structures: arrays, records, strings, linked lists, iterators, stacks, queues, maps and hash tables.
- Write software within an object-oriented design framework, specifying and implementing simple classes.
- Summarize the evolution of programming languages illustrating how this history has led to the paradigms available today.
- Compare and contrast object-oriented analysis and design with structured analysis and design.

Certificate of Achievement Requirements

Code	Title	Units
Required Core		
CSCI 9	Programming Fundamentals: Python	3
CSCI 10A	Programming Methods I: Java	4
CSCI 10B	Programming Methods II: Java	4
CSCI 10C	Programming Methods I.5: C and C++	4
Select one course from the following:		1-3
CSIS 98	Project Development	
CSCI 114	Game Programming: Behind the Scenes	
WORK 96	Professional and Essential Skills	
WORK 99	Career-Focused Work Experience	
Total Units		**16-18**

Please refer to the program requirements section of the Catalog for information about associate degree requirements and certificate requirements including Information Competency, and General Education requirements.

The model sequence of coursework below is one pathway for students to complete the program. The information below is not an official educational plan. An MPC Counselor can assist you with creating a personalized education plan based on your academic, career, and personal goals. Visit MPC's Counseling website for more information about Counseling and up-to-date program requirements.

Suggested Course Sequence

Year 1		
Fall		**Units**
CSCI 9	Programming Fundamentals: Python	3
	Units	**3**
Spring		
CSCI 10A	Programming Methods I: Java	4
	Units	**4**
Year 2		
Fall		
CSCI 10C	Programming Methods I.5: C and C++	4
Select one course from the following:		1-3
CSIS 98 or CSCI 114 or WORK 96 or WORK 99	Project Development or Game Programming: Behind the Scenes or Professional and Essential Skills or Career-Focused Work Experience	
	Units	**5-7**
Spring		
CSCI 10B	Programming Methods II: Java	4
	Units	**4**
	Total Units	**16-18**

MPC "Ready to Work" Career Education programs offer students the opportunity to gain knowledge and skills needed for employment and job advancement.

All students should consult with a Counselor to discuss career pathways, for support with career exploration and planning, and to create a personalized education plan to help them meet their academic, career, and personal goals. Visit MPC's Counseling website for more information about Counseling services provided by MPC and to connect with a Counselor.

Additional resources are available through MPC's Career & Transfer Resource Center (CTRC). The CTRC offers career resources, workshops, guidance and referrals. Visit the CTRC for support finding online career information and other resources to explore majors, occupations, and employment information.