

# CERTIFICATE IN SOFTWARE ENGINEERING

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Units required for Certificate: 12

## Program Description

The Software Engineering certificate is designed to focus on the principles of designing, building, testing and maintaining reliable, efficient, and secure software systems. The certificate is designed to emphasize the knowledge, competencies, and skills needed to produce competent graduates to begin a professional career in the field of software engineering, or pursue graduate programs.

## Academic Certificates

In addition to completing the requirements for the Bachelor of Sciences in Computer Science degree program, students enrolled in the major may also complete one of the (optional) 9-12 unit Academic Certificate programs. Each certificate includes 9 required units which can overlap with elective coursework taken to satisfy the major requirements, with some of the certificates requiring 3 additional units (1 additional course) beyond the degree requirements. Students interested in earning a certificate in addition to their degrees should meet with an academic advisor.

## Requirements for Certificates

Certain combinations of courses gives students a deeper understanding of specialized areas in Computer Science. Completion of any of the following course lists entitles the student to receive a certificate indicating that they concentrated their elective study in the particular area. The Computer Science Department will try and offer on a regular basis all courses required for each certificate, but course cancellations and scheduling conflicts do sometimes occur causing students difficulty in completing their desired course study. In such situations, students may need to forgo completion of their certificate. Printed certificates must be requested directly from the Computer Science Department office after a student graduates.

## Program Requirements

Code	Title	Units
CSC 170	Software Requirements and Specification	3
CSC 171	Software Engineering Project Management	3
CSC 179	Software Testing and Quality Assurance	3
Select one of the following:		3
CSC 154	Computer System Attacks and Countermeasures	
CSC 174	Advanced Database Management Systems	
CSC 176	Database Architecture and Optimization	
CSC 177	Data Analytics and Mining	
<b>Total Units</b>		<b>12</b>