

FULL STACK SOFTWARE DEVELOPMENT (PROFESSIONAL CERTIFICATE)

Overview

Award: Professional Certificate
 Program of Study: Full Stack Software Development
 Program Code: 1714

The certificate in Full Stack Software Development is designed to provide students with the knowledge and skills needed to build applications. Whether those applications are strictly front-end, Progressive Web Application, or Full Stack applications. The program's goal is to provide a hands-on degree in Full Stack application development to meet the growing needs and demands from various industries.

For more information on what you can do with this major, visit Career Services' [What to Do with a Major?](#) resource or the CMU [Computer Science](#) website.

All CMU certificate graduates are expected to demonstrate proficiency in specialized knowledge/applied learning, critical thinking, and personal and social responsibility. In addition to these campus-wide student learning outcomes, graduates of this major will be able to:

1. Identify strengths and weaknesses of competing application tools, languages, frameworks and defend a choice for a given situation. (Critical Thinking)
2. Write back-end server-side code for web applications using SQL and NoSQL and configure web and database servers. (Applied Learning)
3. Design and develop secure and modern full stack applications. (Applied Learning)
4. Demonstrate clear and effective communication on the design of front end applications. (Communication Fluency)
5. Demonstrate independent learning and use of new technologies in web application design. (Specialized Knowledge)

Requirements

Each section below contains details about the requirements for this program. Select a header to expand the information/requirements for that particular section of the program's requirements.

To print or save an overview of this program's information, including the program description, learning outcomes, requirements, suggested course sequencing (if applicable), and advising and graduation information, scroll to the bottom of the left-hand navigation menu and select "Print Options." This will give you the options to either "Send Page to Printer" or "Download PDF of This Page." The "Download PDF of This Page" option prepares a much more concise presentation of all program information. The PDF is also printable and may be preferable due to its brevity.

Institutional Certificate Requirements

The following institutional requirements apply to all CMU Professional Certificates. Specific programs may have different requirements that must be met in addition to institutional requirements.

- Consists of 5-59 semester hours.
- Primarily 300-400 level courses.
- At least fifty percent of the credit hours must be taken at CMU.
- 2.00 cumulative GPA or higher in all courses taken to satisfy program requirements.
- A grade lower than "C" in the program of study will not be counted toward meeting the certificate's requirements.
- A course may only be used to fulfill one requirement for each degree/certificate.
- Pre-collegiate courses (usually numbered below 100) cannot be used for graduation.
- Capstone exit assessment/projects (e.g., Major Field Achievement Test) requirements are identified under Program-Specific Certificate Requirements.
- The Catalog Year determines which program sheet and certificate requirements a student must fulfill in order to graduate. Visit with your advisor or academic department to determine which catalog year and program requirements you should follow.
- See "Requirements for Undergraduate Degrees and Certificates" in the catalog for a complete list of graduation requirements.

Program Specific Certificate Requirements

Code	Title	Semester Credit Hours
CSCI 106	Front End Development ¹	3
CSCI 110	Beginning Programming with Python ²	3
CSCI 206	Progressive Web App Development	3
CSCI 210	Cloud and DevOps Foundations with Linux	3
CSCI 260	Introduction to Database	3
CSCI 306	Full Stack Development	3
CSCI 337	User Interface Design	3
CSCI 375	Object Oriented Programming and Design Patterns ³	3
CSCI 465	Network/Application Security	3
CSCI 490	Software Engineering	3
Total Semester Credit Hours		30

¹ If a student has experience in HTML, CSS, or Javascript then the requirement for CSCI 106 may be waived. Experience could include AP C.S. or demonstrated projects.

² If a student has completed AP C.S. AB or experience with programming CSCI 110 requirement may be waived.

³ CSCI 250 is a prerequisite for CSCI 375.

Suggested Course Plan

First Year		Semester Credit Hours
Fall Semester		
CSCI 106	Front End Development	3
CSCI 110	Beginning Programming with Python	3
Semester Credit Hours		6

Spring Semester		
CSCI 206	Progressive Web App Development	3
CSCI 210	Cloud and DevOps Foundations with Linux	3
Semester Credit Hours		6
Second Year		
Fall Semester		
CSCI 306	Full Stack Development	3
CSCI 375	Object Oriented Programming and Design Patterns	3
Semester Credit Hours		6
Spring Semester		
CSCI 260	Introduction to Database	3
CSCI 337	User Interface Design	3
Semester Credit Hours		6
Third Year		
Fall Semester		
CSCI 490	Software Engineering	3
CSCI 465	Network/Application Security	3
Semester Credit Hours		6
Total Semester Credit Hours		30

student's "Intent to Graduate" does not automatically move to a later graduation date.

Advising and Graduation

Advising Process and DegreeWorks

Documentation on the pages related to this program is intended for informational purposes to help determine what courses and associated requirements are needed to earn a certificate. Some courses are critical to complete in specific semesters while others may be moved around. Meeting with an academic advisor is essential in planning courses and discussing the suggested course sequencing. It is ultimately the student's responsibility to understand and fulfill the requirements for their intended certificate.

DegreeWorks is an online degree audit tool available in MAVzone. It is the official record used by the Registrar's Office to evaluate progress towards a certificate and determine eligibility for graduation. Students are responsible for reviewing their DegreeWorks audit on a regular basis and should discuss questions or concerns with their advisor or academic department head. Discrepancies in requirements should be reported to the Registrar's Office.

Graduation Process

Students must complete the following in the first two months of the semester prior to completing their certificate requirements (for one-semester certificates, complete in the first week of class):

- Review their DegreeWorks audit and create a plan that outlines how unmet requirements will be met in the final semester.
- Meet with their advisor and modify their plan as needed. The advisor must approve the final plan.
- Submit the "Intent to Graduate" form to the Registrar's Office to officially declare the intended graduation date and commencement ceremony plans.
- Register for all needed courses and complete all requirements for each degree sought.

Submission deadlines and commencement details can be found on the [Graduation](#) web page.

If a student's petition for graduation is denied, it will be their responsibility to apply for graduation in a subsequent semester. A