

# FUNDAMENTALS OF COMPUTING, CERTIFICATE IN (BACCALAUREATE CERTIFICATE)

The Certificate in Fundamentals of Computing will prepare non-computer science students for employment that requires a solid understanding of computing, including data analysis, data visualization and data security. The certificate program is offered online. This baccalaureate certificate runs concurrently with a student's major and is not a stand-alone program.

## Student learning outcomes

Upon completing this program, students will know and know how to do the following:

1. Analyze a problem and create a software solution for the problem
2. Discuss networks and cybersecurity and best practices
3. Apply knowledge of data-focused systems to create and use data and able to discuss the analysis of data
4. Apply knowledge of the software engineering process to build and test a website

## Admission requirements

All applicants to the certificate are required to meet the admission requirements of VCU and submit a change of major form. The admission requirements outlined below will apply to all students.

- Applicants must have a minimum GPA of 2.5.

## Curriculum requirements

The curriculum will prepare students to integrate digital technology knowledge with other disciplines. Students will have cross-disciplinary skills and experience across two dimensions as well as deep knowledge in their primary field of study with strong ability in digital technology areas such as data analysis, visualization, and cybersecurity. The curriculum focuses on computational problem-solving with an emphasis on interpreting and communicating the increasingly important information collected in the digital world along with the essential cybersecurity knowledge to appropriately secure data.

## Degree requirements

Course	Title	Hours
CMSC 210	Computers and Programming	3-4
or CMSC 254	Introduction to Problem-solving	
CMSC 320	Software Engineering and Web Development	3
CMSC 330	Data Science Skills	3
CMSC 340	Cybersecurity Skills	3
<b>Total Hours</b>		<b>12-13</b>

The minimum total of credit hours required for this certificate is 12.