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. 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
3. Apply knowledge of data-focused systems to create and use data and be 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 successfully completed 30 credit hours.
- Applicants must have a minimum GPA of 2.5.
- Applicants must have a declared major.

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMSC 210</td>
<td>Computers and Programming</td>
<td>3</td>
</tr>
<tr>
<td>CMSC 320</td>
<td>Software Engineering and Web Development</td>
<td>3</td>
</tr>
<tr>
<td>CMSC 330</td>
<td>Data Science Skills</td>
<td>3</td>
</tr>
<tr>
<td>CMSC 340</td>
<td>Cybersecurity Skills</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
</tr>
</tbody>
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The minimum total of credit hours required for this certificate is 12.