Computer Science Pathways Guide

This pathways guide for Computer Science is aligned with the VCCS Computer Science Common Curriculum. It provides a recommended semester-by-semester sequence for completing this curriculum in preparation for transferring to a four-year institution to major in Computer Science. Computer Science falls under the Associate of Science in Computer Science, and students completing this curriculum with be awarded a Computer Science A.S.

Before you begin…

You'll see in the sequencing below that there are spots where you'll need to make choices. These choices should be based on the recommendations that your intended transfer institution has published. You can search the Transfer VA Resource Center for your school's guide. If they have not posted one there, look on both the BRCC transfer advising pages and your school's website to see if additional information is posted there. Make sure you know the answers to the following:

- All Computer Science majors take **Calculus I (MTH 263)**. You should **make an appointment with an advisor to determine your math placement**. It is possible to place directly into Calculus I (MTH 263) on the basis of your high school coursework. Here are instructions for making an advising appointment. You can also reach out by emailing advising@brcc.edu.
- You'll need to complete at least one of **Statistics I (MTH 245) or Calculus II (MTH 264)** and many institutions may require or recommend both.
- If you need to start in Precalculus, you can start in either MTH 167 or MTH 161. MTH 167 is compressed Precalculus and combines MTH 161 + MTH 162 into one semester. As it is usually possible to complete the math sequence in this pathway in two years starting from MTH 161, we recommend MTH 161 over MTH 167. The only exception is if you need MTH 265 (Calculus III) – in that case, you're better off starting in MTH 167.
- The CSC 221/222/223 sequence is fixed and there's not a lot of choice in CSC electives, except for one spot: make sure you know whether your transfer school wants **CSC 205, CSC 215, or MTH 265**.
- A minimum of one lab science is required. You'll also see spaces on the guide below for "**Additional General Education**" and these spots can be filled by a limited number of additional choices in math and science, plus communication and language should your school want these. Be sure to look at the Computer Science degree in the BRCC catalog for the lists of allowable options here and match those up with what is shown on your transfer school's guide.

In the table on the next page, "UCGS" stands for Uniform Certificate of General Studies. The UCGS forms the General Education core of all the transfer degrees. Here is the list of UCGS courses in the current catalog.

If you would like some help figuring it all out, make an appointment with an Academic Advisor!

What do our local partners want?

We're checking in with our local partners and making notes. This section will be updated as more information becomes available!

James Madison University (JMU)

- JMU has posted a Transfer VA guide for [JMU Computer Science](#).
- There's enough free elective space that you'll always have room for both MTH 245 (Statistics – required) and MTH 264 (Calculus II – strongly recommended), even if you start in Precalculus. If you place directly into MTH 263 (Calculus I) and have no prior Precalculus credit, you'll need a couple extra free choice electives. MTH 266 (Linear Algebra) is a good one to have.
- If you are starting in Precalculus, start in MTH 161. MTH 167 doesn't make anything better and you end up short a credit.
- Of CSC 208 and MTH 288, BRCC teaches the MTH 288. Of CSC 205 and CSC 215, BRCC teaches the CSC 215.

Virginia Tech (VT)

- VT has posted a Transfer VA guide for [VT Computer Science](#).
- VT Computer Science is in their school of Engineering – make sure to complete EGR 121 and EGR 122. These courses count as CS electives in the A.S. Computer Science.
- The current VT guide goes over the credit range for the AS CS (60-62) and VT forgot to leave space for Precalculus credits. This means you'll fill up the degree and graduate before completing every single course. The best ones to defer to VT if needed are either CSC 215 or MTH 265.

George Mason University (GMU)

- GMU has posted a Transfer VA guide for [GMU Computer Science](#).
- GMU requires MTH 264 (Calculus II) and MTH 265 (Calculus III). If you are starting in Precalculus, start in MTH 167 if you are comfortable with it. Starting in MTH 161 can keep you here an extra year, which is fine – we just want that to be an informed choice!
- GMU wants a Communication course (CST 100 or CST 110) – don't overlook that! We made it a CS elective in our degree so it would count.

SSDL (Shared Services Distance Learning) and course offering information

BRCC supports most general education and introductory major classes year-round – if you need a History course or CSC 221, you'll find sections running in the fall, spring, and summer. But as you get into courses that are more specialized for your major, you might see them scheduled only in the fall, or only in the spring. We may also use Shared Services Distance Learning (SSDL) to bring in online courses from other colleges. If you need a course that is tagged with "SSDL" you'll need to work with Academic Advising during registration to request that course.

- All the courses except CSC 205 below are available at BRCC. However, CSC 215 and MTH 265 are taught only in the fall semester, and CSC 223 and MTH 288 are spring only. If you get out of sequence and need these courses in a different semester from when they're offered, you'll need to work with Academic Advising to make an SSDL request. If you need CSC 205, we can bring that in with SSDL.

Sequenced curriculum – MTH 263 start

First semester

Course number	Course title	Credits	If there is a choice, what does your school require?
ENG 111	College Composition I	3	
SDV (101 for STEM preferred)	Orientation for STEM transfer	1	
MTH 263	Calculus I	4	
CSC 221	Introduction to Problem Solving and Programming	3	
Science with Lab (BIO 101, CHM 111, PHY 201*, GOL 105)		4	
Total credits		15	

*PHY 241 is also an option but requires completion of MTH 263 first (move to third semester)

Second semester

Course number	Course title	Credits	If there is a choice, what does your school require?
ENG 112	College Composition I	3	
CSC 222	Object-Oriented Programming	4	
MTH 245 or MTH 264	Statistics I or Calculus II	3-4	
CS General Education	See catalog for choices. Many colleges recommend MTH 245 *and* MTH 264.	4	
Total credits		14-15	

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Third semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CSC 215 (or MTH 265 or CSC 205 (SSDL))	Computer Systems (or Calculus III or Computer Organization)	3-4	
UCGS Humanities/Arts		3	
UCGS History		3	
UCGS Social and Behavioral Science		3	
Additional requirements or A.S. Computer Science electives		3	
Total credits		15-16	

Fourth semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CSC 223	Data Structures and Analysis of Algorithms	4	
MTH 288	Discrete Math	3	
UCGS Lit/Humanities/Arts		3	
Additional requirements or A.S. Computer Science electives		6	
Total credits		16	

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The above plan shows 60-62 total credits. A minimum of 60 credits is needed to complete the A.S. Computer Science program. If you already have credit for Precalculus (MTH 161+162 or MTH 167) those credits count towards your electives total, and you'll have less to take at the end.

Sequenced curriculum – MTH 161 start

Starting in MTH 161 works out as long as your plan does not require MTH 265 (Calculus III). If your school wants that course and you have a Precalculus placement, modify the MTH 263 start plan to complete MTH 167 (Fall), MTH 263 (Spring), and MTH 264 (Summer) to stay on track.

First semester

Course number	Course title	Credits	If there is a choice, what does your school require?
ENG 111	College Composition I	3	
SDV (101 for STEM preferred)	Orientation for STEM transfer	1	
MTH 161	Precalculus I	4	
CSC 221	Introduction to Problem Solving and Programming	3	
Science with Lab (BIO 101, CHM 111, PHY 201, GOL 105)		4	
Total credits		15	

Second semester

Course number	Course title	Credits	If there is a choice, what does your school require?
ENG 112	College Composition I	3	
CSC 222	Object-Oriented Programming	4	
MTH 162	Precalculus II	3	
UCGS History		3	
UCGS Humanities/Arts		3	
Total credits		16	

Third semester

Course number	Course title	Credits	If there is a choice, what does your school require?
MTH 263	Calculus I	4	
CSC 215 (or CSC 205 (SSDL))	Computer Systems (Computer Organization)	3	
UCGS Social and Behavioral Science		3	
UCGS Lit/Humanities/Arts		3	
Additional requirements or A.S. Computer Science electives		3	
Total credits		16	

Fourth semester

Course number	Course title	Credits	If there is a choice, what does your school require?
MTH 245 or MTH 264	Statistics I or Calculus II	3-4	
CSC 223	Data Structures and Analysis of Algorithms	4	
MTH 288	Discrete Math	3	

CS General Education	See catalog for choices. Many colleges recommend MTH 245 *and* MTH 264.	3	
Total credits		13-14	

The above plan shows 60-61 total credits. A minimum of 60 credits is needed to complete the A.S. Computer Science program.