

## Chemistry Pathways Guide

This pathways guide for Chemistry is aligned with the [VCCS Chemistry 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 Chemistry. Chemistry falls under the Associate of Science in Science, and students completing this curriculum will be awarded a Science A.S.

### Alert – ACS Approved Programs

Many of our four-year partner institutions offer Bachelor of Science (B.S.) programs in Chemistry that have been approved by the American Chemical Society (ACS). ACS approval requires that the lab component of foundational courses in Chemistry be an in-person hands-on experience and cannot be replaced with remote learning or simulations. BRCC does not currently offer Organic Chemistry with lab (CHM 241/245 and CHM 242/246) as an on-campus course and cannot bring the lab component in as a virtual lab for future Chemistry majors. If you are planning on majoring in Chemistry after transfer, reach out to Academic Advising and BRCC Chemistry faculty as soon as possible to discuss options.

### 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:

- **MTH 263** (Calculus I) and **MTH 264** (Calculus II) are both required courses. Because of the Calculus sequence, 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](mailto:advising@brcc.edu).
- If you need to start in Precalculus, we recommend **starting in MTH 167** if you are prepared for it. But if you want to take things at a slower pace, you can also complete the MTH 161+162 Precalculus sequence, just be aware that may add some time to your degree because of prerequisite order.
- In addition to CHM 111/112, all Chemistry majors need **Physics** – does your school want PHY 241/242 (University “Calculus-based” Physics) or are they OK with PHY 201/202 (“algebra based” Physics). Most will strongly prefer the PHY 241/242, so you should plan on that.
- As noted above, BRCC is not currently offering **Organic Chemistry** on site. *Please* talk to an advisor at the earliest opportunity about options.
- Finally, does your school want **additional math or science** beyond the requirements? MTH 245 (Statistics I), MTH 265 (Calculus III), and Biology and Geology courses are things to look out for.

In the tables on the next pages, “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 not posted a Transfer VA guide as of this writing. Check the [Transfer VA Resource Center](#) frequently to see if a guide has appeared. In the meantime, you can find some recommendations on their [JMU Chemistry Major Guide](#) page.
- Plan on completing PHY 241/242 at BRCC. Defer Organic Chemistry until after transfer.
- [JMU Biochemistry](#) has further recommendations for MTH 265 (Calculus III) and BIO 101 (General Biology I)
- See the JMU guide for additional elective information.

### Bridgewater College (BC)

- BC has posted Transfer VA guides for [BC Chemistry](#) and [BC Biochemistry](#) in the Resource Center.
- BC allows either PHY 241/242 or PHY 201/202. For Biochemistry, also complete BIO 101/102.
- See the BC guide for additional elective information.

## 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 even Calculus I, 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.

- BRCC offers all courses in the Chemistry curriculum except for Organic Chemistry (CHM 241+245 and CHM 242+246). As noted, we cannot bring in Organic Chemistry labs as SSDL for students who wish to major in Chemistry post-transfer – work with Advising and Chemistry faculty to discuss options.
- Both the Physics sequences (PHY 241/242 or PHY 201/202) are only offered as Fall/Spring.

## 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	
CHM 111	General Chemistry I	4	
MTH 263	Calculus I	4	
UCGS History		3	
Total credits		15	

### Second semester

Course number	Course title	Credits	If there is a choice, what does your school require?
ENG 112	College Composition II	3	
CHM 112	General Chemistry II	4	
MTH 264	Calculus II	4	
CST 100 or 110	Principles of Public Speaking or Intro to Human Communication	3	
UCGS Social & Behavioral Sciences		3	
Total credits		17	

### Third semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CHM 241+245*	Organic Chemistry I with Lab	5	
PHY 241 (or PHY 201)	University Physics I (or General College Physics I)	4	
UCGS Humanities/Arts		3	
Additional requirements or free A.S. Science electives		3-4	
Total credits		15-16	

\*If you can complete the lab onsite at another VCCS college. Otherwise, use the credits to complete additional recommendations for the major.

### Fourth semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CHM 242+246*	Organic Chemistry II with Lab	5	
PHY 242 (or PHY 201)	University Physics II (or General College Physics II)	4	
UCGS Lit/Humanities/Arts		3	
Additional requirements or free A.S. Science electives		3-4	
Total credits		15-16	

\*If you can complete the lab onsite at another VCCS college. Otherwise, use the credits to complete additional recommendations for the major.

The above plan shows 62-64 total credits. A minimum of 60 credits is needed to complete the A.S. Science program. If you already have credit for Precalculus (MTH 161+162 or MTH 167) those credits will count towards your electives total, and you'll have less to take at the end.



## Sequenced curriculum – MTH 167 start

Students with a Precalculus placement can still complete the Chemistry requirements in two years if they are starting in MTH 167 in the fall and can use the summer between their first and second year to complete MTH 264 (Calculus II).

### 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	
CHM 111	General Chemistry I	4	
MTH 167	Precalculus w/ Trigonometry	5	
UCGS History		3	
Total credits		16	

### Second semester

Course number	Course title	Credits	If there is a choice, what does your school require?
ENG 112	College Composition II	3	
CHM 112	General Chemistry II	4	
MTH 263	Calculus I	4	
CST 100 or 110	Principles of Public Speaking or Intro to Human Communication	3	
Total credits		14	

### Summer catch-up

Course number	Course title	Credits	If there is a choice, what does your school require?
MTH 264	Calculus II	4	
Total credits		4	

### Third semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CHM 241+245*	Organic Chemistry I with Lab	5	
PHY 241 (or PHY 201)	University Physics I (or General College Physics I)	4	
UCGS Humanities/Arts		3	
UCGS Social & Behavioral Sciences		3	
Total credits		15	

\*If you can complete the lab onsite at another VCCS college. Otherwise, use the credits to complete additional recommendations for the major.

Fourth semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CHM 242+246*	Organic Chemistry II with Lab	5	
PHY 242 (or PHY 201)	University Physics II (or General College Physics II)	4	
UCGS Lit/Humanities/Arts		3	
Total credits		12	

\*If you can complete the lab onsite at another VCCS college. Otherwise, use the credits to complete additional recommendations for the major.

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

## Sequenced curriculum – MTH 161 start, three years

If you start in MTH 161 Precalculus I in the Fall, it is difficult to complete the A.S. Science with a Chemistry pathway in two years because of prerequisite sequencing. This three-year plan progresses through the curriculum with a lighter credit load each semester and assumes Fall/Spring, Fall/Spring, Fall/Spring.

### First semester

Course number	Course title	Credits	If there is a choice, what does your school require?
MTH 161	Precalculus I	3	
ENG 111	College Composition I	3	
SDV 101 (or other SDV)	Orientation to STEM Transfer preferred	1	
UCGS History		3	
Total credits		10	

### Second semester

Course number	Course title	Credits	If there is a choice, what does your school require?
MTH 162	Precalculus II	3	
ENG 112	College Composition II	3	
CST 100 or 110	Principles of Public Speaking or Intro to Human Communication	3	
UCGS Social and Behavioral Science		3	
Total credits		12	

### Third semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CHM 111	General Chemistry I	4	
MTH 263	Calculus I	4	
UCGS Humanities/Arts		3	
Total credits		11	

### Fourth semester

Course number	Course title	Credits	If there is a choice, what does your school require?
CHM 112	General Chemistry II	4	
MTH 264	Calculus II	4	
UCGS Lit/Humanities/Arts		3	
Total credits		11	

**Fifth semester**

<b>Course number</b>	<b>Course title</b>	<b>Credits</b>	<b>If there is a choice, what does your school require?</b>
CHM 241+245*	Organic Chemistry I with Lab	5	
PHY 241 (or PHY 201)	University Physics I (or General College Physics I)	4	
<b>Total credits</b>		<b>9</b>	

\*If you can complete the lab onsite at another VCCS college. Otherwise, use the credits to complete additional recommendations for the major.

**Sixth semester**

<b>Course number</b>	<b>Course title</b>	<b>Credits</b>	<b>If there is a choice, what does your school require?</b>
CHM 242+246*	Organic Chemistry II with Lab	5	
PHY 242 (or PHY 201)	University Physics II (or General College Physics II)	4	
<b>Total credits</b>		<b>9</b>	

\*If you can complete the lab onsite at another VCCS college. Otherwise, use the credits to complete additional recommendations for the major.

The above plan shows 62 total credits. A minimum of 60 credits is needed to complete the A.S. Science program.