

BIOCHEMISTRY - BS

THIS IS A **GENERAL** CURRICULUM GUIDE AND IS NOT APPLICABLE TO EVERY STUDENT. IT IS IMPORTANT TO MEET WITH YOUR ADVISOR.

Year One			
^{4,9} CHM 115 Principles of Chemistry I Prerequisites: High school chemistry and (MTH 110 or MTH 122 or MTH 125 or MTH 201)	4 (6)	BIO 120 General Biology I Prerequisite: High school chemistry, CHM 109 or CHM 115 strongly encouraged	4 (6)
⁸ MTH 122 College Algebra Prerequisite: MTH 110 or assignment through Grand Valley math placement	3	^{4,9} CHM 116 Principles of Chemistry II Prerequisites: CHM 115 and (MTH 122 or MTH 125 or MTH 201)	5 (7)
Gen Ed	3	⁸ MTH 123 Trigonometry Prerequisite: MTH 122 or assignment through Grand Valley math placement (MTH 122 may be taken concurrently)	3
Gen Ed	3	WRT 150 Strategies in Writing	4
Elective	1		
<i>Numbers noted within (parentheses) are contact hours</i>	<i>Total</i>	<i>Total</i>	<i>16*</i>
	14		
Year Two			
⁹ CHM 222 Quantitative Analysis Prerequisites: CHM 116; Corequisite: CHM 241 or CHM 245	3 (6)	⁹ CHM 225 Instrumental Analysis I Prerequisite: CHM 222	3 (6)
^{1,9} CHM 245 Principles of Organic Chemistry I	4	^{1,9} CHM 247 Principles of Organic Chemistry II	3
^{1,9} CHM 246 Principles of Organic Chemistry I Lab Prerequisites: CHM 116; CHM 245 and 246 must be taken concurrently	1 (4)	^{1,9} CHM 248 Principles of Organic Chemistry II Lab Prerequisites: CHM 245 and CHM 246; CHM 247 and 248 must be taken concurrently	1 (4)
MTH 201 Calculus I Prerequisites: MTH 122 and MTH 123 or assignment through Grand Valley math placement	4	BIO 375 Genetics/ BIO 376 Genetics Laboratory Prerequisites: BIO 120. Concurrent enrollment in BIO 376 is required	3/1 (6)
Gen Ed	3	Gen Ed	3
		² Elective	1
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>15</i>
Year Three			
CHM 461 Biochemistry I Prerequisites: CHM 242, CHM 247, or CHM 248	4	³ PHY 221 General Physics II Prerequisite: PHY 220	5 (7)
³ PHY 220 General Physics I Prerequisites: MTH 122 and MTH 123	5 (7)	⁹ CHM 391 Chemistry Seminar I	1
⁵ Cognate Elective	3	CHM 462 Techniques in Biochemistry Prerequisites: CHM 461 or permission of instructor	3 (4)
Gen Ed	3	CHM 463 Biochemistry II Prerequisites: CHM 461 & BIO 120 or permission of instructor	3
		Issue	3
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>15</i>
Year Four			
⁶ CHM 351 Introduction to Physical Chemistry Prerequisites: CHM 116, MTH 201, and PHY 220 (may be taken concurrently)	3	^{6, 7} CHM 352 SWS Applied Physical Chemistry Prerequisites: CHM 116, MTH 201, CHM 351 and PHY 220 (CHM 351 or PHY 220 may be taken concurrently)	1 (3)
⁵ Cognate Elective	3	CHM 491 Chemistry Seminar II (Capstone)	1
⁵ Cognate Elective	3	⁵ Cognate Elective	3
Issue	3	Gen Ed	3
² Elective	3	Gen Ed	3
		² Elective	3
		² Elective	1
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>15</i>

See reverse for more notes

*The block tuition rate is for 12-15 credits. You will pay additional tuition for any credits over 15.

¹CHM 241 and CHM 242 may substitute for CHM 245/246/247/248 with advisor approval.

² Elective refers to any course to help you earn the required 120 credits for graduation.

³ If planning to attend graduate school, PHY 230/231 should be taken in place of PHY 220/221, and MTH 202 should also be taken.

⁴Chemistry majors who have AP/IB Credit in CHM 115 and/or CHM 116 are generally better prepared for higher level chemistry courses if they take CHM 115 and CHM 116 at GVSU.

⁵See below for cognate electives. Students are encouraged to work with their faculty in selecting elective courses.

⁶Students interested in Graduate School should take CHM 356, 353, 358 and 355 or 455 instead of CHM 351 and 352.

⁷ Students must complete two courses with an SWS attribute.

⁸ Math proficiency exams are available for MTH 122 and MTH 123. **To take the Math Proficiency Tests online, visit this link: gvsu.edu/s/mv**

⁹The following courses must be completed with a C or better grade: CHM 115, 116, 222, 225, 245, 246, 247, 248, 391.

Declaring the Biochemistry Major:

1. In myBanner, select "Student" > "Student Records" > "Change Major" > "Change Major 1/Program"
2. Choose "Biochemistry-BS" from the drop-down box.
3. Click "Submit" and then "Change to New Program"
4. Declare "**Pre-Med**" as your SECOND MAJOR if you are planning on medical, dental, pharmacy, or optometry school.
→If you are Pre-Veterinary, the **Biology with Pre-Veterinary emphasis** is recommended

Pre-Professional Students

(Pre-Chiropractic, Pre-Dental, Pre-Medical, Pre-Optometry, Pre-Pharmacy, Pre-Podiatry, & Pre-Veterinary)

Keep in mind that you may major in anything so long as you complete the prerequisites for your professional program.

General Education Categories fulfilled by the Biochemistry Major:	
Life Sciences with Lab: BIO 120	Physical Sciences with Lab: CHM 115
Mathematical Sciences: STA 215, MTH 122, MTH 123, MTH 201	
Additional Overlap for Pre-Professional Students	
Social and Behavioral Sciences: PSY 101	Social and Behavioral Sciences: SOC 201

⁵Choose an additional 10 credits in cognate electives from the following courses:

BIO 416 Advanced Genetics Laboratory (2)
Prerequisite: BIO 376; BIO 411 or 414 recommended (may be taken concurrently)

BIO 423 Plant Biotechnology (3)
Prerequisite: BIO 376

CHM 490 Chemistry Laboratory Internship (1-4)
Prerequisites: Chemistry major with a minimum of 20 hours in chemistry and permission of instructor

CHM 499 Investigation Problems (1-5)
Prerequisite: Permission of instructor

CMB 406 Cell and Molecular Biology Laboratory (2)

*Can choose **only one** from the following:*

CMB 426 Nucleic Acids Laboratory (3)
Prerequisite: CMB 406

BMS 312 Bacterial Genetics (3) and BMS 313 Bacterial Genetics Laboratory (1)
Prerequisites: BMS 212 or BIO 357, and BIO 355 or BIO 375

BMS 322 Bacterial Physiology (3) and BMS 323 Bacterial Physiology Laboratory (1)
Prerequisite: BMS 212 or BIO 357

*Can choose **only one** from the following:*

BIO 357 Environmental Microbiology (4)
Prerequisite: BIO 120 or permission of instructor
BMS 212 Introductory Microbiology (3) and BMS 213 Laboratory in Microbiology (1)
Prerequisites: BIO 120 and (CHM 230 or 232 or 241)

*Can choose **only one** from the following:*

BIO 432 Comparative Animal Physiology (4)
Prerequisites: BIO 121 (or BMS 208), BIO 120, CHM 232 or CHM 242
BMS 290 Human Physiology (3) and BMS 291 Laboratory in Human Physiology (1)
Prerequisites: BMS 208 and two semesters of chemistry

*Can choose **only one** from the following:*

CMB 405 Cell and Molecular Biology (4)
Prerequisites: (BIO 375 or BIO 355) and BIO 376 and (CHM 232 or CHM 242 or CHM 247 may be taken concurrently)
CMB 414 Molecular Biology of the Gene (3)
Prerequisites: BIO 375 and BIO 376

It is imperative to meet with your faculty advisor or an advisor in the CLAS Academic Advising Center regularly.

Please Friend the GVSU Chemistry Facebook page: <https://www.facebook.com/gvsu.chemistrystockroom>

The CLAS Academic Advising Center is located in C-1-140 MAK, 616-331-8585

<http://www.gvsu.edu/clasadvising> (Also find us on Orgsync, Facebook, and Twitter!)

Pre-Professional Advisors:

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See <http://gvsu.edu/s/zY> for additional details regarding professional school information.

Follow the Pre-Professional Blog: <https://preprofessionalakers.wordpress.com>