

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 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 (or WRT 150) Prerequisite: High school chemistry, CHM 109 or CHM 115 strongly encouraged	4 (6)
⁷ MTH 122 College Algebra Prerequisite: MTH 110 or assignment through Grand Valley math placement	3	⁴ CHM 116 Principles of Chemistry II Prerequisites: CHM 115 and (MTH 122 or MTH 125 or MTH 201)	5 (7)
WRT 150 Strategies in Writing (or BIO 120) Gen Ed Elective	4 3 1	⁷ MTH 123 Trigonometry Prerequisite: MTH 122 or assignment through Grand Valley math placement (MTH 122 may be taken concurrently) Gen Ed	3 3
<i>Numbers noted within (parentheses) are contact hours</i> <i>Total</i>	15	<i>Total</i>	15
Year Two			
CHM 222 Quantitative Analysis (if taken before Fall 16) Prerequisites: CHM 116; Corequisite: CHM 241 or CHM 245 OR CHM 221 Survey of Analytical Chemistry Prerequisites: CHM 116	3 (6) 4 (7)	CHM 225 Instrumental Analysis I (no longer offered or required starting Fall 2016) Prerequisite: CHM 222 OR Cognate Elective	3 (6) 4
¹ CHM 245 Principles of Organic Chemistry I	4	¹ CHM 247 Principles of Organic Chemistry II	3
¹ CHM 246 Principles of Organic Chemistry I Lab Prerequisites: CHM 116; CHM 245 and 246 must be taken concurrently	1 (4) 4	¹ 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 Gen Ed	3	BIO 375 Genetics/ BIO 376 Genetics Laboratory Prerequisites: BIO 120. Concurrent enrollment in BIO 376 is required Gen Ed ² Elective	3/1 (6) 3 0-1
<i>Total</i>	15-16*	<i>Total</i>	15
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)	CHM 391 Chemistry Seminar I Prerequisites: 18 credits of chemistry and senior standing	1
² Elective Gen Ed	3 3	CHM 463 Biochemistry II Prerequisites: CHM 461 & BIO 120 or permission of instructor Issue ² Elective	3 3 3
<i>Total</i>	15	<i>Total</i>	15
Year Four			
⁶ CHM 351 Introduction to Physical Chemistry Prerequisites: CHM 116, MTH 201, and PHY 220 (may be taken concurrently)	3	CHM 462 SWS Techniques in Biochemistry Prerequisites: CHM 461 or permission of instructor	3 (4)
⁶ 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)	CHM 491 Chemistry Seminar II (Capstone) Prerequisites: CHM 391 and senior standing	1
⁵ Cognate Elective	4	⁵ Cognate Elective or Elective Gen Ed	4 3
² Elective Issue	3-4 3	² Elective	1
<i>Total</i>	14-15	<i>Total</i>	15

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 advisor 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 MTH 122 and 123 are not part of the major but may be required depending on math placement. 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**

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-Professional**" 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

⁵**Choose an additional 8 credits in cognate electives from the following courses:**

BIO 357 Environmental Microbiology (4) Prerequisite: BIO 120 or permission of instructor	BMS 422 Bacterial Physiology (3) and BMS 423 Bacterial Physiology Laboratory (2) Prerequisite: BMS 212 or BIO 357
BIO 416 Advanced Genetics Laboratory (2) Prerequisite: BIO 376; BIO 411 or 414 recommended (may be taken concurrently)	BMS 410 Immunology (4) Prerequisite: BMS 212; and CHM 232 or CHM 461 (may be taken concurrently)
BIO 423 Plant Biotechnology (3) Prerequisite: BIO 376	BMS 431 Medical Virology (3) Prerequisite: BMS 212 and CHM 241
BIO 432 Comparative Animal Physiology (4) Prerequisites: BIO 121 (or BMS 208), BIO 120, CHM 232 or CHM 242	CMB 351 Bioinformatics (3) Prerequisite: Junior standing, BIO 120 and either CMB 250 or BIO 375, 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)	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)
*BMS 290 Human Physiology (3) and BMS 291 Laboratory in Human Physiology (1) Prerequisites: BMS 208 and two semesters of chemistry	CMB 406 Cell and Molecular Biology Laboratory (2) Prerequisite: CMB 405 (may be taken concurrently)
BMS 306 Advanced Human Nutrition Prerequisites: BMS 290 or MOV 304, and CHM 232 or CHM 461	CMB 411 Genetics of Development and Cancer (3) Prerequisite: (BIO 375 and 376) or (BIO 355 and CHM 232)
BMS 312 Bacterial Genetics (3) and BMS 313 Bacterial Genetics Laboratory (1) Prerequisites: BMS 212 or BIO 357, and BIO 355 or BIO 375	CMB 414 Molecular Biology of the Gene (3) Prerequisites: BIO 375 and BIO 376
BMS 408 Advanced Human Physiology (3) Prerequisites: BMS 290 and permission of instructor	CMB 426 Nucleic Acids Laboratory (3) Prerequisite: CMB 406
	CMB 452 Computational Biology (3) Prerequisites: BIO 120, CHM 115, CHM 116, (CMB 250 or CHM 461), (MTH 122, MTH 123, MTH 125) or (MTH 201, MTH 202), (PHY220, PHY 221) or (PHY 230, PHY 231) or permission of instructor.

**Recommended for Pre-Professional Students*

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://preprofessionallakers.wordpress.com>