

# MICROBIOLOGY-BS

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

Year One			
<b>CHM 125/126</b> Principles of Chemistry I (GE Physical Science) Prerequisites: High school chemistry and (MTH 108/109, MTH 110, MTH 122, MTH 125 or MTH 201; or fulfillment of MTH 110 through Math Placement [ <a href="https://gvsu.edu/s/mv">gvsu.edu/s/mv</a> ])	3/1 (6)	<b>CHM 127/128</b> Principles of Chemistry II Prerequisites: CHM 125/126 and (MTH 122 or MTH 124 or MTH 125 or equivalent by placement or exam)	4/1 (7)
<sup>1</sup> <b>MTH 122</b> College Algebra Prerequisite: (MTH 108/109, MTH 110, or fulfillment of MTH 110 through Math Placement [ <a href="https://gvsu.edu/s/mv">gvsu.edu/s/mv</a> ])	3	<b>BIO 120</b> General Biology I (GE Life Science) Prerequisites: High school chemistry, CHM 109, or CHM 125/126 strongly recommended (CHM 109 or 125/126 may be taken concurrently)	4 (6)
<b>OR</b> or <sup>2</sup> <b>WRT 120</b> (self-placement)	3	<sup>2</sup> <b>WRT 130</b> or <b>WRT 150</b> Strategies in Writing (GE Writing)	3-4
Gen Ed (GE Philosophy & Literature)	3	<sup>3</sup> Elective	2-3
Gen Ed (if taking MTH 122)	3		
<i>Numbers noted within (parentheses) are contact hours</i>	<i>Total</i>	<i>Total</i>	<i>Total</i>
	15-16*		15
Year Two			
<b>CHM 235/236</b> Organic Chemistry for Life Sciences I Prerequisite: CHM 127/128	4/1 (7)	<b>CHM 237/238</b> Organic Chemistry for Life Sciences II Prerequisite: CHM 235/236	3/1 (6)
<b>BMS 212</b> Introductory Microbiology Prerequisites: BIO 120 and (CHM 127/128, 234, or 231)	3	<sup>1</sup> <b>MTH 123</b> Trigonometry Prerequisite: MTH 122 or assignment through Grand Valley math placement (MTH 122 may be taken concurrently)	3
<b>BMS 213</b> Laboratory in Microbiology Prerequisite: BMS 212 or concurrent enrollment	1 (4)	<b>OR</b> Gen Ed (GE Global Perspectives)	3
<b>STA 215</b> Introductory Applied Statistics (GE Math) Prerequisite: (MTH 108/109, MTH 110, or fulfillment of MTH 110 through Math Placement [ <a href="https://gvsu.edu/s/mv">gvsu.edu/s/mv</a> ])	3	Gen Ed (GE Historical Analysis)	3
Gen Ed (GE Social/Behavioral)	3	Gen Ed (GE Social/Behavioral)	3
		<sup>3</sup> Elective	2
<i>Total</i>	<i>Total</i>	<i>Total</i>	<i>Total</i>
	15		15
Year Three			
<b>BMS 312</b> Bacterial Genetics (offered fall in even numbered years) Prerequisites: BMS 212 or BIO 357	3	<b>CHM 461</b> Biochemistry I Prerequisite: CHM 237/238, or CHM 247/248	4
<b>BMS 313</b> Bacterial Genetics Laboratory Prerequisite: BMS 312 or concurrent registration	1 (4)	<b>PHY 221</b> General Physics II Prerequisites: PHY 220	5 (7)
<b>PHY 220</b> General Physics I Prerequisites: MTH 122 and MTH 123	5 (7)	<sup>3</sup> Elective or Gen Ed (if remaining)	3
Gen Ed (GE US Diversity)	3	<sup>3</sup> Elective	3
<sup>3</sup> Elective or Gen Ed (if remaining)	3		
<i>Total</i>	<i>Total</i>	<i>Total</i>	<i>Total</i>
	15		15
Year Four			
<b>BMS 422</b> Bacterial Physiology (offered fall in odd numbered years) Prerequisite: BMS 212 or BIO 357	3	<b>BMS 412</b> Medical Bacteriology Prerequisite: BMS 212	3
<b>BMS 423</b> Bacterial Physiology Lab Prerequisite: BMS 422 or concurrent registration	2 (6)	<b>BMS 413</b> Medical Bacteriology Lab Prerequisite: BMS 412 or concurrent registration	2 (6)
<sup>4</sup> Microbiology Elective	3	<sup>5</sup> <b>MIC 495 (SWS)</b> Microbiology and Infectious Disease Prerequisite: Senior standing and one of the following pairs: BMS 312+313, BMS 412+413, or BMS 422+423	3
<sup>5</sup> Issues (SWS)	3	<sup>4</sup> Microbiology Elective	3
<sup>3</sup> Elective	4	Issues	3
		<sup>3</sup> Elective	1
<i>Total</i>	<i>Total</i>	<i>Total</i>	<i>Total</i>
	15		15

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

<sup>1</sup> Students starting below MTH 122 should consult with an advisor about summer courses to stay on track for a 4-year graduation. For MTH 201 (Calculus I) can sub for MTH 122 (College Algebra) + MTH 123 (Trigonometry). Students who wish to take MTH 201 for professional/graduate school should take MTH 124, if needed in preparation. MTH 124 alone will not satisfy the prerequisite for PHY 220/221. For students with the Advanced Waiver for Mathematics based on ACT/SAT scores, it is **STRONGLY RECOMMENDED** that proficiency in MTH 123 be demonstrated by either taking the MTH 123 course or by achieving a passing score on the GVSU math placement test **PRIOR** to taking PHY 220 and 221. Students who have AP/IB/dual enrollment credit for MTH 201 (Calculus I), or complete the MTH 122 and 123 proficiency tests, only need to complete STA 215. **To take the Math Proficiency Tests online, visit this link:** [gvsu.edu/s/mv](https://gvsu.edu/s/mv)

<sup>2</sup>Students who self-place into WRT 120 should take this course in the fall semester and then take WRT 130 in the winter semester of their first year. Students will not need to take WRT 150 if they have earned credit for the course through AP/Dual Enrollment. A grade of C or better is required in WRT 130 or 150 to satisfy the WRT requirement at GVSU.

<sup>3</sup> Students must have a **minimum of 120 credits** to graduate with **58 of the 120 credits** being from a senior level institution and the **final 30 of the 120 credits** completed at GVSU. Elective refers to any course that will help meet these requirements.

<sup>4</sup>Microbiology Electives must consist of at least 6 hours of upper-division science courses. See list below for elective options.

<sup>5</sup>Students must complete two courses with an SWS attribute.

### **Declaring the Microbiology Major:**

1. In myBanner, select "Student" > "Student Records" > "Change Major" > "Change Major 1/Program"
2. Choose "Microbiology-BS" from the drop-down box.
3. Click "Submit" and then "Change to New Program"
4. Declare "**PreProfessional Preparation**" as your SECOND MAJOR if you are planning on medical, dental, pharmacy, chiropractic, podiatry, veterinary, or optometry school.

### **General Education Overlap**

<b>General Education Categories fulfilled by the Microbiology Major:</b>	
Life Sciences with Lab: BIO 120	Physical Sciences with Lab: CHM 125/126
Mathematical Sciences: STA 215, MTH 122, 123	
<b>Additional Overlap for Preprofessional Students</b>	
Social and Behavioral Sciences: PSY 101 and SOC 101	

### **Microbiology Elective Courses**

<sup>2</sup> BIO 416 Advanced Genetics Laboratory (2)* Prerequisite: BIO 375; BIO 411 or 414 recommended BMS 394 Laboratory Assistant in Microbiology (1)* Prerequisite: BMS 213 BMS 410 Immunology (3) Prerequisites: BMS 212; CHM 234 or CHM 461 (may be taken concurrently) <sup>2</sup> BMS 431 Medical Virology (3) Prerequisite: BMS 212 and CHM 235/236 <sup>1</sup> BMS 432 Medical Mycology (3) Prerequisite: BMS 212 <sup>1</sup> BMS 433 Medical Parasitology (3) Prerequisite: BMS 212 and CHM 235/236 BMS 492 Biomedical Sciences Internship (1-4)* Prerequisite: BMS 290, BMS 391, CHM 234 or CHM 235/236 BMS 499 Research in Biomedical Sciences (1-3)*  *with advisor approval/permit required	CHM 462 Techniques in Biochemistry (3)* Prerequisite: CHM 461 <sup>2</sup> CHM 463 Biochemistry II (3) Prerequisite: CHM 461 CMB 405 Cell and Molecular Biology (4)* Prerequisite: (BIO 375 or BIO 355); BIO 376; CHM 234, 237/238, or 247 (may be taken concurrently) CMB 406+SWS Cell and Molecular Biology Lab (2) Prerequisite: CMB 405 (may be taken concurrently) CMB 414 Molecular Biology of the Gene (3)* <sup>1</sup> CMB 426 Research Applications in Nucleic Acids (4) Prerequisite: CMB 406  <i>Numbers in parentheses indicate # of credits</i> <sup>1</sup> Offered in Fall Only <sup>2</sup> Offered in Winter Only
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**It is imperative to meet with your faculty advisor and an advisor in the CLAS Academic Advising Center regularly.**

**The CLAS Academic Advising Center is located in C-1-120 MAK**

**(616) 331-8585 | <http://www.gvsu.edu/clasadvising>**

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**Instagram:** @gvsupreprofessionaladvising

### **Preprofessional Students**

(Prechiropractic, Predental, Premedical, Preoptometry, Prepharmacy, Prepodiatry, & Preveterinary)

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

To find more information on Preprofessional programs, visit [www.gvsu.edu/clasadvising/preprofessional](http://www.gvsu.edu/clasadvising/preprofessional)