

# BIOMEDICAL SCIENCES-BS-GENERAL EMPHASIS

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

Year One			
<sup>1</sup> <b>BIO 120</b> General Biology I (w/lab) Prerequisites: High school chemistry, CHM 109, or CHM 115 strongly recommended (CHM 109 or 115 may be taken concurrently)	4 (6)	<b>BMS 208</b> Human Anatomy Prerequisite: BIO 120	3
<b>CHM 115</b> Principles of Chemistry I (w/lab) Prerequisites: High school chemistry and (MTH 110 or MTH 122 or MTH 125 or MTH 201)	4 (6)	<b>CHM 116</b> Principles of Chemistry II (w/lab) Prerequisites: CHM 115 and (MTH 122 or MTH 125 or MTH 201)	5 (7)
<sup>2</sup> <b>MTH 122</b> College Algebra Prerequisite: MTH 110 or by Grand Valley math placement	3	<b>WRT 150</b> Strategies in Writing Gen Ed	4 3
Gen Ed	3		
<sup>3</sup> Elective	1		
<i>Numbers noted within (parentheses) are contact hours</i>	<i>Total</i>	<i>Total</i>	<i>Total</i>
	15		15
Year Two			
<b>BMS 290</b> Human Physiology Prerequisites: BMS 208 and two semesters of chemistry	3	<b>BIO 375</b> Genetics/ <b>BIO 376</b> Genetics Laboratory Prerequisites: BIO 120. Concurrent enrollment in BIO 376 is required	3/1 (6)
<b>BMS 291</b> Laboratory in Human Physiology Prerequisite: BMS 290 or concurrent registration	1 (3)	<b>OR BIO 355</b> Human Genetics (lecture only) Prerequisite: BIO 120 or BIO 103, or permission of instructor	3
<b>CHM 241</b> Organic Chemistry for Life Sciences I (w/lab) Prerequisite: CHM 116	5 (7)	<b>CHM 242</b> Organic Chemistry for Life Sciences II (w/lab) Prerequisite: CHM 241	4 (6)
<b>STA 215</b> Introductory Applied Statistics Prerequisite: MTH 110 or equivalent	3	<sup>2</sup> <b>MTH 123</b> Trigonometry Prerequisite: MTH 122 or assignment through Grand Valley math placement (MTH 122 may be taken concurrently)	3
Gen Ed	3	Gen Ed	3
		<sup>3</sup> Elective	1-2
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>15</i>
Year Three			
<b>CHM 461</b> Biochemistry I Prerequisite: CHM 242 or CHM 247 and CHM 248	4	<b>BMS 212</b> Introductory Microbiology Prerequisites: BIO 120 and (CHM 230 or CHM 232 or CHM 241)	3
<b>PHY 220</b> General Physics I (w/lab & discussion) Prerequisites: MTH 122 and MTH 123	5 (7)	<b>BMS 213</b> Laboratory in Microbiology Prerequisite: BMS 212 or concurrent enrollment	1 (4)
Gen Ed	3	<b>PHY 221</b> General Physics II (w/lab & discussion) Prerequisites: PHY 220	5 (7)
Gen Ed	3	Issue	3
		Gen Ed	3
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>15</i>
Year Four			
<sup>4</sup> <b>BMS 495</b> Concepts in Wellness (Capstone) SWS Prerequisites: BMS 208, BMS 212, BMS 290 or 291, and senior standing	3	<sup>5</sup> Biomedical Science Elective	3
<sup>5</sup> Biomedical Science Elective	3	<sup>5</sup> Biomedical Science Elective	3
Issue	3	<sup>3</sup> Elective	3
<sup>3</sup> Elective	3	<sup>3</sup> Elective	3
<sup>3</sup> Elective	3	<sup>3</sup> Elective	3
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>15</i>

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

<sup>1</sup>CMB 155+156 can sub for BIO 120 for those students interested in research (with advisor approval)

<sup>2</sup>For students with the Advanced Waiver for Mathematics based on ACT/SAT scores, it is **STRONGLY RECOMMENDED** that proficiency in MTH 123 – Trigonometry – 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. MTH 124 and MTH 201 will substitute for MTH 122 and MTH 123.

**To take the Math Proficiency Tests online, visit this link: [gvsu.edu/s/mv](https://gvsu.edu/s/mv)**

<sup>3</sup> Elective refers to any course that will help you reach the required 120 credits to graduate. **Consider a minor or certificate.**

<sup>4</sup>Students must complete two courses with an SWS attribute.

<sup>5</sup>Biomedical Science Electives must consist of at least 9 hours of upper-division Biomedical Science courses. See list on the next page for elective options.

**Declaring the BMS Major:**

1. In myBanner, select "Student" > "Student Records" > "Change Major" > "Change Major 1/Program"
2. Choose "Biomedical Science-BS" from the drop-down box. You have the option of adding an emphasis in Nutrition or Microbiology but this is not required.
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, or optometry school.

**General Education Overlap**

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

**Biomedical Science Elective Courses (9 credits required)**

<b>Anatomy</b>	<b>Microbiology</b>	<b>Nutrition</b>
BMS 309 Laboratory in Human Anatomy (1)	<sup>1</sup> BMS 312 Bacterial Genetics (3) (only offered in even-numbered years)	BMS 305 Clinical Nutrition (3)
<sup>2</sup> BMS 355 Anatomy of Joints (2) w/Lab	<sup>1</sup> BMS 313 Bacterial Genetics Laboratory (1) (only offered in even-numbered years)	<sup>1</sup> BMS 306 Advanced Human Nutrition (3)
BMS 393 Laboratory Assistant in Human Anatomy (1)	BMS 394 Laboratory Assistant in Microbiology (1)	<sup>2</sup> BMS 404 Community Nutrition (3)
<sup>1</sup> BMS 427 Neuroanatomy (1)	<sup>1</sup> BMS 410 Immunology (3)	BMS 407 Nutrition in the Life Cycle (3)
<sup>1</sup> BMS 450 Human Histology (4) w/Lab	<sup>2</sup> BMS 411 Immunology Laboratory (1)	<sup>2</sup> BMS 415 Nutrition and Physical Performance (3)
<sup>2</sup> BMS 460 Regional Human Anatomy (4) w/Lab	<sup>2</sup> BMS 412 Medical Bacteriology (3)	<b>General</b>
<sup>2</sup> BIO 302 Comparative Vertebrate Anatomy w/Lab (4)	<sup>2</sup> BMS 413 Medical Bacteriology Laboratory (2)	BMS 301 Introduction to Research in Biomedical Sciences (3)
<sup>1</sup> BIO 422 Embryology (3) w/Lab	<sup>1</sup> BMS 422 Bacterial Physiology (3) (only offered in odd-numbered years)	BMS 380/480 Special Topics in the Biomedical Sciences (1-4)
	<sup>1</sup> BMS 423 Bacterial Physiology Laboratory (2) (only offered in odd-numbered years)	BMS 399 Readings in the Biomedical Sciences (1-3)
<b>Physiology</b>	<sup>2</sup> BMS 431 Medical Virology (3)	BMS 492 Biomedical Sciences Internship (1-4)
BMS 310 Basic Pathophysiology (3)	<sup>1</sup> BMS 432 Medical Mycology (2)	BMS 499 Research in the Biomedical Sciences (1-3)
BMS 311 Pharmacological Aspects of Biomedical Sciences (3)	<sup>1</sup> BMS 433 Medical Parasitology (3) w/Lab	CMB 405 Cell and Molecular Biology (4)
<sup>1</sup> BMS 375 The Biology of Aging (3)	<sup>2</sup> BIO 416 Advanced Genetics Laboratory (2)	CMB 406 Cell and Molecular Biology Lab (2)
BMS 392 Laboratory Assistant in Physiology (1)	CMB 351 Bioinformatics: Tools and Techniques for Life Scientists (3)	CHM 462 Techniques in Biochemistry w/Lab (3)
<sup>2</sup> BMS 426 Sensory Systems Neuroscience: Anatomy and Physiology (3)	CMB 411 Genetics of Development & Cancer (3)	<sup>2</sup> CHM 463 Biochemistry II (3)
<sup>2</sup> BMS 428 Neurosciences (3)	CMB 414 Molecular Biology of the Gene (3)	
<sup>2</sup> BMS 475 The Pathology of Aging (3)	CMB 426 Nucleic Acids Laboratory (3)	<i>Numbers in parentheses indicate # of credits</i>
<sup>2</sup> BMS 508 Advanced Human Physiology (3) <i>special permission needed</i>	<sup>2</sup> CMB 440 Research Applications in Drosophila Genomics (3) w/Lab	<sup>1</sup> Offered in Fall Only
	CMB 452 Computer Modelling of Biomolecules (3)	<sup>2</sup> Offered in Winter Only
	CMB 460 Genomics & Molecular Diagnostics (3)	

**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**

**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.**

To schedule an appointment with a Biomedical Sciences and/or Pre-Professional Advisor in the CLAS Academic Advising Center, visit [www.gvsu.edu/clasadvising](http://www.gvsu.edu/clasadvising) and click on "Schedule Appointment"

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