

# BIOMEDICAL SCIENCES-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>BIO 180</b> Bio 120 Preparatory Course	3	<b>MTH 109</b> Algebra Stretch II Prerequisite: MTH 108	3
<sup>2</sup> <b>WRT 120</b> Strategies of Writing – Stretch I	3	<b>CHM 100</b> Preparatory Chemistry Prerequisites: MTH 108 and 109. MTH 109 may be taken concurrently.	3
<b>MTH 108</b> Algebra Stretch I	3	<b>WRT 130</b> Strategies in Writing-Stretch II (GE Writing) Prerequisites: WRT 120	3
Gen Ed (GE Art)	3	<sup>1</sup> <b>BIO 120</b> General Biology I (w/lab) (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)
<i>Numbers noted within (parentheses) are contact hours</i>	<i>Total</i>	<i>Total</i>	<i>13</i>
Year Two			
<b>MTH 122</b> College Algebra Prerequisite: MTH 110 or by Grand Valley math placement	3	<b>BMS 208</b> Human Anatomy Prerequisite: BIO 120	3
<b>CHM 125/126</b> Principles of Chemistry I (w/lab)(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 [ <i>gvsu.edu/s/mv</i> ])	3/1 (6)	<b>CHM 127/128</b> Principles of Chemistry II (w/lab) Prerequisites: CHM 125/126 and (MTH 122 or MTH 125 or MTH 201)	4/1(7)
Gen Ed (GE Social/Behavioral)	3	<b>STA 215</b> Introductory Applied Statistics (GE Math) Prerequisite: MTH 108/109, MTH 110, or fulfillment of MTH 110 through Math Placement ( <i>gvsu.edu/s/mv</i> )	3
Gen Ed (GE Philosophy and Literature)	3	Gen Ed (GE Social/Behavioral)	3
<i>Total</i>	<i>13</i>	<i>Total</i>	<i>14</i>
Year Three			
<b>CHM 235/236</b> Organic Chemistry for Life Sciences I (w/lab) Prerequisite: CHM 127/128	4/1(7)	<b>CHM 237/238</b> Organic Chemistry for Life Sciences II (w/lab) Prerequisite: CHM 235/236	3/1(6)
<b>BMS 212</b> Introductory Microbiology Prerequisites: BIO 120 and (CHM 127/128, 231 or 234)	3	<b>BMS 290</b> Human Physiology Prerequisites: BMS 208 or BIO 302 and two semesters of chemistry	3
<b>BMS 213</b> Laboratory in Microbiology Prerequisite: BMS 212 or concurrent enrollment	1 (4)	<b>MTH 123</b> Trigonometry Prerequisite: MTH 122 or assignment through Grand Valley math placement (MTH 122 may be taken concurrently)	3
Gen Ed (GE Historical Analysis)	3	Gen Ed (GE Global Perspectives)	3
Gen Ed (GE US Diversity)	3		
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>13</i>
Year Four			
<b>CHM 461</b> Biochemistry I Prerequisite: CHM 237/238 or CHM 247/248	4	<b>PHY 221</b> General Physics II (w/lab & discussion) Prerequisites: PHY 220	5 (7)
<b>PHY 220</b> General Physics I (w/lab & discussion) Prerequisites: MTH 122 and MTH 123	5(7)	<b>BMS 309</b> Laboratory in Human Anatomy Prerequisite: BMS 208	2
<b>BMS 391</b> Laboratory in Human Physiology Prerequisite: BMS 290 or 251 and two semesters of chemistry	2	<sup>4</sup> Issue (SWS)	3
<sup>3</sup> Elective	1	Gen Ed (if remaining) or <sup>3</sup> Elective	3
<i>Total</i>	<i>12</i>	<i>Total</i>	<i>13</i>
Year Five			
<b>BIO 375</b> Genetics/ <b>BIO 376</b> Genetics Laboratory BIO 375 Prerequisites: BIO 120 or CMB 155 and 156 BIO 376 Prerequisites: BIO 375 or 355 (either may be taken concurrently)	3/1(6)	<sup>4</sup> <b>BMS 495</b> Concepts in Wellness (Capstone) SWS Prerequisites: BMS 208, BMS 212, BMS 290 or 391, and senior standing	3
<b>OR BIO 355</b> Human Genetics (lecture only) Prerequisite: BIO 120 or BIO 104	3	<sup>5</sup> Biomedical Science Elective (300 or 400-level)	3
<sup>5</sup> Biomedical Science Elective (300 or 400-level)	3	<sup>5</sup> Biomedical Science Elective (400-level, if not taken already)	3
Issue	3	<sup>3</sup> Elective	
<sup>3</sup> Elective	3		
<i>Total</i>	<i>12-13</i>	<i>Total</i>	<i>12</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 substitute for BIO 120 for those students interested in research.

<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 in order 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. **Consider a minor or certificate.**

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

<sup>5</sup>BMS Electives must consist of at least 9 hours of upper-division Biomedical Science courses. At least 3-credits must be at the 400-level. See list below.

### 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.
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

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

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

<u>Anatomy</u>	<u>Microbiology</u>	<u>Nutrition</u>
<sup>2</sup> BMS 355 Anatomy of Joints (2) w/Lab	<sup>1</sup> BMS 312 Bacterial Genetics (3) (only offered in even-numbered years)	BMS 305 Clinical Nutrition (3)
BMS 393 Lab Asst in Human Anatomy (1)	<sup>1</sup> BMS 313 Bacterial Genetics Laboratory (1) (only offered in even-numbered years)	<sup>1</sup> BMS 306 Advanced Human Nutrition (3)
<sup>1</sup> BMS 427 Neuroanatomy (1)	BMS 394 Lab Asst in Microbiology (1)	BMS 407 Nutrition in the Life Cycle (3)
<sup>1</sup> BMS 450 Human Histology (4) w/Lab	BMS 410 Immunology (3)	<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)	<u>General</u>
<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 Animal Developmental BIO (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)
<u>Physiology</u>	<sup>1</sup> BMS 423 Bacterial Physiology Laboratory (2) (only offered in odd-numbered years)	BMS 399 Readings in the Biomedical Sciences (1-3)
BMS 310 Basic Pathophysiology (3)	<sup>2</sup> BMS 431 Medical Virology (3)	BMS 492 Biomedical Sciences Internship (1-4)
BMS 311 Pharmacological Aspects of Biomedical Sciences (3)	<sup>1</sup> BMS 432 Medical Mycology (2)	BMS 499 Research in the Biomedical Sciences (1-3)
<sup>1</sup> BMS 375 The Biology of Aging (3)	<sup>1</sup> BMS 433 Medical Parasitology (3) w/Lab	CMB 405 Cell and Molecular Biology (4)
BMS 392 Laboratory Assistant in Physiology (1)	<sup>2</sup> BIO 416 Advanced Genetics Laboratory (2)	CMB 406 Cell and Molecular Biology Lab (2)
<sup>1</sup> BMS 409 Endocrinology (3)	CMB 451 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)	<i>Numbers in parentheses indicate # of credits</i>
<sup>2</sup> BMS 475 The Pathology of Aging (3)	CMB 426 Nucleic Acids Laboratory (3)	<sup>1</sup> Offered in Fall Only
BMS 453 Advanced Pharmacology (3)	<sup>2</sup> CMB 440 Research Applications in Drosophila Genomics (3) w/Lab	<sup>2</sup> Offered in Winter Only
<sup>2</sup> BMS 508 Advanced Human Physiology (3) <i>special permission needed</i>	CMB 452 Computer Modelling and Drug Design (3)	
	CMB 460 Genomics & Molecular Diagnostics (3)	

### Preprofessional Students

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

**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 Preprofessional 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 Preprofessional programs, visit [www.gvsu.edu/clasadvising/preprofessional](http://www.gvsu.edu/clasadvising/preprofessional)