

# 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)<br>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<br>Prerequisite: BIO 120  | 3            |
| <b>CHM 115</b> Principles of Chemistry I (w/lab)<br>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)<br>Prerequisites: CHM 115 and (MTH 122 or MTH 125 or MTH 201)  | 5 (7)        |
| <sup>2</sup> <b>MTH 122</b> College Algebra<br>Prerequisite: MTH 110 or by Grand Valley math placement   | 3         | <sup>3</sup> <b>WRT 130</b> or <b>WRT 150</b> Strategies in Writing<br>Gen Ed  | 3-4<br>3     |
| Gen Ed or <sup>3</sup> <b>WRT 120</b> (self-placement)   | 3         | <sup>4</sup> Elective (if needed)  | 1            |
| <sup>4</sup> Elective  | 1         |  |              |
| <i>Numbers noted within (parentheses) are contact hours</i> <b>Total</b>   | <b>15</b> | <b>Total</b>   | <b>15</b>    |
| Year Two   |           |  |              |
| <b>BMS 212</b> Introductory Microbiology<br>Prerequisites: BIO 120 and (CHM 116, 230 or 231)   | 3         | <b>BMS 290</b> Human Physiology<br>Prerequisites: BMS 208 and two semesters of chemistry   | 3            |
| <b>BMS 213</b> Laboratory in Microbiology<br>Prerequisite: BMS 212 or concurrent enrollment  | 1 (4)     | <b>CHM 242</b> Organic Chemistry for Life Sciences II (w/lab)<br>Prerequisite: CHM 241   | 4 (6)        |
| <b>CHM 241</b> Organic Chemistry for Life Sciences I (w/lab)<br>Prerequisite: CHM 116  | 5 (7)     | <sup>2</sup> <b>MTH 123</b> Trigonometry<br>Prerequisite: MTH 122 or assignment through Grand Valley math placement (MTH 122 may be taken concurrently)                                      | 3            |
| <b>STA 215</b> Introductory Applied Statistics<br>Prerequisite: MTH 110 or equivalent  | 3         | Gen Ed   | 3            |
| Gen Ed   | 3         | Gen Ed or <sup>4</sup> Elective  | 3            |
| <b>Total</b>   | <b>15</b> | <b>Total</b>   | <b>16*</b>   |
| Year Three   |           |  |              |
| <b>BMS 391</b> Laboratory in Human Physiology<br>Prerequisite: BMS 290 or 251 and two semesters of chemistry   | 2 (3)     | <b>BIO 375</b> Genetics/ <b>BIO 376</b> Genetics Laboratory<br>BIO 375 Prerequisites: BIO 120 or CMB 155 and 156<br>BIO 376 Prerequisites: BIO 375 or 355 (either may be taken concurrently) | 3/1(6)       |
| <b>CHM 461</b> Biochemistry I<br>Prerequisite: CHM 242 or CHM 247 and CHM 248  | 4         | <b>OR BIO 355</b> Human Genetics (lecture only)<br>Prerequisite: BIO 120 or BIO 104, or permission of instructor   | 3            |
| <b>PHY 220</b> General Physics I (w/lab & discussion)<br>Prerequisites: MTH 122 and MTH 123  | 5 (7)     | <b>PHY 221</b> General Physics II (w/lab & discussion)<br>Prerequisites: PHY 220   | 5 (7)        |
| Gen Ed   | 3         | Issue  | 3            |
| <sup>4</sup> Elective  | 1         | <sup>5</sup> Gen Ed (SWS)  | 3            |
| <b>Total</b>   | <b>15</b> | <b>Total</b>   | <b>14-15</b> |
| Year Four  |           |  |              |
| <sup>5</sup> <b>BMS 495</b> Concepts in Wellness (Capstone) SWS<br>Prerequisites: BMS 208, BMS 212, BMS 290 or 391, and senior standing  | 3         | <sup>6</sup> Biomedical Science Elective   | 3            |
| <sup>6</sup> Biomedical Science Elective   | 3         | <sup>6</sup> Biomedical Science Elective   | 3            |
| Issue  | 3         | Gen Ed or <sup>4</sup> Elective  | 3            |
| <sup>4</sup> Elective  | 3         | <sup>4</sup> Elective  | 3            |
| <sup>4</sup> Elective  | 3         |  |              |
| <b>Total</b>   | <b>15</b> | <b>Total</b>   | <b>15</b>    |

\*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 pass 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>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>4</sup>Elective refers to any course that will help you reach the required 120 credits to graduate. **Consider a minor or certificate.**

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

<sup>6</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><br>BMS 309 Laboratory in Human Anatomy (1)<br><sup>2</sup> BMS 355 Anatomy of Joints (2) w/Lab<br>BMS 393 Laboratory Assistant in Human Anatomy (1)<br><sup>1</sup> BMS 427 Neuroanatomy (1)<br><sup>1</sup> BMS 450 Human Histology (4) w/Lab<br><sup>2</sup> BMS 460 Regional Human Anatomy (4) w/Lab<br><sup>2</sup> BIO 302 Comparative Vertebrate Anatomy w/Lab (4)<br><sup>1</sup> BIO 422 Embryology (3) w/Lab<br><br><b>Physiology</b><br>BMS 310 Basic Pathophysiology (3)<br>BMS 311 Pharmacological Aspects of Biomedical Sciences (3)<br><sup>1</sup> BMS 375 The Biology of Aging (3)<br>BMS 392 Laboratory Assistant in Physiology (1)<br><sup>2</sup> BMS 426 Sensory Systems Neuroscience: Anatomy and Physiology (3)<br><sup>2</sup> BMS 428 Neurosciences (3)<br><sup>2</sup> BMS 475 The Pathology of Aging (3)<br><sup>2</sup> BMS 508 Advanced Human Physiology (3)<br><i>special permission needed</i> | <b>Microbiology</b><br><sup>1</sup> BMS 312 Bacterial Genetics (3) (only offered in even-numbered years)<br><sup>1</sup> BMS 313 Bacterial Genetics Laboratory (1) (only offered in even-numbered years)<br>BMS 394 Laboratory Assistant in Microbiology (1)<br>BMS 410 Immunology (3)<br><sup>2</sup> BMS 411 Immunology Laboratory (1)<br><sup>2</sup> BMS 412 Medical Bacteriology (3)<br><sup>2</sup> BMS 413 Medical Bacteriology Laboratory (2)<br><sup>1</sup> BMS 422 Bacterial Physiology (3) (only offered in odd-numbered years)<br><sup>1</sup> BMS 423 Bacterial Physiology Laboratory (2) (only offered in odd-numbered years)<br><sup>2</sup> BMS 431 Medical Virology (3)<br><sup>1</sup> BMS 432 Medical Mycology (2)<br><sup>1</sup> BMS 433 Medical Parasitology (3) w/Lab<br><sup>2</sup> BIO 416 Advanced Genetics Laboratory (2)<br>CMB 351 Bioinformatics: Tools and Techniques for Life Scientists (3)<br>CMB 411 Genetics of Development & Cancer (3)<br>CMB 414 Molecular Biology of the Gene (3)<br>CMB 426 Nucleic Acids Laboratory (3)<br><sup>2</sup> CMB 440 Research Applications in Drosophila Genomics (3) w/Lab<br>CMB 452 Computer Modelling of Biomolecules (3)<br>CMB 460 Genomics & Molecular Diagnostics (3) | <b>Nutrition</b><br><sup>2</sup> BMS 304 Community Nutrition (3)<br>BMS 305 Clinical Nutrition (3)<br><sup>1</sup> BMS 306 Advanced Human Nutrition (3)<br>BMS 407 Nutrition in the Life Cycle (3)<br><sup>2</sup> BMS 415 Nutrition and Physical Performance (3)<br><br><b>General</b><br>BMS 301 Introduction to Research in Biomedical Sciences (3)<br>BMS 380/480 Special Topics in the Biomedical Sciences (1-4)<br>BMS 399 Readings in the Biomedical Sciences (1-3)<br>BMS 492 Biomedical Sciences Internship (1-4)<br>BMS 499 Research in the Biomedical Sciences (1-3)<br>CMB 405 Cell and Molecular Biology (4)<br>CMB 406 Cell and Molecular Biology Lab (2)<br>CHM 462 Techniques in Biochemistry w/Lab (3)<br><sup>2</sup> CHM 463 Biochemistry II (3)<br><br><i>Numbers in parentheses indicate # of credits</i><br><sup>1</sup> <i>Offered in Fall Only</i><br><sup>2</sup> <i>Offered in Winter Only</i> |
|---|--|--|

**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)