BIOENGINEERING BS
Biomedical Prehealth Concentration (BMPH)
Fall 2016 – Spring 2017

Contact Information
- Honors College Advisor: Kathleen Alligood (alligood@gmu.edu)
- Undergraduate Advisor: Claudia Borke (cborke@gmu.edu)

Once students begin attending Mason and declare a major they should see both their Honors College and their major department advisor for advising. Students must confirm their major requirements with their department advisor and with PatriotWeb’s Degree Evaluation.

Note for students in the Volgenau School: Be aware of termination and repeat policies as outlined in the catalog. Students who get a warning that they will be terminated from Volgenau for GPA have one semester to either (1) meet the department’s requirements, or (2) change major; otherwise, they will have the “Terminated from Volgenau” designation placed on their transcript.

Advising Sheet
- Honors College Requirement
- Department Requirement

<table>
<thead>
<tr>
<th>1st Year – 1st Semester (Fall)</th>
<th>Credits</th>
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<tbody>
<tr>
<td>♦ HNRS 110: Research Methods (Grade C or better required)</td>
<td>4</td>
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<tr>
<td>♦ MATH 113: Analytic Geometry and Calculus I (a placement exam is required)</td>
<td>4</td>
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<tr>
<td>♦ CS 112: Introduction To Computer Programming (passing placement exam at the MATH 113 level is required)</td>
<td>4</td>
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<tr>
<td>♦ CHEM 211/213: General Chemistry I + lab or CHEM 211H² + lab</td>
<td>3/1</td>
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<tr>
<td>Semester Total</td>
<td>16</td>
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<tr>
<th>1st Year – 2nd Semester (Spring)</th>
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<tbody>
<tr>
<td>♦ CHEM 212/214 or CHEM 212H + lab: General Chemistry II + Lab²</td>
<td>3/1</td>
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<tr>
<td>♦ PHYS 160/161 or PHYS 160H/161: University Physics I (Pre- or co-requisite MATH 114 or MATH 116)²</td>
<td>3/1</td>
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<tr>
<td>♦ BENG 101: Intro to Bioengineering</td>
<td>3</td>
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<tr>
<td>♦ MATH 114: Analytic Geometry and Calculus II (prerequisite: &quot;B-&quot; or better in MATH 113) or MATH 116: Analytic Geometry and Calculus II Honors ²</td>
<td>4</td>
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<tr>
<td>♦ ENGR 107: Introduction to Engineering (Grade C or better required)</td>
<td>2</td>
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<tr>
<td>Semester Total</td>
<td>17</td>
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<th>2nd Year – 1st Semester (Fall)</th>
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<tr>
<td>♦ BIOL 213 or BIOL 213H: Cell Structure and Function²</td>
<td>4</td>
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<tr>
<td>♦ MATH 203: Linear Algebra (Prerequisite MATH 114 or MATH 116)¹</td>
<td>3</td>
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<tr>
<td>♦ MATH 213: Analytic Geometry and Calculus III or MATH 215: Calculus III Honors²</td>
<td>3</td>
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<tr>
<td>♦ PHYS 260/261 or PHYS 260H/261: University Physics II (Pre- or co-requisite MATH 213 or MATH 215)²</td>
<td>3/1</td>
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<tr>
<td>Semester Total</td>
<td>14</td>
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</table>
2nd Year – 2nd Semester (Spring)
- **BENG 313:** Physiology for Engineers 3
- **BENG 220:** Physical Bases of Biomedical Systems (Prerequisites: BENG 101, PHYS 160, MATH 213 or 215; Co-requisite: MATH 214 or 216) 3
- **MATH 214:** Elementary Differential Equations (Prerequisite MATH 213 or 215) or MATH 216 (additional Prerequisite MATH 203) 3
- **SOCI 101:** Introductory Sociology 3
  - **HNRS 122:** Reading the Arts 3

Semester Total 15

3rd Year – 1st Semester (Fall)
- **CHEM 313/315:** Organic Chemistry I and Lab 3/2
- **BENG 320:** Discrete Signals and Systems (pre-req: B- or better in MATH 214) 3
- **BENG 380/381:** Intro to Circuits and Electronics & Lab 3/1
- **HNRS 131:** Contemporary Society in Multiple Perspectives 3

Semester Total 15

3rd Year – 2nd Semester (Spring)
- **CHEM 314/318:** Organic Chemistry II and Lab 3/2
- **BENG 301/302:** BE Measurements & Lab 3/1
- **BENG 304:** Modeling and Control of Physiological Systems 3
- **PSYC 100:** Basic Concepts of Psychology 3

Semester Total 15

4th Year – 1st Semester (Fall)
- **HNRS 240:** Reading the Past 3
- **BENG 491:** BE Senior Seminar I 1
- **BENG 492:** Senior Advanced Design Project I 2
- **BENG 420:** Bioinformatics for Engineers 3
- **BIOL 483:** General Biochemistry 4
- **STAT 344:** Probability and Statistics for Engineers 3

Semester Total 16

4th Year – 2nd Semester (Spring)
- **HNRS 353:** Technology in the Contemporary World (grade of C or better required) 3
- **BENG 493:** Senior Advanced Design Project II 2
- **BENG 495:** BE Senior Seminar II 1
- **BIOL Tech Elective** 3-4
- **CS 222:** Computer Programming for Engineers, or CS 211 or CS 211H: Object-Oriented Programming 3

Semester Total 12-13

5th Year – 1st Semester (Fall)
- **ECE 301:** Digital Electronics 3
- **Technical Elective** 3
• Technical Elective\(^3\)  
  3

• Optional: BIOL Tech Elective\(^5\)  
  3-4

• PHIL 309: Bioethics (or a Mason Core humanities/social science substitute)\(^4\)  
  3

Semester Total 15-16

| Total Hours | 135-137 |

\(^1\) All bioengineers will be required to register for a specific section of MATH 203 including a 1-hour recitation with MATLAB applications

\(^2\) The Honors sections of these courses can be used to satisfy Honors College Requirement 3.

\(^3\) Students choose from sets of approved technical electives, including one of the Technical Electives from an approved life science course (See page 18 for details).

\(^4\) College requirements (VS) include 24 credit hours of department-approved, humanities and/or social science electives.

\(^5\) Students seeking admission to highly selective medical schools are advised to take an additional Biology/Chemistry Elective. Biology/Chemistry Electives include but are not limited to:

- BIOL 305/306 Microbiology (4)
- BIOL 311 General Genetics (3)
- BIOL 322/323 Developmental Biology (4)
- BIOL 425 Human Physiology (3)
- BIOL 382 Introduction to Virology (3)
- BIOL 430 Advanced Human Anatomy and Physiology I (4)

To ensure that they receive up to date and accurate advice, students interested in medical school must consult with the Pre-health Advisor:

Jane Rockwood  
Health Professions Advising Office  
Academic Advising Center, SUB I, 2500  
4400 University Drive, MS 2E6  
Fairfax, Virginia 22030  
Jrockwo1@gmu.edu

HONORS REQUIREMENTS (see advising section of Honors College website for further details)

All Honors College students earning a BS degree must complete HNRS 110, HNRS 122, HNRS 131, HNRS 240, and HNRS 353. HNRS 110 has no substitutions.

Students earning a BS degree must complete Requirement 3 (Advanced Topics) by taking two additional Honors courses beyond Requirements 1 and 2 of the Honors College Curriculum. These courses must be approved by your Honors College advisor in your Plan of Study.