



# Volgenau School of Engineering

## BIOENGINEERING, B.S.

2020 - 2021

### 2020-2021 Sample Schedule for BS in Bioengineering for BMPH

First Semester	Credits	Second Semester	Credits
MATH 113 Analytic Geometry & Calculus I	4	MATH 114 Analytic Geometry & Calculus II <sup>2</sup>	4
CHEM 211 General Chemistry I	3	PHYS 160 University Physics I	3
CHEM 213 General Chemistry I Lab	1	PHYS 161 University Physics I Lab	1
BENG 101 Introduction to Bioengineering	3	CHEM 212 General Chemistry II	3
Mason Core (ENGH 101) <sup>1</sup>	3	CHEM 214 General Chemistry II Lab	1
		CS 112 Introduction to Computer Programming	4
<b>Total Hours</b>	<b>14</b>	<b>Total Hours</b>	<b>16</b>

**Summer I:** CHEM 313/315 Organic Chemistry I +Lab AND CHEM 314/318 Organic Chemistry II +Lab – **10 credits**

Third Semester	Credits	Fourth Semester	Credits
MATH 213 Analytic Geometry & Calculus III	3	MATH 214 Elementary Differential Equations <sup>2</sup>	3
MATH 203 Linear Algebra <sup>3</sup>	3	BENG 230 Continuum Biomechanics and Transport I	3
PHYS 260 University Physics II	3	BENG 240 Biomaterials	3
PHYS 261 University Physics II Lab	1	BENG 241 Biomechanics and Biomaterials Lab	1
BIOL 213E Cell Structure & Function <sup>3</sup>	4	BENG 214 Physiology for Engineers	3
		BENG 320 Bioengineering Signals & Systems	3
<b>Total Hours</b>	<b>14</b>	<b>Total Hours</b>	<b>16</b>

**Summer II:** Mason Core (PSYC 100) AND Mason Core (Literature)<sup>1</sup> – **6 credits**

Fifth Semester	Credits	Sixth Semester	Credits
BENG 414 Pathophysiology & the Role of New Technologies in Human Diseases	3	BENG 360 Biomedical Imaging	3
Mason Core (Communication) <sup>1</sup>	3	BENG 370 Bioinstrumentation and Devices I	3
BENG 330 Computational Methods in BE	3	BENG 371 Bioinstrumentation and Devices Lab	1
BENG 331 Computational Methods in BE Lab	1	BENG 350 Neural System Designs	3
STAT 350 Introductory Statistics II	3	Mason Core (ENGH 302 Advanced Comp.: Nat Sci. and Multidisc.) <sup>1</sup>	3
BENG 391 BE Professional Development	1	BENG 475 Intellectual Property, Regulatory Concepts, & Product Development (Glob. Und.) <sup>1</sup>	3
<b>Total Hours</b>	<b>14</b>	<b>Total Hours</b>	<b>16</b>

**Summer III:** Mason Core (SOCI 101)<sup>1</sup> – **3 credits**

Seventh Semester	Credits	Eighth Semester	Credits
BENG 492 Senior Advanced Design Project I	3	BENG 493 Senior Advanced Design Project II	3
BENG Technical Elective #1*	3	BENG Technical Elective #2	3
Mason Core (Arts) <sup>1</sup>	3	BENG Technical Elective #3	3
BIOL 483 General Biochemistry	4	Mason Core (HIST 100 or 125) <sup>1</sup>	3
<b>Total Hours</b>	<b>13</b>	<b>Total Hours</b>	<b>12</b>

<sup>1</sup><http://catalog.gmu.edu/mason-core> Mason Core Categories: One course from each: Oral Communication, ENGH101, Arts, Global Understanding (BENG 475), Literature, Western Civilization/World History, Social Behavioral Science (ECON 103 or PSYC 100 or SOCI 101). ENGH 101 and Mason Core-Literature must be completed before taking ENGH 302.

<sup>2</sup>MATH 114 and MATH 214: B- and above required.

<sup>3</sup>All bioengineers will be required to register for a specific section of MATH 203 including a 1-hour recitation with practical applications and for a specific section of BIOL 213.

\*Students take three technical electives. Technical electives can be selected such that they can specialize within Pre-health (see [catalog.gmu.edu](http://catalog.gmu.edu)) or take technical electives in any combination, specified from the list given in the current catalog.

**Technical Electives – Select nine credits from the following:**

**Computational Biomedical Engineering** – BENG 420, BENG 430, BENG 435, BENG 550

**Biomedical Imaging and Devices Specialization** – BENG 437, BENG 438, BENG 470, BENG 538

**Biomaterials and Nanomedicine Specialization** – BENG 413, BENG 421, BENG 441, BENG 541

**Neurotechnology & Computational Neuroscience Specialization** – BENG 426, BENG 429, BENG 434, BENG 487, BENG 526

**Research and Design Specialization** – BENG 390, BENG 395, BENG 417, BENG 499, BENG 501