GEORGE MASON UNIVERSITY
VOLGENAU SCHOOL OF ENGINEERING
B.S. DEGREE IN BIOENGINEERING
(BIOENGINEERING HEALTHCARE INFORMATICS CONCENTRATION)
(3100 Peterson Hall, 703-993-4190)
http://bioengineering.gmu.edu/
2018 – 2019 CATALOG

	Department(s) & Course #(s)	Completed/ Grade(s)	Needed

MASON CORE REQUIREMENTS (21)

a. Written Communication: ENGH 101 (100), **ENGH 302 Natural Science or Multi Sections Only (C or better) (3,3)**
b. Oral Communication: COMM 100 or 101 (3)
c. Quantitative Reasoning (satisfied by completion of major requirements)
d. Literature (3)
e. Arts (3)
f. Western Civilization (HIST 100, 125, or acceptable transfer course)
g. Social and Behavioral Science: **Choose one of the following: ECON 103 (3), PSYC 100 (3), or SOCI 101 (3)**
h. Natural Science (satisfied by completion of major requirements)
i. Global Understanding (3)
j. Information Technology (satisfied by completion of major requirements)
k. Synthesis (satisfied by completion of major requirements)

Go to: http://catalog.gmu.edu/mason-core/ to link to information on Mason Core requirements.

BIOENGINEERING Major Requirements (98 credit hours required, including concentration)

Bioengineering (29 credits)
a. BENG 101, BENG 220 (3,3)
b. BENG 301, BENG 302 (3,1)
c. BENG 304, BENG 320 (3,3)
d. BENG 380, BENG 381 (3,1)
e. BENG 420 (3)
f. BENG 491, BENG 492 (1,2)
g. BENG 493, BENG 495 (2,1)
Biology (7 credits)
h. BIOL 213 (Bioengineering Section) & BENG 313 (4,3)
Computer Science (7 credits) & Engineering (2 credits)
i. CS 112 (4), and 211 **OR** CS 222 (3); ENGR 107 (2)
Math and Statistics (20 credits)
j MATH 113, MATH 114 **(B- and above)**(4,4)
k. MATH 213, MATH 214 **(B- and above)** (3,3)
l. MATH 203 **Bioengineering section only** (3), STAT 344 (3)
Physics (8 credits)
m. PHYS 160, PHYS 161 (3,1)
n. PHYS 260, PHYS 261 (3,1)

Bioengineering Healthcare Informatics Concentration (25 credits hours required)

a. CHEM 271/272 (4) **or** CHEM 211/213 (3,1)
c. BENG 322 (3) **or** HAP 436 (3)
c. HAP 301, HAP 360 (3,3)
d. IT 214 (3) **or** HAP 361 (3)
f. **Nine credits of Technical Electives chosen from the following** (circle choices): BENG 327, 341, 390, 395, 406, 421, 437, 441, 451, 499, 525, 538, 541, 550; (Students may choose to substitute one of the three credit technical electives with one of the following: BIOL 305/306, 311, 484 & CHEM 346; CHEM 313/315, CS 310, CS 444, CS 445, PSYC 372, ECE 305, 350, 370, 410, 421, 450; ME 313)

Students must complete each BENG, BIOL, ECE, and ENGR course presented as part of the required credits for the degree with a grade of C or better.

MINIMUM 120 HOURS (including Minimum 45 UPPER DIVISION HOURS) to GRADUATE

This planning form is intended to be used in consultation with your academic advisor and reflects the requirements for the 2018 - 2019 Catalog; the University Catalog is the official reference for program requirements.

2018-2019 Sample Schedule for
Undergraduate Bioengineering Health Care Informatics Concentration majors (BHI)

The BHI concentration focuses on the management, analysis and visualization of data related to biomedical and healthcare applications. **Total: 122 Credit Hours**

Semester 1		**Semester 2**	
MATH 113 Analytic Geom & Calc I	4	MATH 114 Analytic Geom. & Calc. II	4
ENGR 107 Intro to Engineering	2	PHYS 160 Univ Physics I	3
BENG 101 Intro into Bioengineering	3	PHYS 161 Univ Physics I Lab	1
Mason Core[*]	3	CS 112 Intro to Computer Programming	4
CHEM 211 + 213 OR	3	Mason Core*	3
CHEM 271+272 Gen, Chem. For Engr.	4		
	16		15
Semester 3		**Semester 4**	
MATH 213 Analytic Geom. & Calc. III	3	MATH 214 Elem. Differential Equations	3
MATH 203 Linear Algebra[1]	3	BENG 220 Physical Bases of Biomed. Syst.	3
PHYS 260 University Physics II	3	BENG 313 Physiology for Engineers	3
PHYS 261 University Physics II Lab	1	HAP 301 Healthcare Delivery	3
BIOL 213 Cell Structure and Function[1]	4	HAP 360 Intro to Health Inform. Systems	3
Mason Core[*]	3		
	17		15
Semester 5		**Semester 6**	
BENG 320 Bioengineering Signals & Sys.	3	BENG 301 BE Measurements	3
BENG 380 Intro to Circuits & Electronics	3	BENG 302 BE Measurements Lab	1
BENG 381 Circuits and Electronics Lab	1	BENG 304 Model. Control of Physiol. Sys.	3
STAT 344 Prob & Statistics for Engr.	3	CS 222 OR CS 211	3
IT 214 Database Fundamentals[2] **OR**		BENG 322 Health Data Challenges **OR**	
HAP 361 Health Databases	3	HAP 436 Electr.Health Data in Proc. Impr.	3
Mason Core[*]	3	Mason Core[*]	3
	16 .		16
Semester 7		**Semester 8**	
BENG 420 Bioinformatics for Engineers	3	BENG 495 BE Senior Seminar II	1
BENG 491 BE Senior Seminar I	1	BENG 493 Senior Adv. Design Project II	2
BENG 492 Senior Adv. Design Project I	2	Technical Elective[4]	3
Technical Elective[4]	3	Technical Elective[4]	3
Mason Core[1]	3	Mason Core[1]	3
ENGH 302 Adv Comp **	3		
	15		12

[*] http://masoncore.gmu.edu Mason Core Categories: One course from each: Social and Behavioral Sciences (ECON103, PSYC100 OR SOCI 101), Oral Communication, Composition I, Arts, Global Understanding, Literature, Western Civilization/World History. ** Composition I and Mason Core-Literature must be completed before taking ENGH 302. ENGH 302 needs to be completed before Senior Design Projects. BIOE allows for ENG 302 natural science section or multidisciplinary section.

[1] 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.

[2] To sign up for IT 214 please request an override with the IST department. The Override Request Form can be found on their webpage: https://ist.gmu.edu/students/current-students/registering-for-classes/registration-errors-and-overrides/

[3] Students choose from sets of approved technical electives, including one of the Technical Electives from an approved life science course.