

BIOMEDICAL ENGINEERING, B.S.

FOUR-YEAR PLAN

SAMPLE FOUR-YEAR PLAN

First Year

Fall	Credits	Spring	Credits
MATH 221		5 MATH 222	4
CHEM 109 (or CHEM 103 & CHEM 104) ^{1, Med}		5 E M A 201, PHYSICS 201, or PHYSICS 207 ^{3, Med}	3
Communications A		3 CHEM 343 or 341 ^{4, Med}	3
INTEREGR 170 ²		3 Liberal Studies Elective	3
		COMP SCI 200, 220, 300, or 310 ⁵	3-4
		16	16-17

Second Year

Fall	Credits	Spring	Credits
B M E 200 ⁶		1 B M E 201	2
MATH 234		4 MATH 320 or 319	3
PHYSICS 202 or 208 ^{Med}		5 E M A 303 or M E 306	3
CHEM 345 or 327 ^{4, Med}		3 Select one of the following options:	5
B M E 325, STAT 324, or STAT 431 ^{5, Med}		ZOOLOGY/ BIOLOGY 101 & ZOOLOGY/ BIOLOGY 102	
		ZOOLOGY/BIOLOGY/ BOTANY 151 ^{Med}	
		BIOCORE 381 & BIOCORE 382 (the first lab-382- is recommended not required) ^{7, Med}	
		B M E 310 ⁸	3
		16	16

Third Year

Fall	Credits	Spring	Credits
B M E 300 ⁶		1 B M E 301 ⁶	1
CHEM 344 (or CHEM 327 in second year) ^{Med}		2 Liberal Studies Elective	1
INTEREGR 397 (if ZOOLOGY 152 or BIOCORE 384 is not taken) ⁹		3 Free elective credits	3
Liberal Studies Elective		2 Select one of the following options: ^{Med}	5
Engineering Technical Elective		2 ANAT&PHY 335	
B M E 315 ⁸		3 ANAT&PHY 435	

Area-Required Engineering Technical Elective	3	BIOCORE 485 & BIOCORE 486	
E C E 230		B M E/PHM SCI 430 ⁸	3
E C E 330		Area-Engineering Technical Elective	3
E M A 202 or M E 240			
B M E 330 or CBE 320			
		16	16

Fourth Year

Fall	Credits	Spring	Credits
B M E 400		3 B M E 402 ⁶	1
Liberal Studies Elective		3 Liberal Studies Elective ^{Med}	3
Free elective credits		1 Liberal Studies Elective ^{Med}	3
Advanced Zoology Elective, select one of the following:		3 Free elective credits	2
ANAT&PHY 337		Engineering Technical Elective	1
GENETICS 466		Advanced Biomedical Engineering Technical Elective	3
ZOOLOGY 430		Area-Engineering Technical Elective	3
ZOOLOGY 470			
ZOOLOGY/ PSYCH 523			
ZOOLOGY 570			
ZOOLOGY 611			
BIOCORE 587			
Area-Engineering Technical Elective		3	
Area-Engineering Technical Elective		3	
		16	16

Total Credits 128-129

FOOTNOTES

Med—These courses are identified as requirements for most medical schools and are included within the 128 degree credits. Students not wishing to attend medical school may choose any of the listed options. Choosing other options (such as CHEM 103/CHEM 104 vs. CHEM 109 or INTEREGR 397 vs. ZOOLOGY/BIOLOGY/BOTANY 152) will affect the total number of credits.

Medical schools have varying requirements. Liberal electives, free electives, and zoology electives can often be used to satisfy these.

Check requirements early. For example, to prepare for the MCAT it is recommended that students take psychology and sociology. In addition, UW—Madison and others require an intermediate humanities or social science with an intensive writing component (Comm B). All these can be fulfilled within the liberal studies requirements and thus early planning starting freshman year is important. A good resource is: <http://prehealth.wisc.edu/>.

¹ CHEM 103 General Chemistry I & CHEM 104 General Chemistry II may be substituted for CHEM 109 Advanced General Chemistry.

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For this choice, the excess 4 credits are counted as free electives. Most medical schools require one year of basic chemistry. UW–Madison’s medical school (and others) accepts CHEM 109 as a full-year equivalent.

2 INTEREGR 170 Design Practicum is required only for students directly admitted to B M E as freshmen and counts toward the 48 engineering credits.

3 It is highly recommended that students take E M A 201 Statics instead of PHYSICS 201 General Physics. If PHYSICS 201 is chosen instead of E M A 201, another engineering course from a degree-granting engineering program must be substituted for E M A 201. The excess 5 credits from PHYSICS 201 are counted as free elective credits. PHYSICS 207 General Physics & PHYSICS 208 General Physics may be used to substitute for PHYSICS 201 General Physics & PHYSICS 202 General Physics.

4 CHEM 341 Elementary Organic Chemistry may be substituted by those students who are not interested in satisfying premed requirements and who expect to take only one semester of organic chemistry (CHEM 341 is not permitted as a prerequisite for CHEM 344 Introductory Organic Chemistry Laboratory/CHEM 345 Intermediate Organic Chemistry).

Either CHEM 344/ CHEM 345 or CHEM 327 Fundamentals of Analytical Science (or CHEM 329 Fundamentals of Analytical Science) is required.

Premeds or students interested in biomaterials, cellular and tissue engineering should choose to take CHEM 343 Introductory Organic Chemistry, CHEM 344, and CHEM 345.

5 It is recommended that students take statistics and/or computer science in the freshman year for those needing additional core course options.

6 Students who are admitted late to the program and/or students who take part in another experience (such as co-op and/or study abroad) missing B M E 200 Biomedical Engineering Design, B M E 300 Biomedical Engineering Design, or B M E 301 Biomedical Engineering Design may substitute for up to two of these courses for the semester they are not in the program or at UW-Madison.

Approved substitutions include: B M E 1 Cooperative Education Program 1 cr, engineering research credit, or any 200-level or above additional engineering technical elective lab experience.

For more information on the unique design sequence see: <http://bmedesign.engr.wisc.edu/about/>.

7 Students very serious about medical school and learning about biology may select to apply for BIOCORE, a rigorous biology honors program:

- BIOCORE 381 Evolution, Ecology, and Genetics
- BIOCORE 382 Evolution, Ecology, and Genetics Laboratory
- BIOCORE 383 Cellular Biology
- BIOCORE 384 Cellular Biology Laboratory
- BIOCORE 485 Principles of Physiology
- BIOCORE 486 Principles of Physiology Laboratory

The BIOCORE courses have limited enrollment and students must be accepted into this program (applying as freshman). It is generally advisable to complete the entire sequence once it is started.

Only BIOCORE 382 Evolution, Ecology, and Genetics Laboratory is not required and is not necessary to fulfill premed requirements; however, it is recommended as it has been helpful in understanding the BIOCORE lab process. If all the other BIOCORE courses are taken (a total of 16 cr), this will replace the ZOOLOGY/BIOLOGY 101 Animal Biology and ZOOLOGY/BIOLOGY 102 Animal Biology Laboratory,

the Advanced Life Science Elective, ANAT&PHY 335 Physiology, and INTEREGR 397 Engineering Communication.

8 The three core courses are all required: B M E 310 Bioinstrumentation, B M E 315 Biomechanics, B M E/PHM SCI 430 Biological Interactions with Materials, but they can be taken in any order. It is recommended that students take the one in their track of interest first, or as early as possible.

9 ZOOLOGY/BIOLOGY/BOTANY 152 Introductory Biology, which satisfies Communication Part B, may be substituted for INTEREGR 397 Engineering Communication. For the Biocore program, BIOCORE 384 Cellular Biology Laboratory substitutes for INTEREGR 397 Engineering Communication.

Students interested in going to medical school should use this space/credits for BIOCHEM 501 Introduction to Biochemistry which is required for the MCAT.