BIOMEDICAL ENGINEERING

REQUIREMENTS

CORE CURRICULUM

The Core Curriculum is designed to foster critical thinking skills and introduce students to basic domains of thinking that transcend disciplines. The Core applies to all majors. Information on specific classes in the Core can be found at marshall.edu/gened.

CORE 1: CRIT	ICAL THINKING				COF	RE 2:				
CODE	COURSE NAME		HRS	GRADE		CODE COL	JRSE NAME		HRS	GRADE
FYS 100	First Year Seminar	•	3			ENG 101	Beginning Composition	•	3	
MTH 229	Critical Thinking Course	•	5			ENG 201	Advanced Composition	•	3	
	Critical Thinking Course	•	3			CMM 103	Fund Speech-Communication	•	3	
						MTH 229	Calculus I (CT)	• •	5	
Additiona	al University Requirements					BSC 120/120L	Principles of Biology I/	• •	4	
	Writing Intensive		3				BSC120L			
	Writing Intensive		3				Core II Humanities	•	3	
	Multicultural or International		3				Core II Social Science	•	3	
BME 465	Capstone I		2				Core II Fine Arts	•	3	
BMF 466	Capstone II		2							

MAJOR-SPECIFIC

All Biomedical Engineering majors are required to take the following courses:

	CODE	COURSE NAME		HRS	GRADE		CODE	COURSE NAME		HRS	GRADE
	MTH 229	Calculus I	• •	5			EE 202	Circuits II	•	3	
	MTH 230	Calculus II	•	4			ENGR 102	Introduction to CAD	•	2	
	MTH 231	Calculus III	•	4			ENGR 104	Engineering Profession	•	1	
P	MTH 335	Differential Equations	•	3			ENGR 111	Engineering Computations	•	3	
	BSC 120	Principles of Biology I	• •	3		.	ENGR 213	Statics	•	3	
	BSC 120L	Principles of Biology I Lab	• •	1		.	ENGR 214	Dynamics	•	3	
	BSC 121	Principles of Biology II	•	3			ME 245	Circuits and Instrumentation	•	3	
	BSC 121L	Principles of Biology II Lab	•	1			ME 360	Fluid Dynamics	•	4	
	BSC 227	Human Anatomy	•	3			BME 101	Intro to Biomedical Engineering	•	1	
	BSC 227L	Human Anatomy Lab	•	1			BME 201	Biomedical Engineering Seminar	•	2	
þ	BSC 228	Human Physiology	•	3			BME 302	Engineering Biomechanics	•	3	
P	BSC 228L	Human Physiology Lab	•	1			BME 305	Intro to Biophysical Measurement	•	3	
	CHM 211	Chemistry I	•	3			BME 306	Mechanics of Biological Tissues	•	3	
	CHM 217	Chemistry I Lab	•	2		-	BME 310	Modeling & Simulat of BME Syst	•	3	
	CHM 212	Chemistry II	•	3		-	BME 405	Mech & Performance Biomaterials	•	3	
	CHM 218	Chemistry II Lab	•	2			BME 460	Mechanics of Bio-Fluids	•	3	
	PHY 211	University Physics I	•	4		-	BME 465	Capstone I	• •	2	
	PHY 213	University Physics II	•	4			BME 466	Capstone II	• •	2	
								BME Technical Elective	•	3	
								BME Technical Elective	•	3	

MAJOR INFORMATION

- · Students are required to know and track their degree requirements for graduation or for entrance to a professional school.
- BME Technical Elective: At least two BME technical electives must be taken from the following list of courses: any BSC 300- or 400-level course, any CHM 300- or 400-level course, ENGR 222, ENGR 451, ME 330, or any BME 300- or 400-level course not already taken to satisfy degree requirements.
- The B.S.B.M.E. degree program requires a minimum of 136 credit hours of coursework.
- Course offerings and course attributes are subject to change each semester. Please consult each semester's schedule of courses for availability and attributes.

🗬 Milestone Course: This is a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

General Education Requirement

Area of Emphasis

Major Requirement

College Requirement

🗬 Milestone Course: This is a key success marker for your major. See your advisor to discuss the importance of this course in your plan of study.

2022-2023

TOTAL HOURS

Summer Term (optional):

BIOMEDICAL ENGINEERING

The Biomedical Engineering discipline is the application of engineering principles and design concepts to medicine and biology for health care purposes. This discipline aims to narrow the gap between engineering and medicine, combining the design and problem-solving skills of engineering with medical and biosciences to advance health care treatment, including diagnosis, monitoring, and therapy. Biomedical engineering has only recently emerged as its own study, compared to many other engineering fields. Biomedical engineering is a rapidly growing field, and Marshall University has a unique program that will highlight the technical

	any ot gths c	of the univers	sity and garner interest in the develop	ment	of the I	oiomedica	l indus	stry in the st	ate.			
			FALL SEMESTER						SPRING SEMESTER			
		CODE	COURSE NAME		HRS	GRADE		CODE	COURSE NAME	_	HRS	GRADE
		BME 101	Intro to Biomedical Engineer	•	1	CHARLE		BSC 120	Principles of Biology I	• •	3	CIUIDE
		BSC 227	Human Anatomy	•	3			BSC 120L	Principles of Biology I Lab	• •	1	
(F)		BSC 227L	Human Anatomy Lab	•	1			BSC 228	Human Physiology	•	3	
ONE		ENG 101	Beginning Composition	•	3			BSC 228L	Human Physiology Lab	•	1	
		ENGR 104	Engineering Profession	•	1			ENGR 102	Introduction to CAD	•	2	
YEAR		FYS 100	First Year Seminar	•	3			ENGR 111	Engineering Computations	•	3	
XE		MTH 229	Calculus I (CT)	• •	5			MTH 230	Calculus II	•	4	
	(=4.	UNI 100	Freshman First Class		1			WIII1250	Calculus II	•		
		TOTAL HO			18			TOTAL HO	URS		17	
	Sum	nmer Term (opt	tional):									
			FALL SEMESTER						SPRING SEMESTER			
		CODE	COURSE NAME		HRS	GRADE		CODE	COURSE NAME		HRS	GRADE
		BME 201	Biomedical Engineering Seminar	•	2			BSC 121	Principles of Biology II	•	3	
		CHM 211	Chemistry I	•	3			BSC 121L	Principles of Biology II Lab	•	1	
0		CHM 217	Chemistry I Lab	•	2			CHM 212	Chemistry II	•	3	
TWO	**	ENGR 213	Statics	•	3			CHM 218	Chemistry II Lab	•	2	
	**	MTH 231	Calculus III	•	4		***	ENGR 214	Dynamics	•	3	
YEAR		PHY 211	University Physics I	•	4			PHY 213	Physics II	•	4	
YE		=			•				,			
		TOTAL HO	URS		18			TOTAL HO	URS		16	
	Sum	mer Term (opt										
	Sum	nmer Term (opt										
	Sum	nmer Term (opt		_					SPRING SEMESTER		_	
	Sum	nmer Term (opt	tional):		HRS	GRADE		CODE			HRS	GRADE
	Sum		tional): FALL SEMESTER			GRADE			SPRING SEMESTER	•	HRS 3	GRADE
€	Sum	CODE	FALL SEMESTER COURSE NAME		3	GRADE		CODE	SPRING SEMESTER	* *		GRADE
REE	Sum	CODE BME 302	FALL SEMESTER COURSE NAME Engineering Biomechanics		3	GRADE	•	CODE BME 306	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues		3	GRADE
HREE	Sum	CODE BME 302 BME 305	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement		3	GRADE		CODE BME 306 BME 310	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst	•	3	GRADE
THREE	Sum	CODE BME 302 BME 305 ME 245	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation		3 3	GRADE		CODE BME 306 BME 310 EE 202	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II	*	3 3 3	GRADE
EG.	Sum	CODE BME 302 BME 305 ME 245	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation		3 3	GRADE		CODE BME 306 BME 310 EE 202 ENG 201	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition	*	3 3 3 3	GRADE
	Sum	CODE BME 302 BME 305 ME 245	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation		3 3	GRADE		CODE BME 306 BME 310 EE 202 ENG 201	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition	*	3 3 3 3	GRADE
EG.	Sum	CODE BME 302 BME 305 ME 245	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics		3 3	GRADE	***	CODE BME 306 BME 310 EE 202 ENG 201	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations	*	3 3 3 3	GRADE
EG.		CODE BME 302 BME 305 ME 245 ME 360	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics		3 3 3 4	GRADE		CODE BME 306 BME 310 EE 202 ENG 201 MTH 335	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations	*	3 3 3 3	GRADE
EG.		CODE BME 302 BME 305 ME 245 ME 360	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional):		3 3 3 4	GRADE	**	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS	*	3 3 3 3	GRADE
EG.		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER		3 3 3 4		**	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER	*	3 3 3 3 15	
EG.		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO Inner Term (opti	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER COURSE NAME	•	3 3 3 4 4 13 HRS	GRADE	**	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335 TOTAL HO	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER COURSE NAME	•	3 3 3 3 15	GRADE
EG.		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER COURSE NAME Mech & Performance of		3 3 3 4		**	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER COURSE NAME Capstone II	•	3 3 3 3 15	
YEAR		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO Inner Term (option of the code) CODE BME 405	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER COURSE NAME Mech & Performance of Biomaterials	•	13 HRS		***	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335 TOTAL HO	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER COURSE NAME Capstone II BME Technical Elective	•	3 3 3 3 3 15 HRS 2 3	
YEAR		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO Inner Term (option CODE BME 405 BME 460	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER COURSE NAME Mech & Performance of Biomaterials Mechanics of Bio-Fluids	•	13 HRS 3		***	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335 TOTAL HO	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER COURSE NAME Capstone II BME Technical Elective Core II Humanities (WI, CT)	•	3 3 3 3 15	
YEAR		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO Inner Term (option of the code) CODE BME 405	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER COURSE NAME Mech & Performance of Biomaterials Mechanics of Bio-Fluids Capstone I	•	13 HRS 3		**	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335 TOTAL HO	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER COURSE NAME Capstone II BME Technical Elective Core II Humanities (WI, CT) Core II Social Science (MC/I, WI)	•	3 3 3 3 3 15 HRS 2 3	
YEAR		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO Inner Term (opt CODE BME 405 BME 460 BME 465	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER COURSE NAME Mech & Performance of Biomaterials Mechanics of Bio-Fluids Capstone I BME Technical Elective	•	13 HRS 3		***	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335 TOTAL HO	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER COURSE NAME Capstone II BME Technical Elective Core II Humanities (WI, CT)	•	3 3 3 3 3 15 HRS 2 3	
EG.		CODE BME 302 BME 305 ME 245 ME 360 TOTAL HO Inner Term (option CODE BME 405 BME 460	FALL SEMESTER COURSE NAME Engineering Biomechanics Intro to Biophysical Measurement Circuits and Instrumentation Fluid Dynamics URS tional): FALL SEMESTER COURSE NAME Mech & Performance of Biomaterials Mechanics of Bio-Fluids Capstone I	•	13 HRS 3		**	CODE BME 306 BME 310 EE 202 ENG 201 MTH 335 TOTAL HO	SPRING SEMESTER COURSE NAME Mechanics of Biological Tissues Modeling & Simulation of BME Syst Circuits II Advanced Composition Differential Equations URS SPRING SEMESTER COURSE NAME Capstone II BME Technical Elective Core II Humanities (WI, CT) Core II Social Science (MC/I, WI)	•	3 3 3 3 3 15 HRS 2 3 3 3	

TOTAL HOURS