CURRICULUM PLAN COLLEGE OF INFORMATION TECHNOLOGY AND ENGINEERING 2019-2020

MY ADVISOR'S NAME IS: _____

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: CRITICAL THINKING

CODE	COURSE NAME	HRS	GRADE
FYS 100	First Year Seminar	3	
MTH 229	Calculus I	5	
_____	Critical Thinking Course	3	
	Additional University Requirements		
_____	Writing Intensive	3	
_____	Writing Intensive	3	
_____	Multicultural or International	3	
BME 465	Capstone I	2	
BME 466	Capstone II	2	

CORE 2:

CODE	COURSE NAME	HRS	GRADE
ENG 101	Composition I	3	
ENG 201	Composition II	3	
CMM 103	Fund Speech-Communication	3	
MTH 229	Calculus I (CT)	5	
BSC 120	Principles of Biology I	4	
_____	Core II Humanities	3	
_____	Core II Social Science	3	
_____	Core II Fine Arts	3	

MAJOR-SPECIFIC

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

CODE	COURSE NAME	HRS	GRADE
MTH 229	Calculus I	5	
MTH 230	Calculus II	4	
MTH 231	Calculus III	4	
MTH 335	Differential Equations	3	
BSC 120	Principles of Biology I	4	
BSC 121	Principles of Biology II	4	
BSC 227	Human Anatomy	4	
BSC 228	Human Physiology	4	
CHM 211	Chemistry I	3	
CHM 217	Chemistry I Lab	2	
CHM 212	Chemistry II	3	
CHM 218	Chemistry II Lab	2	
PHY 211	Physics I	3	
PHY 213	Physics II	4	
ENGR 102	Introduction to CAD	2	
ENGR 104	Engineering Profession	1	
ENGR 111	Engineering Computations	3	
ENGR 202 or BSC 322	Circuits II or Principles of Cell Biology	4	
ENGR 213	Statics	3	
ENGR 214	Dynamics	3	

CODE	COURSE NAME	HRS	GRADE
ENGR 216	Mechanics of Deformable Bodies	3	
ENGR 219 or CHM 355	Engineering Thermodynamics or Organic Chemistry I	3	
ENGR 245	Intro to Circuits & Instrumentation	3	
ENGR 318	Fluid Mechanics	3	
BME 101	Intro to Biomedical Engineering	1	
BME 201	Biomedical Engineering Seminar	2	
BME 302	Engineering Biomechanics	3	
BME 305	Intro to Biophysical Measurement	3	
BME 306	Mechanics of Biological Tissues	3	
BME 310	Modeling & Simulat of BME Syst	3	
BME 405	Mech & Performance Biomaterials	3	
BME 460	Mechanics of Bio-Fluids	3	
BME 465	Capstone I	2	
BME 466	Capstone II	2	
_____	BME Technical Elective	3	
_____	BME Technical Elective	3	
_____	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: Four 300 or 400 level biomedical engineering or closely related courses must be taken. The courses must be approved by the student's advisor and the division's chair.
- 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.

Area of Emphasis ◆ Major Requirement ■ College Requirement ● General Education 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.

FOUR YEAR PLAN COLLEGE OF INFORMATION TECHNOLOGY AND ENGINEERING 2019-2020

MY ADVISOR'S NAME IS: _____

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 strengths of the university and garner interest in the development of the biomedical industry in the state.

YEAR ONE

FALL SEMESTER					SPRING SEMESTER				
CODE	COURSE NAME		HRS	GRADE	CODE	COURSE NAME		HRS	GRADE
ENG 101	Beginning Composition	●	3		MTH 230	Calculus II	◆	4	
MTH 229	Calculus I (CT)	● ◆	5		CHM 212	Chemistry II	◆	3	
FYS 100	First Year Sem Crit Thinking	●	3		CHM 218	Chemistry II Lab	◆	2	
ENGR 104	Engineering Profession	◆	1		ENGR 111	Engineering Computations	◆	3	
BME 101	Intro to Biomedical Engineer	◆	1		BSC 120	Principles of Biology I	◆	4	
CHM 211	Chemistry I	◆	3		ENGR 102	Introduction to CAD	◆	2	
CHM 217	Chemistry I Lab	◆	2						
UNI 100	Freshman First Class		1						
TOTAL HOURS			**19**		**TOTAL HOURS**			**18**	

Summer Term (optional):

YEAR TWO

FALL SEMESTER					SPRING SEMESTER				
CODE	COURSE NAME		HRS	GRADE	CODE	COURSE NAME		HRS	GRADE
MTH 231	Calculus III	◆	4		PHY 213	Physics II	◆	4	
BSC 227	Human Anatomy	◆	4		BSC 121	Principles of Biology II	◆	4	
BME 201	Biomedical Engineering Seminar	◆	2		ENGR 216	Mechanics of Deformable Bodies	◆	3	
PHY 211	Physics I	◆	4		ENGR 214	Dynamics	◆	3	
ENGR 213	Statics	◆	3		BSC 228	Human Physiology	◆	4	
TOTAL HOURS			**17**		**TOTAL HOURS**			**18**	

Summer Term (optional):

YEAR THREE

FALL SEMESTER					SPRING SEMESTER				
CODE	COURSE NAME		HRS	GRADE	CODE	COURSE NAME		HRS	GRADE
MTH 335	Differential Equations	◆	3		ENGR 318	Fluid Mechanics	◆	3	
BME 305	Intro to Biophysical Measurement	◆	3		ENG 201	Advanced Composition	●	3	
CMM 103	Fund Speech-Communications	●	3		BME 310	Modeling & Simulation of BME Syst	◆	3	
BME 302	Engineering Biomechanics	◆	3		BME 306	Mechanics of Biological Tissues	◆	3	
ENGR 245	Intro to Circuits & Instrumentation	◆	3		ENGR 202 or BSC 322	Circuits II or Principles of Cell Biology	◆	4	
ENGR 219 or CHM 355	Engineering Thermodynamics or Organic Chemistry I	◆	3		_____	Core II Social Science (MC/I, WI)	● ◆	3	
TOTAL HOURS			**18**		**TOTAL HOURS**			**19**	

Summer Term (optional):

YEAR FOUR

FALL SEMESTER					SPRING SEMESTER				
CODE	COURSE NAME		HRS	GRADE	CODE	COURSE NAME		HRS	GRADE
BME 405	Mech & Performance of Biomaterials	◆	3		_____	BME Technical Elective	◆	3	
_____	BME Technical Elective	◆	3		_____	BME Technical Elective	◆	3	
_____	BME Technical Elective	◆	3		BME 466	Capstone II	◆	2	
BME 465	Capstone I	◆	2		_____	Core II Humanities (WI, CT)	●	3	
BME 460	Mechanics of Bio-Fluids	◆	3		_____	Core II Fine Arts	●	3	
TOTAL HOURS			**14**		**TOTAL HOURS**			**14**	

Summer Term (optional):

Area of Emphasis ◆ Major Requirement ■ College Requirement ● General Education 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.

BIOMEDICAL ENGINEERING — 2019-2020

INVOLVEMENT OPPORTUNITIES

- Student Government Association
- Campus Activity Board
- JMELI
- Commuter Student Advisory Board
- Club Sports
- Religious Organizations
- Political Organizations
- Residence Hall Association
- Cultural Organizations
- National Society of Leadership and Success

RELATED MAJORS

- Business
- Mathematics
- Statistics
- Geography
- Geology

GRADUATION REQUIREMENTS

- Have a minimum of 120 credit hours (some colleges or majors require more);
- Have an overall and Marshall Grade Point Average of 2.00 or higher;
- Have an overall Grade Point Average of 2.00 or higher in the major area of study;
- Have earned a grade of C or better in English 201 or 201 H;
- Have met all major(s) and college requirements;
- Have met the requirements of the Core Curriculum;
- Have met the residence requirements of Marshall University, including 12 hours of 300/400 level coursework in the student's college (see section entitled "Residence Requirements" in the undergraduate catalogue);
- Be enrolled at Marshall at least one semester of the senior year;
- Have transferred no more than 72 credit hours from an accredited West Virginia two-year institution of higher education.

Colleges and specific programs may have unique requirements that are more stringent than those noted above. Students are responsible for staying informed about and ensuring that they meet the requirements for graduation.

This academic map is to be used as a guide in planning your coursework toward a degree. Due to the complexities of degree programs, it is unfortunate but inevitable that an error may occur in the creation of this document. The official source of degree requirements at Marshall University is DegreeWorks available in your myMU portal. Always consult regularly with your advisor.

YEAR ONE

Have questions? Need to talk? You already have a Friend-At-Marshall ready to help you succeed. Find your FAM Peer Mentor here: www.marshall.edu/fam

Stay on the Herd Path and come to class! Class attendance is more important to your success than your high school GPA, your class standing, or your ACT/SAT scores.

In order to graduate on time, you need to take an average of 15 credits per semester. Are you on track? Take 15 to Finish.

Take a career self-assessment to help determine what majors fit your talents and interests and consider job shadowing opportunities.

Take a pulse check. Know what you need to do every year to keep your grants, scholarships, or federal financial aid.

Declare a major before your 30th hour. Participate in a Career Exploration Experience (job shadow) to help decide on your major and career goals.

Explore peer leadership opportunities through the FAM Program, or apply to be a UNI Peer Mentor.

YEAR TWO

Are you completing enough credits to graduate on time? Dropping or failing a class can put you behind. Use summer terms to quickly get back on track.

Run for Student Government and represent your fellow students while making a longterm difference on Marshall's campus.

No need to wait until graduate school. Discuss undergraduate research opportunities with faculty in your major right now.

In order to work in your field, you need to take a certification exam. Develop a study strategy now. Check with your advisor.

Don't enter your field with zero experience! Secure an internship related to your field of study.

Join or create a club or organization on campus about a particular issue you care about. Marshall has more than 200 student organizations.

Meet with a career education specialist to conduct a "gap analysis." Figure out the skills you'll need for the career you want while you still have time to build them.

YEAR THREE

Attend an intercultural festival or event on campus or in town.

Talk to faculty about pursuing optional professional certifications.

Are you on track to graduate? Meet with your advisor for your Junior Eval to make sure you know what requirements you have left.

Run for Student Government and represent your fellow students while making a longterm difference on Marshall's campus.

Networking is key! Attend a Career Expo to seek employment opportunities and network with employers in your field.

Prepare for and pass the FE exam.

Your degree requires an internship. Start planning now! Meet with your advisor to discuss your internship options.

YEAR FOUR

This is it! Are you on track to graduate? Meet with your advisor for your Senior Eval to see what requirements you have left.

Want to continue your education and increase your opportunities? Talk to a faculty member about whether graduate school fits you career goals.

Strengthen your resume and enhance your presentation skills. Present what you've learned at an academic conference of campus.

Prepare for and pass the FE exam.

Your degree requires an internship. Start planning now! Meet with your advisor to discuss your internship options.

Run for Student Government and represent your fellow students while making a longterm difference on Marshall's campus.

Be at the top of your professional game! Prepare a final resume and practice your interview skills with a career coach in Career Education.

TRANSFERABLE SKILLS ASSOCIATED WITH THIS MAJOR

- Analytical Skills
- Design Skills
- Oral and Written Communication Skills
- Critical Thinking Skills
- Leadership Skills
- The Ability to Work as Part of a Team

ASSOCIATED CAREERS

- Structural Engineer
- Urban Planner
- Construction Engineer
- Environmental Engineer
- Transportation Engineer
- Geotechnical Engineer

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