Concurrent Majors in Biomedical (BME) and Mechanical Engineering (M E)

Only for students admitted first to BME with the Biomechanics Option

9 Semesters: Total Credits = 148

PROGRAM REQUIREMENTS

First Semester			CR
(a,b,d)	***MATH 140***	***Calculus with Analytic Geometry I -or-***	4
	MATH 140E	***Calculus with Engineering Applications I***	
(a,d)	***CHEM 110***	***Chemical Principles I***	3
	CHEM 111	Experimental Chemistry I	1
	EDSGN 100	Introduction to Engineering Design	3
	ENGL 015	Rhetoric and Composition - or -	3
	ENGL 030	Honors Freshman Composition	
	FYS	First Year Seminar	1
	ECON 102	Microeconomic Analysis and Policy (GS), - or-	3
	ECON 104	Macroeconomic Analysis and Policy (GS),	
		Total	18

Second Semester			CR
(a,b,d)	***MATH 141***	***Calculus with Analytic Geometry II - or-***	4
	MATH 141E	***Calculus with Engineering Applications II***	
(a,d)	***PHYS 211***	***General Physics: Mechanics***	4
	CHEM 112	Chemical Principles II	3
	CHEM 113	Experimental Chemistry III	1
(d)	**BIOL 141**	**Physiology (or BIOL 240W)**	3
(d)	**BIOL 142**	**Physiology Lab (240W has a lab)**	1
	GHA	Health & Physical Activity	1.5
		Total	17.5

Third Semester			CR
(a, d)	***MATH 251***	***Ordinary and Partial Differential Equations***	4
(c, d)	**E MCH 210**	**Statics and Strength of Materials**	5
	CMPSC 200	Programming for Engineers with MATLAB	3
(a,d)	***PHYS 212***	***General Physics: Electricity and Magnetism***	4
		Total	16

Fourth Semester			CR
(e)	MATH 230	Calculus and Vector Analysis	4
	MATH 220	Matrices	2
(d)	**E MCH 212**	**Dynamics**	3
(d,*)	**BME 201**	**Fundamentals of Cells and Molecules**	3
	E MCH 315	Mechanical Response of Engineering Materials	2
	E MCH 316	Experimental Determination of Mechanical Response of Materials	1
		Total	15

Fifth Semester			CR
(d)	**M E 300**	**Engineering Thermodynamics I**	3
	PHYS 214	Wave Motion and Quantum Physics	2
(d)	**M E 360**	**Mechanical Design**	3
(d,*)	**BME 303**	**Bio-Continuum Mechanics**	3
(d,*)	**BME 301**	**Analysis of Physiological Systems**	4
	GHA	Health & Physical Activity	1.5
		Total	16.5

Sixth Semester			CR
	MATSE 259	Properties and Processing of Eng. Materials	3
(d,*)	**BME 409**	**Biofluid Mechanics**	3
(d,*)	**BME 401**	**Numerical Simulations in BME**	3
(d,*)	**BME 402**	**Biomedical Instrumentation and Measurements**	3
(d,*)	**BME 403**	**Biomedical Instrumentation Laboratory**	1
(i)	GA, GH, or GS Course		3
		Total	16

Seventh Semester			CR
	IE 312	Product Design and Manufacturing Processes	3
(d)	**M E 370**	**Vibration of Mechanical Systems**	3
(*)	BME 440	BME Professional Seminar	1
(d)	**M E 340**	**Mechanical Engineering Design Methodology**	3
	ENGL 202C	Technical Writing	3
(*)	BME 429	Biomechanics and Techniques Lab	2
		Total	15

Eighth Semester			CR
	BME Related & ME ET Elective	(Must complete BME&ME req)	3
(*)	BME 450W	Senior Design (CAPSTONE)	3
(d)	**M E 410**	**Heat Transfer**	3
(f)	M E Lab		1
(i)	GA, GH, or GS Course		3
(i)	GA, GH, or GS Course		3
		Total	16

Ninth Semester			CR
(h)	Related Elective (See BME guidelines)		3
(d)	**M E 450**	**Modeling of Dynamic Systems**	3
(g)	METE	M E Technical Elective	3
	CAS 100A/B	Effective Speech	3
(i)	GA, GH, or GS Course		3
(i)	GA, GH, or GS Course		3
		Total	18

[Choose one from the courses enclosed within the brackets.

(*) BME courses are offered only in the semester shown: Fall = odd-numbered semesters, Spring = even-numbered semesters.

(a) Courses listed in ***boldface italic type*** require a grade of C or better for entrance to this major.
(b) MATH 140E and MATH 141E are only available at University Park in the semester shown.
(c) E MCH 211 and E MCH 213 = E MCH 210
(d) Courses listed in **bold face type** require a grade of C or better for graduation in this concurrent majors program.
(e) MATH 231 and MATH 232 = MATH 230
(f) To graduate, a student must take at least one of the following M E lab courses: M E 315, M E 325, M E 355, or M E 375. E MCH 316 is a required course and will satisfy the second M E Lab requirement. Note: If M E 445 is taken as a technical elective, one credit can be used as an M E Lab Course.
(g) A Mechanical Engineering Technical Elective (METE) is any three-credit, 400-level mechanical engineering course, not required for the major. M E 494 or M E 496 may not be used.
(h) A BME Related Elective is any Option (Biochemical, Device and Imaging, Biomechanical, Biomaterial) Elective, any BME 400 level or BIOE 500 level course not otherwise required (may not double count), CHEM 210, CHEM 212, ENGR 295, ENGR 395, ENGR 495 (3 credits max for ENGR x95), and courses for an approved minor (E L D, ESHIP, ENTI, NANO)
(i) An elective course to satisfy General Education AHS requirements: GA - General Arts, GH - Humanities, GS - Social & Behavioral Sciences, selected from the lists published in the University General Education Handbook.