

BIOMEDICAL ENGINEERING

Louisiana Tech University
Curriculum as of 2016

Name _____

Date _____

CWID - - _____

Email _____@latech.edu

COURSE	PREREQUISITE	SCH	QTR	GRADE
BIEN 202	MATH 241	1	Sp	R*
203	MATH 241	1	F	R
225	ENGR 221, MATH 244	3	F	R*
235	MEMT 201	3	W	R*
301	BIEN 202, ENGR 222, GPA≥2.0 MATH 241-245	3	W	R*
321	BIEN 325○	1	W	R
325	BISC 227, BIEN 225, PHYS 202, GPA ≥ 2.0 MATH 241-245	3	W	R*
400	BIEN 401, 425	1	F	R
401	BIEN 301, MATH 245	3	Sp	R*
402	BIEN 403, 430, ENGL 303	2	W	R*
403	BIEN 401, 425	3	F	R*
404	BIEN 402	2	Sp	R
425	BIEN 325, MATH 245	3	Sp	R*
430	BIEN 235, 301, ENGR 220	3	F	R*
435	BIEN 403, 430	1	W	R
BISC 225		3		*
227	BISC 225	3		*
315	BISC 132, 133	3	W, Sp	
CHEM 101	CHEM 100 (or by placement)	2		*
102	CHEM 101	2		*
103	CHEM 100, 101○	1		*
104	CHEM 103	1		
COMM 101		3		
ENGL 101		3		
102	ENGL 101	3		
303	ENGL 102	3		
ENGR 120	MATH 240○, CHEM 100○	2		*
121	ENGR 120, MATH 241○, CHEM 101○	2		*
122	ENGR 121, MATH 242○	2		*
220	ENGR 122, MATH 242, PHYS 201	3		*
221	ENGR 122, MATH 242, PHYS 201	3		*
222	ENGR 122, MATH 242	3		*
MATH 241	MATH 240	3		*
242	MATH 241	3		*
243	MATH 242	3		*
244	MATH 243	3		*
245	MATH 244	3		*
MEEN 215	MEMT 201○	1		
MEMT 201	ENGR 122	2		*
PHYS 201	MATH 241	3		*
202	MATH 242, PHYS 201	3		*
STAT 405	MATH 242	3		
ELECTIVES				
Art (ART 290, KINE 280, MUGN 290, or THTR 290)		3		
Directed Elective		3		
Directed Elective		3		
Directed Elective		3		
Directed Elective		2		
Humanity		3		
Humanity		3		
Social Science		3		
Social Science		3		
TOTAL SEMESTER HOURS		128		

SUBSTITUTIONS		
COURSE	SCH	GRADE
1		
2		
3		
4		
5		

ADDITIONAL COURSES		
COURSE	SCH	GRADE
1		
2		
3		
4		
5		

GPA	
Rubric GPA	_____
MATH 241-244 GPA	_____

NOTES	
* requires grade of "C" or higher	
○ credit or registration in	
R course in rubric	
1 Directed electives must be selected in consultation with advisor.	
2 Petitions must be filed for substitutions.	
3 A student must have a minimum 2.0 GPA on all hours pursued in courses designated: BIEN.	
4 All students must complete an International Education Requirement (IER). Courses acceptable: HIST 102, GEOG 205, and GEOG 210.	

ADDITIONAL COMMENTS	

IER requirement met

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FRESHMAN YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
ENGR 120	* Engineering Problem Solving I	2	ENGR 121	* Engineering Problem Solving II	2	BIEN 202	* Biomed Principles I	1
MATH 240	* Precalculus	3	MATH 241	* Calculus I	3	ENGR 122	* Engineering Problem Solving III	2
CHEM 100	* General Chemistry	2	CHEM 101	* General Chemistry	2	MATH 242	* Calculus II	3
COMM 101	Principles of Comm Studies	3	CHEM 103	* General Chemistry Lab	1	CHEM 102	* General Chemistry	2
FYE 100	First Year Experience	1	ENGL 101	Freshman Composition I	3	CHEM 104	General Chemistry Lab	1
						PHYS 201	* Physics for Engr & Sci I	3
		11			11			12

SOPHOMORE YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
BIEN 203	Biomed Principles II	1	BIEN 235	* Biomaterials	3	ENGR 222‡	* Thermodynaics	3
ENGR 220‡	* Statics & Mechanics of Materials	3	ENGR 221‡	* Electrical Engineering & Circuits I	3	MATH 245	* Differential Equaitions	3
MATH 243	* Calculus III	3	MATH 244	* Calculus IV	3	BISC 227	* Human Anatomy & Physiology II	3
MEMT 201	* Engineering Materials	2	BISC 225	* Human Anatomy & Physiology I	3	ENGL 102	Freshman Composition II	3
MEEN 215	Engineering Materials Lab	1						
		10			12			12

JUNIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
BIEN 225	* Biomedical Signals and Systems	3	BIEN 301	* Fluid Mechanics & Energy Trans	3	BIEN 401	* Biomed Mass Transport	3
PHYS 202	* Physics for Engr & Sci II	3	BIEN 325	* Bioinstrumentation	3	BIEN 425	* Adv Biomed Instrument Systems	3
ENGL 303	Technical Writing	3	BIEN 321	Biomedical Engr Animal Phys Lab	1	Directed Elective		3
STAT 405	Statistics	3	BISC 315	Cell Biology	3	Humanities Elective		3
		12			10			12

SENIOR YEAR								
Fall Quarter		Hr	Winter Quarter		Hr	Spring Quarter		Hr
BIEN 400	Biomed Engr Seminar	1	BIEN 402	* Biomed Engr Design I	2	BIEN 404	Biomed Engr Design II	2
BIEN 403	* Physiological Control Systems	3	BIEN 435	Senior Biomed Engineering Lab	1	Fine Arts Appr.		3
BIEN 430	* Biomechanics	3	Directed Elective		3	Social Science		3
Social Science		3	Directed Elective		3	Directed Elective		2
			Humanities Elective		3			
		10			12			10

Neither MATH 240 nor CHEM 100 count towards the biomedical engineering degree.

* requires grade of "C" or higher.

Courses in **bold** are typically offered only once per year.

‡ ENGR 220, 221, and 222 can be taken in any sequence. Students must complete ENGR 221 before they can take BIEN 225, and must complete ENGR 222 before they can take BIEN 301.

Social Science electives can be selected from Anthropology, Criminal Justice, Economics, Geography, International Studies, Interdisciplinary, Political Science, Psychology, and Sociology.

Humanities electives can be selected from Classical Studies, Communications, Foreign Languages, History, Literature, Philosophy, Religious Studies, Interdisciplinary

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All students must complete an International Education Requirement prior to graduation. A list of courses can be found in the university catalog. Courses that do not have any pre-requisite requirement are: GEOG 205, GEOG 210, HIST 102.

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Concentrations

CHEMICAL CONCENTRATION					
COURSE		PREREQUISITE	SCH	GRADE	
CMEN	202	Chemical Engineering Calculations	ENGR 122, MATH 241	3	*
	332	Chemical Engineering Thermodynamics II	CHEM 311, ENGR 222, MATH 245, GPA \geq 2.0 MATH 241-244	3	*
	402	Chemical Reaction Engineering	Senior Standing	3	*
	300-level or higher			2	*
			TOTAL	11	

COMPUTER INFORMATION SYSTEMS CONCENTRATION					
COURSE		PREREQUISITE	SCH	GRADE	
CSC	130	The Science of Computing I	MATH 101	3	*
	131	The Science of Computing II	CSC 130 or CYEN 130	3	*
	132	The Science of Computing III	CSC 131 or CYEN 131	3	*
BIEN, CSC, or ELEN		-	-	-	*
	200-level or higher			2	*◇
			TOTAL	11	

ELECTRICAL ENGINEERING CONCENTRATION					
COURSE		PREREQUISITE	SCH	GRADE	
ELEN	242	Introduction to Microprocessors	MATH 242 ^o	3	*
ELEN	313	Electric and Magnetic Fields	PHYS 202, ENGR 221, GPA > 2 in MATH 241-244	3	*
	335	Electronic Circuits I	ELEN 224, 334	3	*
	300-level or higher	in consultation with advisor	Advisor Approval	2	*
			TOTAL	11	

MECHANICAL ENGINEERING CONCENTRATION					
COURSE		PREREQUISITE	SCH	GRADE	
MEEN		-	-	-	*
	300-level or higher			3	*
	300-level or higher			3	*
MEMT	203	Dynamics	ENGR 220	3	*
	211	Intermediate Strength of Materials	ENGR 220, GPA \geq 2.0 MATH 241-243	2	*
			TOTAL	11	

MICROSYSTEMS ENGINEERING CONCENTRATION					
COURSE		PREREQUISITE	SCH	GRADE	
MSE	401	Fundamentals of Microfabrication Processes	MATH 245, PHYS 202	3	*
	402	Micro/Nanoelectromechanical Systems	ELEN 334	3	*
NSE	201	Fundamentals of Nanosystems Engineering	CHEM 102, PHYS 201	2	*
MSE or NSE		-	-	-	*
	300-level or higher			3	*
			TOTAL	11	

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^o credit or registration in

◇ must have computer content and advisor approval

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PRE-MEDICAL CONCENTRATION					
COURSE			PREREQUISITE	SCH	GRADE
CHEM	250	Organic Chemistry	CHEM 102	2	*
	251	Organic Chemistry	CHEM 250, CHEM 253 ^o	2	*
	252	Organic Chemistry	CHEM 251, CHEM 254 ^o	2	*
	253	Organic Chemistry Laboratory	CHEM 102, CHEM 251 ^o	1	*
	254	Organic Chemistry Laboratory	CHEM 252 ^o , 253	1	*
engineering or science		-	-	-	-
300-level or higher		-	-	3	*+
TOTAL				11	

PRE-PROFESSIONAL PHYSICAL/OCCUPATIONAL THERAPY CONCENTRATION					
COURSE			PREREQUISITE	SCH	GRADE
BISC	226	Human Anatomy and Physiology Laboratory I	BISC 225 ^o	1	*
	228	Human Anatomy and Physiology Laboratory II	BISC 227 ^o	1	*
PSYC (pick2)	208	Developmental Psychology		3	*
	218	Fundamentals of Abnormal Psyc		3	*
	308	Human Growth and Development	PSYC 202 or HNRS 202 & PSYC 320		
appropriate discipline		-	-	-	-
200-level or higher		-	-	3	*
TOTAL				11	

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Concentrations

o credit or registration in

◇ must have computer content and advisor approval

+ must have advisors approval