

Bioengineering Four Year Academic Plan

Name: _____

UID: _____

Year 1	Fall		
Gateway requirements include: ENGL 101, CHEM 135, MATH 141, PHYS 161 and an approved Distributive Studies course. (Directly admitted freshman must pass and complete these courses and ENES 100 by 45 UM credits.)	Course	Credit	Grade
	ENES 102	3	
	CHEM 135	3	
	CHEM 136	1	
	MATH 140 (AR)	4	
	BIOE 120	3	
	BIOE 121	1	
	Total	15	

Spring		
Course	Credit	Grade
ENES100 (SP)	3	
MATH 141	4	
PHYS 161 (NS)	3	
Humanities (HU)*	3	
ENGL 101 (AW)	3	
Total	16	

Year 2	Fall		
	Course	Credit	Grade
	CHEM 231	3	
	CHEM 232	1	
	PHYS 260 and PHYS 261 (NL)	3 & 1	
	ENES 220	3	
	MATH 241	4	
	Total	15	

Spring		
Course	Credit	Grade
BIOE 232	3	
BIOE 241	3	
BSCI 330	4	
MATH 246	3	
BIOE 371	3	
Total	16	

Year 3	Fall		
Second benchmark requirements must be completed one year after students are reviewed for the gateway requirements and include: All 100 and 200 level MATH, PHYS and ENES courses; BIOE 120, BIOE 121, CHEM 231, CHEM 232 and BSCI 330.	Course	Credit	Grade
	BIOE 331	3	
	BIOE 340	4	
	BIOE 404	3	
	BIOE 457	4	
	Humanities (HU)*	3	
	Total	14	

Spring		
Course	Credit	Grade
BIOE 332	3	
BIOE 420	3	
BIOE 453	3	
Biological Science Elec.	3	
Oral Communication (OC)	3	
Total	15	

Year 4	Fall		
Third benchmark requirements must be completed one year after students are reviewed for the second benchmark and include: At least one 300 level or above BIOE course; an approved biological science or engineering science technical elective; BIOE 232, BIOE 241 and BIOE 331.	Course	Credit	Grade
	BIOE 485	3	
	Eng. Science Elective	3	
	ENGL 393 (PW)	3	
	Hist & Social Sciences (HS)*	3	
	Scholarship in Practice (SP)*	3	
	Total	15	

Spring		
Course	Credit	Grade
BIOE 486	3	
Unrestricted Elective	3	
Biological Science Elec.	3	
Eng. Science Elective	3	
Hist & Social Sciences (HS)*	3	
Total	15	

*All students must complete two Distributive Studies courses that are approved for I-series courses. The Understanding Plural Societies (UP) and Cultural Competence (CC) courses may also fulfill Distributive Studies categories.

BIOENGINEERING

NAME: _____

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General Education Requirements Fundamental Studies

Requirements	Course	Credits	Grade
Academic Writing (AW)	ENGL 101	3	
Professional Writing (PW)	ENGL 393	3	
Oral Communication (OC)		3	
Math (MA)	-----	0	
Analytic Reasoning (AR)	MATH 140	0	

Distributive Studies

Requirements	Course	Credits	Grade
Natural Science Lab (NL)	PHYS 260&261	0	
Natural Sciences (NS)	PHYS 161	0	
History/Social Sciences (HS)		3	
History/Social Sciences (HS)		3	
Humanities (HU)		3	
Humanities (HU)		3	
Scholarship in Practice (SP)	ENES100	0	
Scholarship in Practice (SP) non major		3	

I-Series Normally double counted with Distributive Studies

Requirements	Course	Credits	Grade
I-Series (IS)			
I-Series (IS)			

Diversity (overlap permitted with Distributive Studies and/or I-series)

Requirements	Course	Credits	Grade
Understanding Plural Societies (UP)			
Understanding Plural Societies (UP) or Cultural Competency (CC)			

Basic Sciences

Requirements- <i>The cumulative average of these courses must be a 2.0</i>	Credits	Grade
CHEM 135 - Chem for Eng	3	
CHEM 136 - Chemistry Lab for Eng	1	
CHEM 231 and 232 - Organic Chemistry I & Lab	3 & 1	
PHYS 161 - General Physics I	3	
PHYS 260 and PHYS 261 - Gen Physics II & Lab	3 & 1	
MATH 140 - Calculus I	4	
MATH 141 - Calculus II	4	
MATH 241 - Calculus III	4	
MATH 246 - Differential Equations	3	

Engineering Sciences

Requirements- <i>The cumulative average of these courses must be a 2.0</i>	Credits	Grade
ENES 100 - Intro to Eng Design	3	
ENES 102 - Mechanics I	3	
ENES 220 - Mechanics II	3	

Requirements for Graduation:

- At least 30 credits must be earned at UMD
- 15 of the final 30 credits must be earned at the 300-400 level
- 12 upper level major credits must be earned at UMD

Major Requirements

The cumulative average of these courses must be a 2.0

Requirements	Credits	Grade
BIOE 120 - Biology for Engineers	3	
BIOE 121 - Biology for Eng Lab	1	
BIOE 232 - Biological Thermodynamics	3	
BIOE 241 - Biocomputation Methods	3	
BIOE 331 - Biofluids or ENME 331	3	
BIOE 332- Transport Process Design	3	
BIOE 340 - Modeling Phys. & Lab	4	
BIOE 371 - Bioengineering Math & Stats	3	
BIOE 404 - Biomechanics	3	
BIOE 420 - Bioimaging	3	
BIOE 453 - Biomaterials	3	
BIOE 457 - Biomedical Elect. & Instrumentation	4	
BIOE 485 - Capstone I	3	
BIOE 486 - Capstone II	3	

Technical Requirements

BSCI 330 - Cell Biology & Physiology	4	
Biological Science Elective **	3	
Biological Science Elective **	3	
Unrestricted Elective **	3	
ENGR Science Elective **	3	
ENGR Science Elective **	3	
ENGL 393 - Technical Writing	3	

**Approved technical electives:

Gateway requirements

Requirements	Credits	Grade
ENGL 101	3	
CHEM 135, 271 or 113	3	
MATH 141	4	
PHYS 161	3	
An approved Distributive Studies course	3	
ENES 100 (required for Freshman Direct Admits)	3	

Benchmark 2 requirements

MATH 140, 141, 241 and 246	15	
PHYS 161, 260 and 261	7	
ENES 100, 102, and 220, BSCI 330	13	
BIOE 120, BIOE 121, CHEM 231, CHEM 232	8	

Benchmark 3 requirements

BIOE 232, BIOE 241 and BIOE 331	9	
At least one 300 level or above BIOE course	3	
Approved bio sci OR engineering sci elective	3	

Students must earn a minimum of 120 credits to earn the degree.