

College of Engineering and Computer Science

Bioengineering

Name _____

Fall 2020

SUID _____

pr= prerequisite, co=corequisite

Minor/Second Major (if any): _____

	CREDIT GRADE	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR +/-
		F	S	F	S	F	S	F	S	
MATHEMATICS (15)										
MAT295 Calculus 1	(4) _____	4								
MAT296 Calculus 2 (pr: MAT 295 min C-)	(4) _____		4							
MAT397 Calculus 3 (pr: MAT 296 min C-)	(4) _____			4						
MAT485 Diff. Eq. & Matrix Alg. (pr: MAT 397)	(3) _____				3					
SCIENCES (19)										
CHE106 General Chemistry 1	(3) _____	3								
CHE107 General Chemistry Lab 1 (co: CHE 106)	(1) _____	1								
CHE116 General Chemistry 2 (pr: CHE 106)	(3) _____		3							
CHE117 Gen. Chemistry Lab 2 (pr: CHE 107, co: CHE 116)	(1) _____		1							
CHE275 Organic Chemistry 1 (pr: CHE 116)	(3) _____			3						
PHY211 General Physics 1 (co: PHY 221, MAT 295)	(3) _____		3							
PHY221 Gen. Physics Lab 1 (co: PHY 211)	(1) _____		1							
PHY212 Gen. Phys. 2 (pr: PHY 211,221, co: PHY 222, MAT 296)	(3) _____			3						
PHY222 General Physics Lab 2 (co: PHY 212)	(1) _____			1						
WRITING/SOCIAL SCIENCES/HUMANITIES (24)										
WRT105 Studio 1: Practices of Academic Writing	(3) _____	3								
WRT205 Studio 2: Critical Research and Wrt (pr: WRT 105)	(3) _____				3					
SSH Elective _____	(3) _____	3								
SSH Elective _____	(3) _____				3					
SSH Elective _____	(3) _____					3				
SSH Elective _____	(3) _____					3				
SSH Elective _____	(3) _____								3	
SSH Elective _____	(3) _____								3	
ENGINEERING (19)										
ECS101 Intro. to Engr. & Comp. Sci.	(3) _____	3								
ECS104 Engr. Comput. Tools (co: MAT 295)	(3) _____		3							
ECS221 Statics (pr: PHY 211, co: MAT 296)	(3) _____				3					
ECS326 Engr. Materials, Prop. & Proc.	(3) _____					3				
ELE231 Elec. Engr. Fundamentals 1 (pr: MAT 295, PHY 211)	(3) _____				3					
ELE251 Fundamentals of Linear Systems	(3) _____					3				
ELE292 Electrical Engineering Lab (co: ELE 251)	(1) _____					1				
BIOENGINEERING (41)										
BEN201 Biological Principles for Engineers	(4) _____			4						
BEN212 Exp. Methods in BMCE (pr: MAT 296, ECS 104)	(3) _____				3					
BEN231 Bioengineering Fundamentals	(3) _____			3						
BEN333 Fluid Transport (pr: MAT 397, PHY 212)	(3) _____					3				
BEN341 Fund. Of Heat & Mass Transfer (pr: BEN 333)	(3) _____						3			
BEN364 Quantitative Physiology (pr: BEN 201)	(3) _____						3			
BEN375 Biomedical Systems, Signals and Control	(3) _____						3			
BEN385 Bioengineering Laboratory I	(3) _____						3			
BEN465 Biomechanics (pr: ECS 221, MAT 485, BEN 364)	(3) _____							3		
BEN468 Biomaterials & Medical Devices	(3) _____						3			
BEN481 Bioinstrumentation (pr: ELE 231 an ELE 251)	(3) _____							3		
BEN485 Bioengineering Laboratory II (co: BEN 465, BEN 481)	(3) _____							3		
BEN486 Bioengineering Capstone Design I	(1) _____							1		
BEN487 Bioengineering Capstone Design II	(3) _____								3	
TECHNICAL ELECTIVES (12)										
BIO Elective _____	(3) _____							3		
Tech Elective _____	(3) _____							3		
Tech Elective _____	(3) _____								3	
Tech Elective _____	(3) _____								3	
TOTAL CREDITS		130	17	15	18	18	16	15	16	15

**BIOENGINEERING
Curriculum Notes
2020-2021**

1. Bioengineering students must complete a minimum of **18 credits in the Social Science or Humanities** disciplines using any one of the following options:
2. Bioengineering students must complete a minimum of **18 credits Social Sciences, Humanities, or Foreign Language** using any one of the following options:

Option 1: Complete a minimum of 18 credits from the Social Sciences List* and/or Humanities List* and/or of a foreign language[†].

Option 2: Petition to use completion of the Engineering and Computer Science Management minor to complete the Social Science and Humanities elective requirement.

*The Humanities List and Social Sciences List of approved courses are published by the College of Arts and Sciences in the Undergraduate Catalog for Advising (coursecatalog.syr.edu). Students should confirm that a course intended to fulfill this requirement is in one of these lists.

*Please note that the following courses are **NOT** social sciences or humanities: ANT 131, ANT 431, ANT 433, all CFS, GEO 155, GEO 215, GEO 316, GEO 326, GEO 482, GEO 455, HNR 250, HNR 255, HNR 350, HNR 355, HNR 450, HNR 455; PSY 223, PSY 252, PSY 323, PSY 324, PSY 334. This list is not exhaustive.

*Students may count *ECS 392- Ethical Aspects of ECS* towards their Social Science and Humanities elective requirements.

[†]Foreign language grammar and/or oral practice courses may not be in student's native language. Foreign language courses focused on literature, culture, or linguistics in a student's native language are acceptable.

Biology Elective:

Biology elective encompasses upper-division courses prefixed with BIO (300-level or higher). The breadth of biology elective option is intended to be flexible to allow students to deepen their biology knowledge. Students are recommended to work with academic advisors to identify an elective course to build towards their long-term career objectives. The biology elective is subject to approval by the student's academic advisor and program director. Courses not included in the pre-approved list may be approved by petition if found to have sufficient biological content. Please note that the following courses are **NOT** considered a biology elective: BIO 316, BIO 317, BIO 355.

Technical Electives:

Technical electives broadly encompass Math, Science (excluding Social Science), or Engineering course not included in the required bioengineering curriculum. These courses are intended to be challenging (200-level or higher), although relevant AP credits and introductory biology courses (BIO 121 and BIO 123/124) may also count towards the technical elective requirement. The breadth of technical elective options is intended to be flexible to allow students to develop skill-sets for their chosen careers. It is highly recommended that students work with academic advisors to identify technical electives to build towards their long-term career objectives. Technical electives are subject to approval by the student's academic advisor and program director. Courses not included in the description above may be approved by petition if found to have sufficient technical content.