

NAME: \_\_\_\_\_

# BIOCOMPUTATIONAL ENGINEERING

UID: \_\_\_\_\_ A.A. \_\_\_ A.S.E. \_\_\_ Post-Bac

GENERAL EDUCATION REQUIREMENTS			
<b>Fundamental Studies</b>			
Academic Writing (AW)	ENGL 101		3
Professional Writing (PW) @USG	ENGL 393		3
Oral Communication (OC)			3
Mathmatics (MA)	MATH 140		4
Analytic Reasoning (AR)	MATH 140		0
<b>Distributive Studies</b>			
History/Social Sciences (HS*)			3
History/Social Sciences (HS*)			3
Humanities (HU*)			3
Humanities (HU*)			3
Natural Sciences No Lab (NS)	PHYS 161		3
Natural Sciences w/Lab (NL)	PHYS 260/261		4
Scholarship in Practice (SP*) in major	ENES 100		3
Scholarship in Practice (SP*) out of major			3
<b>Big Question Courses</b>			
Big Question (SCIS*)			0/3
Big Question (SCIS*)			0/3
<b>Diversity</b>			
Understanding Plural Societies (UP*)			0/3
Understanding Plural Societies (UP*) OR Cultural Competency (CC*)			0/3
<b>MAJOR REQUIREMENTS</b>			
<b>Basic Sciences</b>			
CHEM 135- Chem Engr or CHEM 131+134 - Gen Chem+Princ			3/3&1
CHEM136 - Chemistry Lab for Engr			1
PHYS 161 - General Physics I (NS)			0
PHYS 260 and PHYS 261 - Gen Physics II & Lab (NL)			0
MATH 140 - Calculus I (MA/AR)			0
MATH 141 - Calculus II			4
MATH 241 - Calculus III			4
<b>Engineering Sciences</b>			
ENES 100 - Intro to Eng Design (SP)			0
BIOE 120 - Biology for Engr or BSCI170 - Prin of Mol & Cell Bio			3
BIOE 241 - Biocomputational Methods or equivalent			3

Major Requirements @ USG		
ENBC 301 - Intro to Biocomputational Engineering		1
ENBC 311 - Python for Data Analysis		3
ENBC 312 - Object Oriented Programming in C++		3
ENBC 321 - Machine Learning for Data Analysis		3
ENBC 322 - Algorithms		3
ENBC 331 - Applied Linear Systems and Diff Eqs		3
ENBC 332 - Statistics, Data Analysis, and Data Vis		3
ENBC 341 - Biomolecular Engineering Thermo		3
ENBC 342 - Comp Fluid Dynamics and Mass Transfer		3
ENBC 351 - Quantitative Mol and Cell Biology		3
ENBC 352 - Molecular Techniques Laboratory		2
ENBC 353 - Synthetic Biology		3
ENBC 425 - Imaging and Image Processing		3
ENBC 431 - Finite Element Analysis		3
ENBC 441 - Computational Systems Biology		3
ENBC 491 - Senior Capstone Design in BCE		3
<b>Required Technical Electives (12 credits) ** @ USG</b>		
ENBC Technical Elective I		3
ENBC Technical Elective II		3
ENBC Technical Elective III		3
ENBC Technical Elective IV		3

Requirements for Graduation:
<ul style="list-style-type: none"> <li>Final 30 credits must be earned at UMD</li> <li>15 of the final 30 credits must be earned at the 300-400 level</li> <li>12 upper level major credits must be earned at UMD</li> <li>A minimum 2.00 cumulative UM GPA, and satisfactory completion of all degree requirements, is required for graduation</li> <li>Students matriculating in Fall 2012 or after must have a 2.0 minimum GPA for all degree requirements, minor requirements, and undergraduate certificate requirements</li> </ul>
<p><i>(Major courses are defined as: departmental courses, basic sciences, engineering sciences, specified degree tracks, technical requirements/ technical electives and ENGL 393)</i></p> <ul style="list-style-type: none"> <li>A minimum of 120 credits is required to earn the degree</li> </ul>

\* May satisfy more than one requirement. See [www.gened.umd.edu](http://www.gened.umd.edu)\*\*See Biocomputational Engineering Advisor for electives: [biocomp.umd.edu](http://biocomp.umd.edu)

# Biocomputational Engineering Graduation Plan

Name: \_\_\_\_\_

UID: \_\_\_\_\_

Current Engineering Students: <https://eng.umd.edu/services/academic-policies>

Prospective Engineering Students: <https://lep.umd.edu/>

Year 1	Fall		
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	MATH140	4	
	CHEM135	3	
	CHEM136	1	
	ENGL101	3	
	General Ed Requirement I	3	
	General Ed Requirement II	3	
	<b>Total</b>	<b>17</b>	

Spring			
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	ENES100	3	
	BIOE120	3	
	MATH141	4	
	PHYS161	3	
	General Ed Requirement III	3	
	<b>Total</b>	<b>16</b>	

Year 2	Fall		
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	MATH241	4	
	BIOE241	3	
	General Ed Requirement IV	3	
	General Ed Requirement V	3	
	<b>Total</b>	<b>13</b>	

Spring			
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	PHYS260	3	
	PHYS261	1	
	General Ed Requirement VI	3	
	General Ed Requirement VII	3	
	General Ed Requirement VIII	3	
	<b>Total</b>	<b>13</b>	

Year 3	Fall @USG		
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	ENBC301	1	
	ENBC311	3	
	ENBC331	3	
	ENBC332	3	
	ENBC341	3	
	ENBC322	3	
	<b>Total</b>	<b>16</b>	

Spring @USG			
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	ENBC312	3	
	ENBC351	3	
	ENBC342	3	
	ENBC352	2	
	ENBC321	3	
	<b>Total</b>	<b>14</b>	

Year 4	Fall @USG		
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	ENBC353	3	
	ENBC431	3	
	ENBC425	3	
	ENGL393	3	
	<b>Total</b>	<b>12</b>	

Spring @ USG			
	<i>Course</i>	<i>Credit</i>	<i>Grade</i>
	Elective	3	
	ENBC441	3	
	ENBC491	3	
	Elective	3	
	<b>Total</b>	<b>12</b>	