Plan of Study for the Biomedical Sciences & Engineering Track

of the Engineering Sciences AB Concentration

Effective for Students Declaring the Concentration after August 1, 2024

NAME: _____ CLASS: _____

EMAIL: _____ DATE: _____

This Plan of Study Form is for a (*Circle One*): DECLARATION REVISION

Please list your selected concentration courses in the schedule below:

Fall 1	Spring 1	Fall 2	Spring 2	Fall 3	Spring 3	Fall 4	Spring 4

REQUIRED COURSES	Selected Courses
Mathematics (2-4 courses) *Begin according to placement:* Math 1a – Introduction to Calculus I (or Math Ma & Mb) Math 1b – Calculus, Series, and Differential Equations Math 21a – Multivariable Calculus (or Math 22b or 23a) Math 21b – Linear Algebra and Differential Equations (or Math 22a or 23b)	
Physics (2 courses) PS 12a - Mechanics and Statistical Physics (or AP 50a or Physics 15a or 16) PS 12b - Electromagnetism and Quantum Physics (or AP50b or Physics 15b)	
Chemistry/Life Sciences (1 course) Life Sciences 1a – An Integrated Introduction to the Life Sciences (or LPS A – Foundational Chemistry and Biology)	
Computer Science (1 course) CS 50 – Introduction to Computer Science I (or CS 51 – Introduction to Computer Science II or CS 61 – Systems Programming & Machine Organization or AM 10 - Computing w/ Python for Scientists and Engineers or CS 32 – Computational Thinking and Problem Solving)	

REQUIRED COURSES	Selected Courses
Bioengineering Core: Physiology & Modeling (2 courses) ES 53 – Quantitative Physiology as a Basis for Bioengineering BE 110 – Physiological Systems Analysis	
Subtrack-specific Courses (4 courses) *Select one Subtrack:* • *Mechanical Subtrack* o ES 120 – Intro to the Mechanics of Solids o ES 123 – Intro to Fluid Mechanics o ES 181 – Engineering Thermodynamics o ES 50 – Intro to Electrical Engineering • *Electrical Subtrack* o ES 150 – Intro to Probability with Engineering Applications o ES 50 – Intro to Electrical Engineering (or both ES 152 & CS 141)) o To reach 4 courses: 1-2 of BE 128- Biomedical Imaging Systems, BE 129 – Bioelectronics, BE 130 – Neural Control of Movement, BE 131 – Neuroengineering, or ES 157 – Biological Signal Processing • *Chemical & Materials Subtrack* o ES 123 – Intro to Fluid Mechanics o ES 181 – Engineering Thermodynamics o BE 191 – Intro to Biomaterials (*preferred*) *(or* ES 190 – Intro to Materials Science & Eng.) o PS 1 – Chemical Bonding, Energy, & Reactivity (or Chem 10 or PS 11)	
Approved Electives (*2 courses from the list below)* Engineering Sciences 51, 91r (one term only), 120, 123, 128, 157, 181, 190, 221, 227 Biomedical Engineering 121, 124, 125, 128, 129, 130, 131, 191 Either Applied Mathematics 101 or Engineering Sciences 150 One from Engineering Sciences 50, or 152 Physics 136, 140, 143a, 151, 153 One from Physical Sciences 1, 10, 11, Chemistry 10, 17 or 20 Applied Mathematics 104 or 105	

Required Signatures:

_____ _____

Student Date

_____ _____

Associate/Director of Undergraduate Studies (BME) Date

Prerequisite Planning Table for the ES AB - Biomedical Sciences & Engineering Track

	Typically Offered	Math	Biology / Chemistry	Physics	Other
Required Courses					
ES 53	Fall			**Co: A or B**	
BE 110	Fall	*21a,b*		*B*	*ES 53*
Selected Electives					
BE 121	Fall	**21b**	**LS 1a,1b**	**A,B**	**ES 53, Co:BE 110**
BE 124	Spring	*21b*		**A**	**CS 50 or equiv.**
BE 125	Spring		*LS1a, Chem 17*		
BE 128	Spring	**1b**		**B**	
BE 129	Spring	**1b**	**LS 1a**, *Chem 17*	**B**	
BE 130	Spring				
BE 131	Fall	**1b**	*LS1a/ES53*	**B**	*ES 50*
BE 191	Fall	**1b**	**LS1a or LPSa**		
CS 141	Spring				*CS50*
ES 50	Spring				
ES 120	Spring	**21a, Co: 21b**		A	
ES 123	Spring	**21a,b**		A	
ES 150	Spring	**21a, Co:21b**			
ES 152	Fall	**1a,b**		**Co: B**	
ES 155	Fall	*21a, 21b*			
ES 157	Fall	**21a,b**			*ES 150 or 156*
ES 181	Fall			**A**	
ES 190	Fall	**21a,b**		**A,B**	
ES 227	Spring				*ES 51 or ES 50*

[1]Courses listed as Recommended Preparation, and not an enforced prerequisite, are shown in italics

[2]Courses marked with "Co:" may be taken as a co-requisite

[3]Equivalent courses are accepted for prerequisites (e.g., Phys 15a, PS 12a, or AP50a all count for Physics A)