

Recommended course pathway for BSE students interested in careers in
BIOTECHNOLOGY
 (129 credits)

Fall 1st Year 16 cr.	CHEM 1035 (3) General Chemistry ⁵	CHEM 1045 (1) General Chemistry Lab ⁵	MATH 1225 (4) Calculus for Science ⁵	ENGE 1215 (2) Foundations of Engineering ⁵	ENGL 1105 (3) First-Year Writing ⁵	Pathways (3)	
Spring 1st Year 16 cr.	CHEM 1036 (3) General Chemistry Pre: CHEM 1035 Spring, Summer	ENGL 1106 (3) Freshman English ⁵ Pre: ENGL 1105	PHYS 2305 (4) Foundations of Physics ⁵ Pre: MATH 1225 Co: MATH 1226	MATH 1226 (4) Calculus for Science ⁵ Pre: MATH 1225	ENGE 1216 (2) Exploration of Engineering Design ⁵ Pre: ENGE 1215		
Fall 2nd Year 18 cr.	CHEM 2535/CHEM 2565 (3) O-Chem ² /Principles O-Chem ² Pre: CHEM 1036/CHEM 1035 Fall, Spring, Summer, Winter/ Spring Only	MATH 2114 (3) Intro to Linear Algebra Pre: Math 1225 (min. grade B) or MATH 1226	MATH 2204 (3) Multivariable Calculus Pre: Math 1226	ESM 2104 (3) Statics Pre: MATH 1226	BIOL 1105 (3) Principles of Biology Fall, Summer, Winter	BSE 2004 (3) Intro to BSE Pre: ENGE 1215 Fall Only	
Spring 2nd Year 15 cr.	MATH 2214 (3) Differential Equations ⁵ Pre: MATH 2114 & 1226	Pathways (3)		BIOL 1106 (3) Principles of Biology Spring, Summer, Winter	BSE 3144 (2) Engineering Analysis for Biological Systems Spring Only	PHYS 2306 (4) Foundations of Physics Pre: MATH 1226, PHYS 2305	
Fall 3rd Year 14-16 cr.	ESM 3024 (3) Intro Fluid Mechanics Pre: ESM 2104, PHYS 2305 Fall Only	BSE 3154 (3) Thermodynamics of Biological Systems Pre: CHEM 1036, PHYS 2305, MATH 2204 Fall Only	**BSE 4984 (2) Engineering Biology CURE Lab ^{1,4}	STAT 3704 (2) Statistics for Engineering Applications Pre: MATH 2204		Pathways (3)	Pathways (3)
Spring 3rd Year 18 cr.	BIOL 2604 (3) General Microbiology Pre: BIOL 1105, 1106, CHEM 1035, 1036 Fall, Spring, Summer, Winter	BSE 3504 (3) Transport Processes in BSE Pre: BSE 3154, ESM 3024 Spring Only	BSE 3524 (3) Unit Operations ¹ Spring Only Pre: BSE 3154	ISE 3034 (3) Technical Communication for Engineers ⁵ Spring & Summer	BSE 3534 (3) Bioprocess Engineering ¹ Pre: BSE 3154 Co: BSE 3504 & BIOL 2604 Spring Only	CHEM 2536/CHEM 2566 (3) O-Chem ⁴ /Prin O-Chem ⁴ Pre: CHEM 2535/2565 Fall, Spring, Summer Fall Only	
Fall 4th Year 17 cr.	ISE 2014 (2) Engineering Economy	BSE 4125 (2) Comprehensive Design Project Pre: BSE 3524 & 3534 Fall Only	Engineering Topics Elective (3)	**BSE 4534 (1): Biological Processing Lab ^{1,4} Pre: BSE 3524, 3534	BSE 4544 (3) Protein Separation ¹ Pre: BSE 3504 Fall Only	BSE 4524 (3) Bioprocessing Plant Design ¹ Pre: BSE 3524 Fall Only	BSE Elective (3) ** will not need if take both BSE 4984 & 4534 labs
Spring 4th Year 15 cr.	BSE 4126 (3) Comprehensive Design Project Pre: BSE 4125 Spring Only		BSE 4564 (3) Metabolic Engineering ³ Pre: BSE 3534 Spring Only	BCHM 3114 (3) Biochemistry for Biotech ⁴ Pre: CHEM 2536/2566 Fall, Spring	Pathways (3)		Engineering Topics Elective (3)

¹ BSE Elective; ² Chemistry Elective; ³ Engineering Elective; ⁴ Technical Elective; ⁵ Pathways ****You must take EITHER BSE 4534 OR BSE 4984: CURE lab to fulfill degree requirements.**