UMBC
CHEMICAL BIOCHEMICAL AND ENVIRONMENTAL ENGINEERING

B.S. Chemical Engineering - Biotechnology & Bioengineering Track

Sample Academic Pathway

Degree Requirements	Curriculum Notes
Total Credits: 133 - 134 **Major Credits:** 105 **Min. Upper-Level Credits:** 45 **Minimum Cumulative GPA:** 2.0	• This sample plan assumes no AP/IB/CLEP or transfer credit, foreign language proficiency up to the 201 level and a math placement level of MATH 151 • All students must complete a credit-bearing English and Mathematics course in the first year of study • Gateway Course Information: **advising.coeit.umbc.edu/gateway-information/cbee-gateway** • Courses with an * symbol are benchmark requirements. Courses with an ^ symbol are gateway courses. For complete information on degree requirements, reference the Undergraduate Course Catalog (**catalog.umbc.edu**). Your personal program of study may vary.

	FALL SEMESTER		SPRING SEMESTER	
	Course	**Credits**	**Course**	**Credits**
Year 1	CHEM 101 (S non-lab GEP) Principles of Chemistry I	4	*^CHEM 102 (S non-lab GEP) Principles of Chemistry II	4
	*MATH 151 (MATH GEP) Calculus & Analytic Geometry I	4	*CHEM 102L (Lab GEP) Introductory Chemistry Lab	2
	*^ENES 101/101Y/101H Introduction to Engineering	3-4	PHYS 121 Introductory Physics I	4
	ENGL GEP	3	*^MATH 152 Calculus & Analytic Geometry II	4
	AH GEP	3	BIOL 141 Foundations of Biology: Cells, Energy & Organisms	4
	Total:	17-18	**Total:**	18
	Course	**Credits**	**Course**	**Credits**
Year 2	*^ENCH 215 Chemical Engineering Analysis	3	ENCH 225L Chemical Engineering Problem Solving & Experiment Design Lab	4
	CHEM 351 Organic Chemistry I	3	CHEM 352 Organic Chemistry II	3
	*MATH 251 Multivariable Calculus	4	*MATH 225 Introduction to Differential Equations	3
	BIOL 302 Molecular & General Genetics	4	PHYS 122 Introductory Physics II	4
	AH GEP	3	BIOL 303 Cell Biology	3
	Total:	17	**Total:**	17
	Course	**Credits**	**Course**	**Credits**
Year 3	*ENCH 300 Chemical Process Thermodynamics	3	*ENCH 427 Transport Processes II: Mass Transfer	3
	*ENCH 425 Transport I: Fluids	3	*ENCH 440 Chemical Engineering Kinetics	3
	CHEM 437 Comprehensive Biochemistry I	4	ENCH 442 Chemical Engineering Systems Analysis	3
	Foreign Language 201	4	CHEM 303 Physical Chemistry for Biochemical Science	3
	AH GEP	3	SS GEP	3
	Total:	17	**Total:**	15
	Course	**Credits**	**Course**	**Credits**
Year 4	ENCH 444 Process Engineering Economics & Design I	3	ENCH 446 Process Engineering Economics & Design II	4
	ENCH 445 Separation Processes	3	ENCH 485L Bioengineering Laboratory	4
	ENCH 482 Biochemical Engineering	3	ENCH XXX Chemical Engineering Elective	3
	ENCH XXX Chemical Engineering Elective	3	SS GEP	3
	C GEP	3		
	SS GEP	3		
	Total:	18	**Total:**	14

Advising Coordinator: COEIT Advising coeitadvising@umbc.edu ITE Building, Room 202-206

Updated 05/2025