CHEMICAL & BIOLOGICAL ENGINEERING

Bachelor of Science in Bioengineering (B.S.BIO.E.)

Department of Chemical & Biological Engineering

Catalog 2027-2028

Minimum required credit hours for graduation: 125

Optional PHYS 1311 and PHYS 1321 are 1 credit each and are not included in the 125-credit minimum.

FRESHMAN YEAR

FALL SEMESTER			SPRING SEMESTER		
CBE 101	Introduction to Chemical and Biological Engineering	1	CBE 102	Addressing Societal Challenges Using the Tools of Chemical and Biological Engineering	1
CHEM 1215	General Chemistry for STEM Majors (or Principles of Chemistry I)	3	CHEM 1225	General Chemistry II for STEM Majors	3
CHEM 1215L	General Chemistry I for STEM Majors Lab	1	CHEM 1225L	General Chemistry II for STEM Majors Lab	1
MATH 1512	Calculus I	4	MATH 1522	Calculus II	4
BIOL 2101	Principles of Biology: Molecules to Cells	3	GEN ED	Social & Behavioral Sciences	3
BIOL 2103L	Principles of Biology: Introductory Laboratory	1	PHYS 1310	Calculus-Based Physics I	3
ENGL 1120	Composition II	3	*PHYS 1311^*	*Problems in Calculus-Based Physics I*	*1*
	Total Required Semester Hours:	16		Total Required Semester Hours:	15

SOPHOMORE YEAR

FALL SEMESTER			SPRING SEMESTER		
CBE 252	Quantitative Processes in Bioengineering	3	CBE 254	Introduction to Programming for Bioengineering	3
BIOL 2210	Human Anatomy and Physiology I	3	CBE 302	Chemical & Bio Engineering Thermodynamics	3
MATH 2531	Calculus III	4	CHEM 301	Organic Chemistry	3
GEN ED	Arts & Design	3	MATH 316	Applied Ordinary Differential Equations	3
PHYS 1320	Calculus-Based Physics II	3	ELECTIVE	Professional/Technical Fundamentals Elective	3
*PHYS 1321^*	*Problems in Calculus-Based Physics II*	*1*			
	Total Required Semester Hours:	16		Total Required Semester Hours:	15

JUNIOR YEAR

FALL SEMESTER			SPRING SEMESTER		
CBE 311	Introduction to Transport Phenomena	3	BIOC 423	Introductory Biochemistry	3
GEN ED	Humanities	3	GEN ED	Communication	3
CBE 320L	Bioengineering Laboratory I: Introduction to Experimentation	3	CBE 321L	Bioengineering Laboratory II	3
ELECTIVE	Technical Elective	3	CBE 321	Mass Transfer	3
CHEM 302	Organic Chemistry	3	CBE 322	Bioengineering Instrumentation	3
CBE 486	Introduction to Statistics and Design of Experiments	3	ELECTIVE	Technical Elective	3
	Total Required Semester Hours:	18		Total Required Semester Hours:	18

SENIOR YEAR

FALL SEMESTER			SPRING SEMESTER		
CBE 420L	Bioengineering Laboratory III	1	CBE 421L	Bioengineering Laboratory IV	1
CBE 451	Senior Seminar	1	ELECTIVE	Technical Elective	3
CBE 493L	Chemical Engineering & Bioengineering Design	3	CBE 494L	Advanced Chemical Engineering and Bioengineering Design	3
ELECTIVE	Technical Elective	3	CBE 472	Biomaterials	3
ELECTIVE	Technical Elective	3	ELECTIVE	Technical Elective	3
GEN ED	Second Language	3			
	Total Required Semester Hours:	14		Total Required Semester Hours:	13

(1) Optional PHYS 1311 and PHYS 1321 are recommended 1-credit problem courses; they are not included in the 125-credit degree minimum.

(2) Professional/Technical Fundamentals and Technical Elective options are listed on the Elective Options tab.