

# Bioengineering Program Map 2017–18 Prerequisites

## First Year

Course	Title	Units	Prerequisites
MATH 021	Calculus I for Physical Sciences and Engineering	4	<i>MATH 005 or equivalent score on the Placement (or equivalent) Exam</i>
PHYS 008	Introductory Physics I for Physical Sciences	4	<i>MATH 021, which may be taken concurrently, or equivalent score on the Competency Exam</i>
BIO 001 + Lab	Contemporary Biology & Lab	4 + 1	none
CORE 001	The World at Home	4	<i>WRI 001 or passing score on the entry level analytical Writing Placement Exam or equivalent</i>

Course	Title	Units	Prerequisites
MATH 022	Calculus II for Physical Sciences and Engineering	4	<i>MATH 021 or equivalent score on the Competency Exam</i>
PHYS 009	Introductory Physics II for Physical Sciences	4	<i>MATH 022, which may be taken concurrently</i>
CHEM 002	General Chemistry I	4	<i>CHEM 001 or combined score of 40 or above on Chemistry and Competency Exam or equivalent</i>
WRI 010	College Reading and Composition	4	<i>WRI 001 or passing score on the entry level analytical Writing Placement Exam or equivalent</i>

## Semester 3

Course	Title	Units	Prerequisites
MATH 024	Linear Algebra & Differential Equations	4	<i>MATH 022 or equivalent score on the Competency Exam</i>
BIOE 021	Computing for Bioengineers	3	<i>none</i>
CHEM 010	General Chemistry II	4	<i>CHEM 002 and (MATH 011 or MATH 021, which may be taken concurrently, or equivalent score on the Competency Exam)</i>
ENGR 045	Introduction to Materials	4	<i>CHEM 002 and (MATH 021 or equivalent score on the Competency Exam) and PHYS 008</i>

## Semester 4

Course	Title	Units	Prerequisites
MATH 023	Vector Calculus	4	<i>MATH 022 or equivalent score on the Competency Exam</i>
BIOE 060	Signals and Systems	3	<i>MATH 024 and BIOE 021</i>
CHEM 008 + Lab	Principles of Organic Chemistry	3 + 1	<i>CHEM 002 (must be completed with A- or better) or CHEM 010</i>
BIO 002 + Lab	Introduction to Molecular Biology	4 + 1	<i>BIO 001</i>

## Semester 5

Course	Title	Units	Prerequisites
MATH 032	Probability & Statistics	4	<i>MATH 023, which may be taken concurrently</i>

BIOE 104	Biotransport	4	<i>BIO 002 and MATH 024 and PHYS 009</i>
BIOE 065	Biocircuits Theory	3	PHYS 009 and BIOE 060
	General Education	3-4	<i>Variable</i>

### Semester 6

Course	Title	Units	Prerequisites
BIOE 135	Biochemistry for Engineers	4	<i>MATH 021 and CHEM 008 and CHEM 010 and PHYS 009</i>
BIOE 166	Bioelectronics	3	<i>BIOE 065</i>
BIOE 130	Biothermodynamics	3	<i>MATH 023 and MATH 024 and PHYS 009 and CHEM 002</i>
BIOE 106	Cell Biology for Engineers	4	<i>BIO 002 and CHEM 010 and CHEM 008</i>

### Semester 7

Course	Title	Units	Prerequisites
BIOE 140	Biomolecular Engineering	4	<i>BIOE 135</i>
BIOE 113	Bioinstrumentation	4	<i>PHYS 009 and BIO 001 and BIOE 166</i>
BIOE 100	Physiology for Engineers	4	<i>BIO 002 and BIOE 065 and BIOE 130 and BIOE 135</i>
WRI 1XX	Upper-division writing	3-4	<i>Variable</i>

### Semester 8

Course	Title	Units	Prerequisites
BIOE 150	Bioengineering Design	4	<i>ENGR 045 and CHEM 008 and BIOE 130 and BIOE 166 and BIOE 100 and BIOE 104</i>
	General Education	3-4	<i>Variable</i>
ENGR 191	Professional Seminar	1	<i>Senior Standing</i>
BIOE 1XX	Technical Elective	3-4	<i>Variable</i>
	General Education	3-4	<i>Variable</i>