Bioengineering Program Map 2016 – 17 Prerequisites

First Year

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

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

Semester 3

Course	Title	Units	Prerequisites
MATH 023	Vector Calculus	4	MATH 022 or equivalent score on the Competency Exam
ME 021	Engineering Computing	4	none
CHEM 010	General Chemistry II	4	(CHEM 002 or CHEM 002H) and (MATH 011 or MATH 021, which may be taken concurrently, or equivalent score on the Competency Exam)
BIOE 030	Introduction to Bioengineering	4	(MATH 021 or equivalent score on the Competency Exam) and (PHYS 008 or PHYS 008H) and BIO 001 and (CHEM 002 or CHEM 002H, which may be taken concurrently)

Semester 4

Course	Title	Units	Prerequisites
MATH 024	Linear Algebra & Differential Equations	4	MATH 022 or equivalent score on the Competency Exam
ENGR 045	Introduction to Materials	4	(CHEM 002 or CHEM 002H) and (MATH 021 or equivalent score on the Competency Exam) and (PHYS 008H or PHYS 008)
CHEM 008 + Lab	Principles of Organic Chemistry	3 + 1	(CHEM 002 or CHEM 002H, must be completed with A- or better) or (CHEM 010 or CHEM 010H) and CHEM 008L, which may be taken concurrently
BIO 002 + Lab	Introduction to Molecular Biology	4 + 1	BIO 001

Semester 5

Course	Title	Units	Prerequisites
MATH 032	Probability & Statistics	4	MATH 023, which may be taken concurrently
BIOE 106	Cell Biology for Engineers	4	(BIO 002 or BIO 100) and (CHEM 010 or CHEM 010H) and (CHEM 008 or CHEM 008H) and BIOE 030
ENGR 065	Circuit Theory	3	MATH 024 and (PHYS 009 or PHYS 009H)
ENGR 057	Statics and Dynamics	4	MATH 021 or equivalent score on the Competency Exam) and (PHYS 008 or PHYS 008H)

Semester 6

Course	Title	Units	Prerequisites
BIOE 104	Biotransport	4	BIO 002 and MATH 024 and (PHYS 009 or PHYS 009H) and BIOE 030 and ENGR 057
BIOE 100	Physiology for Engineers	4	BIO 002 and (MATH 021 or equivalent score on the Competency Exam) and (PHYS 008H or PHYS 008) and (CHEM 008 or CHEM 008H)
ENGR 166	Analog and Digital Electronics	3	ENGR 065
ENGR 130	Thermodynamics	3	(CHEM 002 or CHEM 002H) and MATH 023 and MATH 024 and (PHYS 009 or PHYS 009H)

Semester 7

Course	Title	Units	Prerequisites
BIOE 140	Biomolecular Engineering	4	(MATH 021 or equivalent score on the Competency Exam) and (PHYS 009 or PHYS 009H) and (CHEM 008 or CHEM 008H) and (CHEM 010 or CHEM 010H)
BIOE 113	Bioinstrumentation	4	(PHYS 009 or PHYS 009H or PHYS 019) and BIO 001 and ENGR 065
	General Education	3-4	Variable
WRI 1XX	Upper-division writing	3-4	Variable

Semester 8

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