

# Agricultural & Biosystems Engineering Department

## B.S. in Biosystems Engineering

### Pre Health Track four-year plan

Below is the advised sequence of courses for this degree program and prerequisites as of 05/31/16.  
The official degree requirements and prerequisites can be found in the University General Catalog and the prerequisites are subject to change.”

Course Number and Title	Units	Prerequisites
<b>1<sup>ST</sup> SEMESTER</b>		
	<b>18/16</b>	
MATH 122A/MATH 122B or MATH 124 or MATH 125 Calculus I	5/3	Appropriate Math Placement
CHEM 151 General Chemistry I	4	
ENGL 101 First-Year Composition	3	
ENGR 102 Introduction to Engineering or ENGR102A & ENGR102B	3	Concurrent enrollment or completion of MATH 122B or MATH 124 or MATH 125
Tier I General Education	3	
<b>2<sup>ND</sup> SEMESTER</b>		
	<b>17</b>	
MATH 129 Calculus II	3	MATH 122A/MATH 122B or MATH 124 or MATH 125
CHEM 152 General Chemistry II	4	CHEM 151
PHYS 141 or PHYS 161H Introductory Mechanics	4	MATH 122A/MATH 122B or MATH 124 or MATH 125; Concurrent enrollment in MATH 129
ENGL 102 First-Year Composition	3	ENGL 101
Tier I General Education	3	
<b>3<sup>RD</sup> SEMESTER</b>		
	<b>16</b>	
CE 214 Statics	3	PHYS 141 or PHYS 161H ; MATH 129 or MATH 250A
ABE 284 Biosystems Thermal Engineering	3	MATH 129; PHYS 141
ABE 201 Introduction to Biosystems Engineering	2	MATH 122A/MATH 122B or MATH 124 or MATH 125
MATH 223 Vector Calculus	4	MATH 129 or MATH 250A
MCB 181 R & L Introductory Biology I or PLS 240 Plant Bio	4	Appropriate Math Placement
<b>4<sup>TH</sup> SEMESTER</b>		
	<b>17</b>	
ABE 205 Engineering Analytic Computer Skills	3	MATH 122A/MATH 122B or MATH 124 or MATH 125
MATH 254 Intro to Ordinary Differential Equations	3	MATH 129
PHYS 241 or PHYS 261H Introductory Electricity and Magnetism	4	PHYS 141
ECOL 182 R & L Introductory Biology II or MIC 205 A & L General Microbiology or PSIO 201 Human Anatomy and Physiology	4	
Tier 1 General Education	3	

**Advanced Standing is required for 300 and 400 level courses  
(See advisor for requirements)**

Course Number and Title	Units	Prerequisites
<b>5<sup>TH</sup> SEMESTER</b>		
CE 218 Mechanics of Fluids (see upper division note) or AME 331 Introduction to Fluid Mechanics	3	
SIE 265 Engineering Management I	3	
ABE 221 Introduction to Computer Aided Design	3	
CHEM 241 A & CHEM 243 A Organic Chemistry (see upper division note)	4	
SIE 305 Engineering Probability and Statistics	3	
<b>6<sup>TH</sup> SEMESTER</b>		
ABE 423 Biosystems Analysis and Design	3	
ABE Design Elective	3	
Technical Elective	3	
AGTM 422 or ENGL 308 Technical Writing	3	
CHEM 241 B & CHEM 243 B Organic Chemistry (see upper division note)	4	
<b>7<sup>TH</sup> SEMESTER</b>		
ABE 496A Seminar in Engineering Careers and Professionalism	1	
ABE 498A Senior Capstone: Engineering Design I	3	
ABE 447 Sensors and Controls	3	
ABE Design Elective	3	
AME 324A Mechanical Behavior of Engineering Materials	3	
Tier I General Education (*upper division)	3	
<b>8<sup>TH</sup> SEMESTER</b>		
ENGR 498B Senior Capstone Engineering Design II	3	
Technical Elective	3	
ABE 393 Internship	1	
ABE Design Elective	3	
Tier II General Education (*upper division)	3	
Tier II General Education (*upper division)	3	

Total Units needed for Graduation 128: (Total Units with Math 125 option = 130 or Total Units with Math 122A/B option = 128)

- Engineering Majors are required to complete Upper Division Units 42 to satisfy the major requirements. BE Pre-Health majors who take 4 to 8 units of OCHEM and 3 units CE 218, will not meet the UA Upper Division Unit requirements. To satisfy the Upper Division requirements for the UA, the ABE Department recommends that students fulfill the requirement by completing 3 to 12 units of course work under the one or more of the following areas: Tier I, Tier II or Biosystems Technical Electives.
- BE students should review their Student Academic Advisement Report (SAAR), with either the ABE Academic Program Coordinator or their assigned ABE Faculty Advisor at least once a semester.
- Students who do not take ENGR 102, will be required to take a 3 unit Engineering course approved by an ABE Advisor. (courses are listed under the BE Tech list.)
- ABE Engineering Design Electives: Students are required to complete 9 units of upper division courses, see SAAR for list of acceptable courses.
- Technical Electives: Students are required to complete 9 units of upper division courses, see SAAR for a list of acceptable courses.
- Advanced Core II course: Students should take one of the pre-approved ABE courses printed under the Advanced Core II section. Students who do not take one of the pre-approved courses, must receive approval from an advisor prior to taking the course. The 300-400 level course must be in the student's Biosystems focus area (Controlled Environment, Biological, Bioinformatics, Water, Pre-Health). These courses can be found under the BE Tech elective list.