PURDUE UNIVERSITY

Agricultural and Biological Engineering
Biological Engineering:
Cellular and Biomolecular Engineering

College of Engineering

Program-BE-BSE
Major-BIEN
Concentration-CBME

Biological Engineering Major Courses (129 credits) (https://ag.purdue.edu/oap/Pages/major.aspx)

Required ABE Courses (45 credits)

_____ (4) ABE 20100 Thermodynamics of Biological Systems I
_____ (3) ABE 20200 Thermodynamics of Biological Systems II
_____ (1) ABE 29000 Sophomore Seminar
_____ (3) ABE 30100 Numerical and Computational Modeling in Biological Engineering
_____ (3) ABE 30300 Applications of Physics and Chemistry to Biological Processes
_____ (3) ABE 30400 Bioprocess Engineering laboratory
_____ (3) ABE 30700 Momentum Transfer in Food and Biological Systems
_____ (3) ABE 30800 Heat and Mass Transfer in Food and Biological Systems
_____ (3) ABE 37000 Biological/Microbial Kinetics and Reaction Engineering
_____ (3) ABE 44000 Cell and Molecular Design Principles
_____ (3) ABE 45700 Transport Operations in Food and Biological Engineering I
_____ (3) ABE 46000 Sensors and Process Controls
_____ (1) ABE 49000 Professional Practice in Agricultural and Biological Engineering
_____ (3) ABE 55700 Transport Operations in Food and Biological Engineering II
_____ (3) ABE 55800 Process Design for Food and Biological Systems
_____ (3) ABE 58000 Process Engineering Of Renewable Resources

Other Departmental /Program Course Requirements (66 credits)

_____ (3) BIOL 23000 or 23100 Biology of the Living Cell or Cell Structure and Function
(3) CHE 32000 Statistical Modeling and Quality Enhancement
(4) CHM 11500 General Chemistry (satisfies Science #1 for core)
(4) CHM 11600 General Chemistry (satisfies Science #2 for core and FYE requirements)
(4) CHM 25700 or (CHM 25500 and CHM 25501) Organic chemistry or (Organic chemistry I and Organic chemistry Lab I)
(2) CNIT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II
_____ (3) COM 11400 Fundamentals of Speech Communication (satisfies Oral Communication for core)
(4) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)
_____ (2) ENGR 13100 Transforming Ideas to Innovation I (satisfies FYE requirements)
(2) ENGR 13200 Transforming Ideas to Innovation II (satisfies FYE requirements)
(2) IT 22600 Biotechnology Laboratory I
(4) MA 16500 Plane Analytic Geometry and Calculus I (satisfies Quantitative Reasoning for core and FYE requirements)
(4) MA 16600 Plane Analytic Geometry and Calculus II (satisfies FYE requirements)
(4) MA 26100 Multivariate Calculus
(4) MA 26200 Linear Algebra and Differential Equations
_____ (3) MA 30300 Partial Differential Equations
_____ (4) PHYS 17200 Modern Mechanics (satisfies FYE requirements)
(3) CS 15900 Programming Applications for Engineering
(4) _____ Biology Selective
(3) _____ Biology or Science Selective

NOTE: Of the 18 credit hours, 9 credits must meet the College of Agriculture International Understanding (6) and Multicultural Awareness (3) requirements.

General Electives (18 credits)

_____ (3) _____ Written/Oral Communication Selective
_____ (3) Economics Selective (satisfies Human _____ Culture Behavioral/Social Science for core)
_____ (3) UCC Humanities Selective (satisfies Human _____ Cultures Humanities for core)
_____ (3) _____ Humanities or Social Science Selective
_____ (2) _____ Humanities or Social Science Selective
_____ (3) Humanities or Social Science Selective _____ (30000+ level)

University Core Requirements

Human Cultures Humanities	☐ _____	*Science, Technology & Society Selective*	☐ _____
Human Cultures Behavioral/Social Science	☐ _____	*Written Communication*	☐ _____
Information Literacy	☐ _____	*Oral Communication*	☐ _____
Science Selective	☐ _____	*Quantitative Reasoning*	☐ _____
Science Selective	☐ _____		

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Suggested Arrangement of Courses:

Credits	Fall 1st Year	Prerequisite	Credits	Spring 1st Year	Prerequisite
4	CHM 11500	Pre/co: MA 16500	4	CHM 11600	CHM 11500
4	ENGL 10600		3	COM 11400	
2	ENGR 13100		2	ENGR 13200	ENGR 13100
4	MA 16500	ALEKS 85+	4	MA 16600	MA 16500
3	PHYS 17200	Pre/co: MA 16500	3	CS 15900	Pre/co: ENGR 13100
18			**16**		

Credits	Fall 2nd Year	Prerequisite	Credits	Spring 2nd Year	Prerequisite
4	ABE 20100	CHM 11500, PHYS 17200	3	ABE 20200	ABE 20100
1	ABE 29000		3	CHE 32000	MA 26200
3	BIOL 23000 or BIOL 23100	CHM 11600	2	CNIT 22700 or IT 22700	
4	CHM 25700 or (CHM 25500 and CHM 25501)	CHM 11500, PHYS 17200	4	MA 26200	MA 26100
2	IT 22600		3	_ _ _ _ _ Economics Selective	
4	MA 26100	MA 16500			
18			**15**		

Credits	Fall 3rd Year	Prerequisite	Credits	Spring 3rd Year	Prerequisite
3	ABE 30300	ABE 20200	3	ABE 30100	ABE 37000, MA 26200, CS 15900
3	ABE 30700	ABE 20200, MA 262	3	ABE 30400	Co: ABE 30800
3	ABE 37000	MA 26200	3	ABE 30800	ABE 30700
3	MA 30300	MA 26200	3	ABE 45700	pre/co: ABE 30800
4	Biological Science Selective		3	Humanities or Social Science Selective	
16			**15**		

Credits	Fall 4th Year	Prerequisite	Credits	Spring 4th Year	Prerequisite
3	ABE 46000	MA 26600	3	ABE 44000	MA 26500, 26600, BIOL 23000
1	ABE 49000	ABE 29000	3	ABE 55800	ABE 55700
3	ABE 55700	ABE 45700	3	ABE 58000	ABE 37000
3	Biological Science Science Selective		3	UCC Humanities Selective	
3	Written or Oral Communication Selective		3	Humanities or Social Science Selective (30000+ level)	
3	Humanities or Social Science Selective				
16			**15**		

129 semester credits required for Bachelor of Engineering degree.
Students must have a graduation index of 2.0

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The student is ultimately responsible for knowing and completing all degree requirements.

Degree Works is knowledge source for specific requirements and completion

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