

## **Agricultural and Biological Engineering Biological Engineering:** Cellular and Biomolecular Engineering College of Engineering

Program-BE-BSE Major-BIEN Concentration-CBME

Required ABS 20100 Thermodynamics of Biological Systems I  (3) ABS 20100 Thermodynamics of Biological Systems II  (3) ABS 20000 Sephomore Seminar  (3) ABS 30100 Numerical and Computational Modeling in Biological Engineering I  (3) ABS 30100 Numerical and Computational Modeling in Biological Foresess II  (3) ABS 30300 Applications of Physics and Chemistry to Biological Processes II  (3) ABS 30300 Applications of Physics and Chemistry to Biological Processes II  (3) ABS 30400 Bioprocess Engineering laboratory II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Mementum Transfer in Food and Biological Systems II  (3) ABS 30400 Meat and Mass Transfer in Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (3) ABS 30400 Bioprocess Engineering In Food and Biological Systems II  (4) CHM 11500 General Chemistry (satisfies Science #1  (5) CINT 32000 Statistical Modeling and Quality II  (5) ENGR 13100 Transforming Ideas to Innovation II  (5) (satisfies FYE requirements)  (6) CHM 25500 General Chemistry (satisfies Science #2  (7) CINT 22700 or II CINT 22700 Biotechnology Laboratory II  (8) CHM 11500 General Chemistry (satisfies Science #2  (9) CINT 22700 Fire II 22700 Biotechnology Laboratory II  (1) MA 16500 Plane Analytic Geometry and Calculus II  (8) Satisfies FYE requirements  (1) MA 16500 Plane Analytic Geometry and Calculus II  (8) Satisfies FYE requirements  (1)	Diologic	cal Engineering Major Courses (129 Credits) ( <u>inteps:/</u>	<u>/ ag.puruue.e</u>	euu/oap/Fages/major.aspx)
3 ABE 2000 Thermodynamics of Biological Systems     Reaction Engineering		Required ABE Courses (45 credits)		
3 ABE 39000 Sophomore Seminar   3 ABE 44000 Cell and Molecular Design Principles   3 ABE 30100 Numerical and Computational Modeling   1 Biological Engineering   1 Biological Engineering   3 ABE 3000 Applications of Physics and Chemistry   3 ABE 45000 Process and Process Controls   3 ABE 30700 Momentum Transfer in Food and   3 ABE 58000 Process Design for			(3)	
3   ABE 30100 Numerical and Computational Modeling in Biological Engineering   3   ABE 49000 Processes   3   ABE 49000 Process Controls   Biological Processes   3   ABE 49000 Process Controls   Biological Processes   3   ABE 49000 Process Controls   Biological Displacering   3   ABE 30400 Biological Systems   3   ABE 30400 Biological Systems   3   ABE 30400 Biological Systems   3   ABE 55700 Transport Operations in Food and Biological Engineering   3   ABE 55700 Transport Operations in Food and Biological Engineering   3   ABE 55000 Process Design for Food and Biological Engineering   3   ABE 55000 Process Design for Food and Biological Engineering   3   ABE 55000 Process Design for Food and Biological Engineering   3   ABE 55000 Process Design for Food and Biological Engineering   3   ABE 55000 Process Design for Food and Biological Engineering   4   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Biological Engineering   5   ABE 55000 Process Design for Food and Bio	(3)	ABE 20200 Thermodynamics of Biological Systems II		
in Biological Engineering   Biological Engineering    Biological Processes   1, 3	(1)	ABE 29000 Sophomore Seminar	omore Seminar (3) ABE 4	
in Biological Engineering   Biological Engineering    Biological Processes   1, 3	(3)	ABE 30100 Numerical and Computational Modeling	(3)	ABE 45700 Transport Operations in Food and
Biological Processes   1   ABE 49000 Professional Practice in Agricultural and Biological Engineering   and Biological Engineering   and Biological Engineering   and Biological Engineering   Babe 3700 Momentum Transfer in Food and Biological Systems   Biological Systems   Biological Engineering   Babe 3800 Heat and Mass Transfer in Food and Biological Systems   3   ABE 58000 Process Design for Food and Biological Systems   Secources   ABE 38000 Heat and Mass Transfer in Food and Biological Systems   Secources   ABE 38000 Process Design for Food and Biological Systems   Secources   ABE 58000 Process Design for Food and Biological Systems   Secources   ABE 58000 Process Engineering Of Renewable Resources   ABE 58000 Process Design for Food and Biological Engineering   Biological Engine	` ` `	in Biological Engineering		
and Biological Engineering  ABE 30700 Momentum Transfer in Food and Biological Systems  ABE 30800 Heat and Mass Transfer in Food and Biological Systems  Bological Systems  ABE 30800 Heat and Mass Transfer in Food and Biological Engineering II  ABE 55800 Process Design for Food and Biological Systems  College of March 1997  ABE 58000 Process Design for Food and Biological Systems  Bological Systems  College Systems  ABE 58000 Process Design for Food and Biological Systems  ABE 58000 Process Engineering Of Renewable Resources  College Structure and Function  Cell Munction  Cell Munction  Cell Structure and Function  Cell Munction  Cell Mu	(3)	ABE 30300 Applications of Physics and Chemistry to	(3)	ABE 46000 Sensors and Process Controls
(3) ABE 30700 Momentum Transfer in Food and Biological Systems  (3) ABE 30800 Heat and Mass Transfer in Food and Biological Systems  (3) ABE 55800 Process Design for Food and Biological Systems  (3) ABE 55800 Process Design for Food and Biological Systems  (3) ABE 55800 Process Design for Food and Biological Systems  (3) ABE 55800 Process Engineering Of Renewable Resources  (4) Other Departmental /Program Course Requirements (66 credits)  (5) BIOL 23000 or 23100 Biology of the Living Cell or Cell Structure and Function  (6) Cell Structure and Function  (7) Cell Structure and Function  (8) CHB 23000 Statistical Modeling and Quality  (9) CHM 11500 General Chemistry (satisfies Science #1 for core)  (1) CHM 11500 General Chemistry (satisfies Science #2 for core and FYE requirements)  (1) CHM 11500 General Chemistry (satisfies Science #2 for core and FYE requirements)  (2) CNIT 22700 or (THZ 2700 Bioinformatics or Core and FYE requirements)  (3) COM 11400 Fundamentals of Speech Communication (satisfies Oral Communication (satisfies Oral Communication for core)  (3) COM 11400 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)  NOTE: of the 18 credit hours, 9 credits must meet the College of Agriculture International Understanding (6) and Multicultural Awareness (3) requirements.  (3) Economics Selective (satisfies Human Cultures Humanities or Social Science Selective Core Requirements  (4) University Core Requirements  (5) Economics Selective (satisfies Human Cultures Humanities or Social Science Selective University Core Requirements  (6) CHM 25700 CHM 25500 Selective (satisfies Human Cultures Humanities for core)  (8) CICC Humanities Selective (satisfies Human Cultures Humanities or Social Science Selective Written Communication  (9) Communication (butters Humanities or Social Science Selective Written Communication (butters Humanities or Social Science Selective Written Communication (butters Humanities Or Social Science Selective Written Communic		Biological Processes	(1)	
Games   Game	(3)	ABE 30400 Bioprocess Engineering laboratory		and Biological Engineering
Biological Systems   Biological Engineering II			(3)	ABE 55700 Transport Operations in Food and
Sample   S				
Biological Systems	(3)	•	(3)	
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)  (5) CT 2500 General Chemistry (satisfies Science #1 for core and FYE requirements)  (4) CHM 11500 General Chemistry (satisfies Science #2 for core and FYE requirements)  (5) CT MM 11500 General Chemistry (satisfies Science #2 for core and FYE requirements)  (6) CHM 12500 or (CHM 25500 and CHM 25501)  (7) Cropanic chemistry or (Organic chemistry 1 and Organic chemistry (1 and Organic chemistry 1 and Organic Chemistry Lab I)  (8) CNTT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II  (9) CNTT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II  (1) CMM 26100 Multivariate Calculus  (2) CNTT 22700 or IT 22700 Bioinformatics or Communication (satisfies Oral Communication for core)  (3) CMM 1400 Fundamentals of Speech  (4) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)  NOTE: Of the 18 credit hours, 9 credits must meet the College of Agriculture International Understanding (6) and Multicultural Awareness (3) requirements.  (3) Leconomics Selective (satisfies Human Cultures Humanities or core)  (3) Lec Humanities Selective (satisfies Human Cultures Humanities or core)  (4) Lec Humanities Selective (satisfies Human Cultures Humanities or core)  (5) UCC Humanities For core)  (6) Leconomics Selective (satisfies Human Cultures Humanities or core)  (7) Leconomication Cultures Behavioral/Social Science for core)  (8) Leconomics Selective (satisfies Human Cultures Humanities or core)  (9) Leconomication Cultures Behavioral/Social Science For core)  (10) Leconomication Cultures Behavioral/Social Science For core)  (11) Leconomication Cultures Behavioral/Social Science Selective Culture Communication Cultures Behavioral/Social Science Selective Culture				_
Resources   Reso			(3)	•
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) (5) CHM 11500 General Chemistry (satisfies Science #1 for core) (6) CHM 11500 General Chemistry (satisfies Science #2 for core and FYE requirements) (7) CHM 11600 General Chemistry (satisfies Science #2 for core and FYE requirements) (8) CHM 25700 or (CHM 25500 and CHM 25501) (9) Organic chemistry Lab I) (10) Organic chemistry Lab I) (11) Organic chemistry Lab I) (12) CNIT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II (13) COM 11400 Fundamentals of Speech (14) ENGL 10600 First-Year Composition (satisfies Corel Communication (satisfies Oral Communication Information Literacy (14) ENGL 10600 First-Year Composition (satisfies Written Communication Information Literacy (15) Selective For core and FYE requirements (16) Experiments (17) Core and FYE requirements (18) MA 26200 Linear Algebra and Differential Equations (18) PHYS 17200 Modern Mechanics (satisfies FYE requirements) (19) CS 15900 Programming Applications for Engineering (19) ENGL 10600 First-Year Composition (satisfies Corel Communication Information Literacy (19) Selective For core and FYE requirements (19) Core and FYE requirements (20) Called For Corelits International Understanding (6) and Multicultural Awareness (3) requirements (3) Core and FYE requirements (4) ENGL 10600 First-Year Composition Selective (3) Economics Selective (satisfies Human (2) Humanities or Social Science Selective (3) Economics Selective (satisfies Human (2) Humanities or Social Science Selective (3) Economics Selective (satisfies Human (2) Humanities or Social Science Selective (3) Economics Selective (satisfies Human (2) Humanities or Social Science Selective (3) Humanities For core) (3) Humanities or Social Science Selective (3) Humanities or Social Science Selective (4) Humanities or Social Science Selective (4) Humanities or Social Science Selective (4		Other Departmental /Program Course Requirement	s (66 credits	
Cell Structure and Function  (3) CHE 32000 Statistical Modeling and Quality Enhancement  (4) CHM 11500 General Chemistry (satisfies Science #1 for core) (4) CHM 11500 General Chemistry (satisfies Science #1 for core and FYE requirements) (4) CHM 11600 General Chemistry (satisfies Science #2 for core and FYE requirements) (4) CHM 25700 or (CHM 25500 and CHM 25501) (4) CHM 25700 or (CHM 25500 and CHM 25501) (5) Cryanic chemistry or (Organic chemistry or (Organic chemistry or (Organic chemistry or Organic chemi	(3)		-	-
(3) CHE 32000 Statistical Modeling and Quality Enhancement (4) CHM 11500 General Chemistry (satisfies Science #1 for core) (5) CTP 2600 Biotechnology Laboratory I (6) CHM 11500 General Chemistry (satisfies Science #2 for core and FYE requirements) (6) CHM 11600 General Chemistry (satisfies Science #2 for core and FYE requirements) (6) CHM 25700 or (CHM 25500 and CHM 25501) (7) CRAIL CHM 25700 or (CHM 25500 and CHM 25501) (8) CHM 25700 or (CHM 25500 and CHM 25501) (9) CRAIL CHM 25700 or T 22700 Bioinformatics or Organic chemistry Lab I) (10) CRAIL CHM 25700 or T 22700 Bioinformatics or Sibotechnology Laboratory II (20) CNIT 22700 or T 22700 Bioinformatics or Sibotechnology Laboratory II (21) CNIT 22700 or T 22700 Bioinformatics or Sibotechnology Laboratory II (22) CNIT 22700 or T 22700 Bioinformatics or Sibotechnology Laboratory II (23) COM 11400 Fundamentals of Speech (24) ENGL 10600 First-Year Composition (satisfies Oral Communication for Core) (35) CS 15900 Programming Applications for Engineering (46) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy (30) Selective for core and FYE requirements)  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) (31) Seconomics Selective (satisfies Human (2) Humanities or Social Science Selective (2) Humanities or Social Science Selective Culture Behavioral/Social Science for core (2) Humanities or Social Science Selective Cultures Humanities For core)  University Core Requirements				
Enhancement   (satisfies FYE requirements)	(3)		(2)	
(4) CHM 11500 General Chemistry (satisfies Science #1 for core) (4) CHM 11500 General Chemistry (satisfies Science #2 for core and FYE requirements) (4) CHM 25700 or (CHM 25500 and CHM 25501) (5) Organic chemistry or (Organic chemistry I and Organic chemistry Lab I) (6) CNIT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II (7) CNIT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II (8) CONIT 22700 or IT 22700 Bioinformatics or Core (9) CONIT 22700 or IT 22700 Bioinformatics or Core (10) MA 30300 Partial Differential Equations (11) COM 11400 Fundamentals of Speech (12) Communication (satisfies Oral Communication for core) (13) COM 11400 First-Year Composition (satisfies Written Communication, Information Literacy (14) ENGL 10600 First-Year Composition (satisfies Piecetive For core and FYE requirements)  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) (13) Written/Oral Communication Selective (14) Economics Selective (satisfies Human (15) Culture Behavioral/Social Science for core) (15) CHumanities Selective (satisfies Human (15) Cultures Humanities for core)  University Core Requirements  Written Communication (15) Core Requirements  Written Communication (16) Written Communication (17) Core Requirements (18) Core Requirements (19) Core Requirements (19) Core Communication (19) Core Core Core Core Core Core Core Core	(0)		(-)	
for core)  (4) CHM 11600 General Chemistry (satisfies Science #2 for core and FYE requirements)  (4) CHM 25700 or (CHM 25500 and CHM 25501)  (5) Organic chemistry or (Organic chemistry I and Organic chemistry Lab I)  (6) Organic chemistry Lab I)  (7) Organic chemistry Lab I)  (8) Organic chemistry Lab II  (9) Organic chemistry Lab II  (10) Organic chemistry Lab II  (11) Organic chemistry Lab II  (12) CNIT 22700 Bioinformatics or Biotechnology Laboratory II  (13) MA 26200 Linear Algebra and Differential Equations  (14) MA 26200 Linear Algebra and Differential Equations  (15) OM 11400 Fundamentals of Speech  (16) Communication (satisfies Oral Communication for core)  (17) Communication (satisfies Oral Communication for core)  (18) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)  (19) MOTE: Of the 18 credit hours, 9 credits must meet the College of Agriculture International Understanding (6) and Multicultural Awareness (3) requirements  (19) Formation Literacy  (20) Liture Behavioral/Social Science for core (21) Intuman Cultures Humannities or core)  (21) UCC Humanities Selective (satisfies Human (22) Humanities or Social Science Selective (23) Humanities or Social Science Selective (24) Intuman Cultures Humannities or core)  (21) University Core Requirements  Human Cultures Humannities  (8) MA 16500 Plane Analytic Geometry and Calculus II (satisfies PYE requirements)  (19) MA 26200 Linear Algebra and Differential Equations  (19) MA 30300 Partial Differential Equations  (21) PHYS 17200 Modern Mechanics (satisfies FYE requirements)  (3) CS 15900 Programming Applications for Engineering  (4) ENGL 10600 First-Year Composition (satisfies or Agriculture International Understanding (6) and Multicultural Awareness (31) requirements  (3) Understanding (6) and Multicultural Awareness (18) Physical Science Selective (	(4)		(2)	
(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)  (5) CNIT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II  (6) MA 26100 Multivariate Calculus (7) CNIT 22700 Bioinformatics or Biotechnology Laboratory II  (8) COM 11400 Fundamentals of Speech (9) COM 11400 Fundamentals of Speech (14) PHYS 17200 Modern Mechanics (satisfies FYE requirements)  (8) COM 11400 Fundamentals of Speech (14) PHYS 17200 Modern Mechanics (satisfies FYE requirements)  (8) CS 15900 Programming Applications for Engineering (15) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)  NOTE: Of the 18 credit hours, 9 credits must meet the College of Agriculture International Understanding (6) and Multicultural Awareness (3) requirements.  (16) Economics Selective (satisfies Human (2) Humanities or Social Science Selective (3) Humanities or Social Science Selective (4) Humanities or Social Science Selective (5) Humanities or Social Science Selective (6) Humanities or Social Science Selective (7) Humanities Organical Science Selective (7) Humanities Or	(1)			
for core and FYE requirements)  (4) CHM 25700 or (CHM 25500 and CHM 25501)	(4)	· · · · · · · · · · · · · · · · · · ·	(4)	
(4) CHM 25700 or (CHM 25500 and CHM 25501) Organic chemistry or (Organic chemistry 1 and Organic chemistry or (Organic chemistry 1 and Organic chemistry 1 and Organic chemistry 1 and Universe Humanitites or (Organic chemistry 1 and Universe Behavioral/Social Science Selective Information Universe Humanitites or (Organic chemistry or (Organic chemistry 1 and Organic chemistry 1 and Organic chemistry or (Organic chemistry 1 and Organic chemistry 1 and Organic chemistry 1 and (4) MA 26100 Multivariate Calculus (4) MA 26200 Linear Algebra and Differential Equations (5) MA 30300 Partial Differential Equations (6) MA 30300 Partial Differential Equations (7) PHYS 17200 Modern Mechanics (satisfies FYE requirements) (8) CS 15900 Programming Applications for Engineering (9) ENGL 10600 First-Year Composition (satisfies (4) Security 1 and 1	(4)			
Organic chemistry or (Organic chemistry I and Organic chemistry Lab I) (4) MA 26100 Multivariate Calculus  (2) CNIT 22700 or IT 22700 Bioinformatics or (4) MA 26200 Linear Algebra and Differential Equations Biotechnology Laboratory II Equations  (3) MA 30300 Partial Differential Equations  (3) MA 30300 Partial Differential Equations  (4) PHYS 17200 Modern Mechanics (satisfies FYE requirements)  (5) CS 15900 Programming Applications for Engineering  (4) ENGL 10600 First-Year Composition (satisfies (4) Biology Selective Written Communication, Information Literacy (3) Biology or Science Selective Selective for core and FYE requirements)  (5) MOTE: Of the 18 credit hours, 9 credits must meet the College of Agriculture International Understanding (6) and Multicultural Awareness (3) requirements.  (6) First-Year Composition (satisfies (4) Biology or Science Selective (5) and Multicultural Awareness (3) requirements.  (6) First-Year Communication Selective (5) and Multicultural Awareness (6) and Multicultural Awareness (7) requirements.  (8) First Pervised (8) First Pervised (9) First P	(4)		(4)	
Organic chemistry Lab I)	(4)	,	(4)	
(2) CNIT 22700 or IT 22700 Bioinformatics or Biotechnology Laboratory II			(4)	
Biotechnology Laboratory II	(2)			
(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)  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 (satisfies Human Culture Behavioral/Social Science for core) (3) UCC Humanities Selective (satisfies Human Cultures Human Cultures Humanities or core)  University Core Requirements  Science, Technology & Society Selective International Understanding (6) and Multicultural Awareness (3) Figure 1 (3) Figure 2 (3) Figure 3 (3) Figu	(2)		(4)	
(3) COM 11400 Fundamentals of Speech Communication (satisfies Oral Communication for core) (3) CS 15900 Programming Applications for Engineering (4) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)  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) Economics Selective (satisfies Human (2) Humanities or Social Science Selective (3) Humanities or Social Science		bioteciniology Laboratory II		-
Communication (satisfies Oral Communication for core)  Core)  (3) CS 15900 Programming Applications for Engineering  (4) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)  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)Humanities or Social Science Selective (3)	(2)	COM 11400 From James and James de Company		
Core   (3) CS 15900 Programming Applications for Engineering  (4) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective for core and FYE requirements)  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)	(3)		(4)	
Engineering  (4) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective For core and FYE requirements)  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)		•	(0)	
(4) ENGL 10600 First-Year Composition (satisfies Written Communication, Information Literacy Selective For core and FYE requirements)  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) Humanities or Social Science Selective (3) Culture Behavioral/Social Science for core) (3) Humanities or Social Science Selective (3) Humanities or Social Science Selective (3) Cultures Humanities For core) (3) Humanities or Social Science Selective (3) Written Communication (3) Cultures Behavioral/Social Science		corej	(3)	
Written Communication, Information Literacy Selective for core and FYE requirements)  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) Humanities or Social Science Selective (3) Humanities or Social Science Selective (2) Humanities or Social Science Selective (3) (30000+level) (30000+level)	(4)	THOU 40000 FLORING CONTRACTOR	(4)	
Selective for core and FYE requirements)  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	(4)			
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)	Biology or Science Selective
Awareness (3) requirements.  General Electives (18 credits)  (3)Written/Oral Communication Selective (3)Beconomics Selective (satisfies Human    Culture Behavioral/Social Science for core) (3) UCC Humanities Selective (satisfies Human    Cultures Humanities for core)  University Core Requirements  Human Cultures Humanities  Science, Technology & Society Selective  Written Communication  Oral Communication	NOTE (		· A · · 1, · · ·	
General Electives (18 credits)  (3)Written/Oral Communication Selective  (3)Culture Behavioral/Social Science for core)  (3) UCC Humanities Selective (satisfies Human(3)Humanities or Social Science Selective(3)Humanities or Social Science Selective(3)Humanities or Social Science Selective(3)Humanities or Social Science Selective(3)			Agriculture i	nternational Understanding (6) and Multicultural
(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)  University Core Requirements  Human Cultures Humanities    Science, Technology & Society Selective   Image: Communication   Image: Communicat				
(3) Economics Selective (satisfies HumanCulture Behavioral/Social Science for core) (3) UCC Humanities Selective (satisfies HumanCultures Humanities for core) University Core Requirements  Human Cultures Humanities    Science, Technology & Society Selective   Written Communication   Oral Comm			(2)	Humanitias or Social Science Soloctive
Culture Behavioral/Social Science for core) (3) UCC Humanities Selective (satisfies Human(30000+ level)  University Core Requirements  Human Cultures Humanities  Human Cultures Behavioral/Social Science  Information Literacy  (3) Humanities or Social Science Selective(30000+ level) (30000+ level)				
(3) UCC Humanities Selective (satisfies Human(30000+ level)	(3)			
University Core Requirements  Human Cultures Humanities    Science, Technology & Society Selective	•		(3)	
University Core Requirements       Human Cultures Humanities     Science, Technology & Society Selective        Human Cultures Behavioral/Social Science     Written Communication        Information Literacy     Oral Communication	(3)			(30000+ level)
Human Cultures Humanities  Human Cultures Behavioral/Social Science  Unformation Literacy  Science, Technology & Society Selective Written Communication  Oral Communication	Univers	· · · · · · · · · · · · · · · · · · ·		
Human Cultures Behavioral/Social Science     Information Literacy     Information Literacy     Information Literacy     Information Information		•		
Information Literacy				
<u> </u>				
Science Selective   Quantitative Reasoning   Quantitative Reasoning	· · · · · · · · · · · · · · · · · · ·			
	Science Selective		Quantitative Re	easoning — — — — — — — — — — — — — — — — — — —

## Biological Engineering: Cellular and Biomolecular Engineering <a href="https://ag.purdue.edu/oap/Pages/major.aspx">https://ag.purdue.edu/oap/Pages/major.aspx</a>

**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