

**AGRICULTURAL AND BIOSYSTEMS ENGINEERING CURRICULUM GUIDE - Fall 2024\***  
**Department of Agricultural and Biosystems Engineering - North Dakota State University**

Student: \_\_\_\_\_ Student ID # \_\_\_\_\_ Advisor \_\_\_\_\_

	FALL					SPRING				
	Course	Crs	Grade <sup>1</sup>	300 /400 Level <sup>2</sup>	Gen Ed	Course	Crs	Grade <sup>1</sup>	300 /400 Level <sup>2</sup>	Gen Ed
Freshman (<27 crs)	<b>ABEN 110</b> <i>Introduction to ABEN</i>	3				<b>ABEN 348</b> <i>Ag Technology Expo</i>	1		1	
	<b>CHEM 121</b> <i>General Chemistry I</i>	3			S	<b>ME 212</b> <i>Fund.of Visual Comm</i>	3			
	<b>ENGL 110<sup>3</sup></b> <i>College Composition I</i>	3			C	<b>ME 221</b> <i>Engineering Mechanics 1</i>	3			
	<b>MATH 165</b> <i>Calculus I</i>	4			R	<b>CHEM 122</b> <i>General Chemistry II</i>	3			S
	BIOL 150 or MICR 202 or BIOL 111, or BIOL 124	3				<b>ENGL 120</b> <i>College Composition II</i>	3			C
	<b>BIOL 150L or MICR 202L, or CHEM 121L</b>	1				<b>MATH 166</b> <i>Calculus II</i>	4			
	<b>17</b>					<b>17</b>				
Sophomore (27-59 crs)	<b>ABEN 255</b> <i>Comp. Aided Analysis/Design</i>	3				<b>ABEN 263</b> <i>Biomaterials Processing</i>	3			
	<b>COMM 110</b> <i>Fund Public Speaking</i>	3			C	<b>PHYS 252</b> <i>Univ Physics II</i>	4			S
	<b>ME 222</b> <i>Engineering Mechanics II</i>	3				<b>PHYS 252L</b> <i>Univ Physics II Lab</i>	1			L
	<b>ME 223</b> <i>Mechanics of Materials</i>	3				<b>MATH 266</b> <i>Intro Diff Equations</i>	3			
	<b>MATH 259</b> <i>Multivariate Calculus</i>	3				<b>ME 350</b> <i>Thermodynamics</i>	3		3	
	<b>MATH 128</b> <i>Intro to Linear Algebra</i>	1				CSCI 122 or ME 213 or GEOG 455 or PAG 215	3			
	<b>16</b>					<b>17</b>				
Junior (60 - 89 crs)	<b>IME 460 or STAT 330</b> <i>(see sidebar)</i>	3		3		<b>ABEN 444 or ABEN 452</b> <i>(see sidebar)</i>	3		3	
	<b>CE 309 or ME 352</b> <i>Fluid Mech.</i>	3		3		<b>ABEN 482</b> <i>Inst and Measurement</i>	3		3	
	<b>ABEN 358</b> <i>Electric Energy Appl in Ag</i>	3		3		<b>ENGL 320, 321, 324, or 459</b> <i>Inten Write</i>	3		3	C
	<b>ABEN 479</b> <i>Fluid Power Sys Design</i>	3		3		<b>ABEN 391</b> <i>Seminar</i>	1		1	
	Program Elective	3				<b>ABEN 464 (4cr) or ABEN 484 (3 cr)</b>	3		3	
						Gen Ed Elective (see side bar)	3			A
	<b>15</b>				<b>*Complete your Degree Audit this semester</b>	<b>16</b>				
Senior (90 + crs)	<b>ABEN 486</b> <i>Design Project I</i>	2		2		<b>ABEN 487</b> <i>Design Project II</i>	2		2	
	<b>ENGR 327</b> <i>Ethics, Engr, &amp; Tech</i>	3		3	A/D	Program Elective (see back)	3			
	<b>IME 440</b> <i>Engineering Economy</i>	3		3		Program Elective (see back)	3			
	Program Elective (see back)	3				Gen Ed Elective (see side bar)	3			B/G
	Prog. Elec. 300-400 Engr Elective (see back)	3		3		Gen Ed Elective (see side bar)	3			B
	Gen Ed Elective (see side bar)	2			W					
	<b>16</b>				<b>*Complete your Application for Graduation by 3rd week of semester</b>	<b>14</b>				

General Education Electives			
See www.ndsu.edu/registrar/gened for approved courses.			
Gen Ed	Course	Crs	Grade
A	ENGR 327	3	
A		3	
B		3	
B		3	
C	ENGL 320, 321, 324, OR 459	3	
D ■	(Double-count with A or B) ENGR 327	3	
G ●	(Double-count with A or B above)	3	
W		2	

**General Education Categories:**  
 A - Humanities/Fine Arts  
 B - Social/Behavioral Sciences  
 C - Communication  
 D - Cultural Diversity ■  
 G - Global Perspectives ●  
 L - Co-requisite Lab  
 R - Quantitative Reasoning  
 S - Science & Technology  
 W - Wellness

Program Electives		
Select at least 15 credits from list on back in consultation with your advisor.		
Course	Crs	Grade

Course Titles:	
ABEN 444	Transport Process
ABEN 452	Bioenvironmental Systems Design
ABEN 464	Resource Conservation & Irrigation Engr
ABEN 484	Drainage & Wetland Engr
IME 460	Evaluation of Engineering Data
STAT 330	Introductory Statistics

**The last 30 credits must be earned in residence at NDSU.**  
<sup>1</sup> Use this column to tally grades; use "T" for transfer courses and "IP" for courses currently in progress.  
<sup>2</sup> Use this column to tally 36 credits of 300/400 level courses required for graduation.  
<sup>3</sup> First year students with a composite ENGL ACT sub-score ≥ 18 should register for ENGL 120 (unless transfer credit for ENGL 120 is received). If ENGL 120 is completed with a grade of "C" or better, credits will be awarded for ENGL 110 with a passing grade (P). For more details on NDSU's English Placement process, go to <https://bulletin.ndsu.edu/academic-policies/undergraduate-policies/english-and-math-placement/#englishplacementtext>.  
 \*As a student at NDSU, it is your responsibility to know the requirements of your degree. To ensure all degree requirements are met, meet with your academic advisor regularly and follow your Academic Requirements Report found on Campus Connection. Required ABEN courses are typically offered only once per year, ABEN electives are typically offered only once every two years, and all course offerings are subject to change.

<b>Minimum Degree Total</b>
<b>128</b>

**AGRICULTURAL and BIOSYSTEMS ENGINEERING CURRICULUM GUIDE CONTINUED**

**Program Elective Course Suggestions**

Select 15 credits from the courses listed below.

At least 3 credits must be from a 300/400 level College of Engineering course, marked with an \* below.

**Suggested Courses for Machinery Focus**

Course #	Course Name	Cr.	Prerequisites/Notes
ABEN 377*	Numerical Modeling in ABEN	3	MATH 266 & ME 223
ABEN 473*	Agricultural Power	3	ME 350
ABEN 478*	Machinery Analysis & Design	3	ME 223
ME 331*	Material Science and Engr	4	CHEM 122 & ME 223
ME 421*	Theory of Vibrations	3	ME 213 & MATH 266
ME 442*	Machine Design I	3	ME 331
IME 335*	Welding Technology	3	
IME 456*	Program & Project Mgt	3	Jr Standing
ECE 275	Digital Design	4	MATH 105
ECE 301/306*	Elec. Engr 1 & Lab	3/1	MATH 259 & PHYS 252; ECE 306 co-req ECE 301
ASM 323	Post Harvest Technology	3	MATH 103
ASM 378	Machinery Princ. & Mgmt	3	MATH 103
PAG 115	Intro to Precision Ag	2	MATH 103
PAG 315	Electronic Systems in PAG	3	PAG 115, PAG 115L, PAG 215
PAG 454	Applications of PAG	3	PAG 215

**Suggested Courses for Processing Focus**

Course #	Course Name	Cr.	Prerequisites/Notes
ABEN 456*	Biobased Energy Engr	3	
ABEN 458*	Process Engr of Foods	3	ABEN 263
BME 220	Intro to Biomedical Engr	2	MATH 165
ME 435*	Plastics & Polymer Processing	3	MATH 266
IME 330*	Manufacturing Processing	3	ME 212
IME 456*	Program & Project Mgt	3	Jr Standing
ASM 323	Post Harvest Technology	3	MATH 103
CHEM 240	Survey of Organic Chem	3	CHEM 121
CFS 210	Intro to Food Sci.	3	
CFS 370	Food Processing I	3	CFS 210

**Suggested Courses for Natural Resources Focus**

Course #	Course Name	Cr.	Prerequisites/Notes
ABEN 286	Intro to Controlled Enviro	3	MATH 103
ABEN 377*	Num. Modeling in ABEN	3	MATH 266 & ME 223
CE 204	Surveying	3	MATH 105
CE 408*	Water Resources & Supply	3	CE 309
CE 421*	Open Channel Flow	3	CE 309
CE 477*	Applied Hydrology	3	CE 408
IME 456*	Program & Project Mgmt	3	Jr Standing
ASM 264	Natural Res. Mgmt Sys.	3	MATH 103
ANSC 114	Intro to Animal Sci.	3	
ANSC 220	Livestock Production	3	
PAG 115	Intro to Precision Ag	2	MATH 103
PLSC 110	World Food Crops	3	
PLSC 225	Princ. of Crop Production	3	
SOIL 210	Intro to Soil Sci.	3	
SOIL 410	Soils and Land Use	3	SOIL 210, CHEM 121/L

**Suggested Courses for General Focus**

Course #	Course Name	Cr.	Prerequisites/Notes
ABEN 286	Intro to Controlled Enviro	3	MATH 103
ABEN 377*	Num. Modeling in ABEN	3	MATH 266 & ME 223
ABEN 458*	Process Engr of Foods	3	ABEN 263
CE 316*	Soil Mechanics	3	ME 222, ME 223
CE 343*	Structural Engr Analysis	4	ME 223
CE 417*	Slope Stability of Retaining Walls	3	ME 223
CE 446*	Basic Dynamics of Structures	3	CE 343
IME 456*	Program & Project Mgmt	3	Jr Standing

ABEN 496\* (Internship) 1 - 3cr. may be taken as a COE 300/400 level program elective in all focus areas.

ABEN 348 may be taken a second time and used as a program elective in all focus areas.

Projected ABEN Course Offerings				
	Fall ODD	Spring EVEN	Fall EVEN	Spring ODD
<b>Required Courses</b>	110, 255	263, 358, 377	10, 255, 35	263, 358, 377
	486	391, 482, 487	486	391, 482, 487
<b>Elective Courses</b>	286, 458	444, 456	452, 473	444, 456, 464
	473, 479	478	479, 484	478
<b>Graduate Courses</b>	658, 673, 679	644, 656, 678	52, 673, 67	644, 664, 678
	765, 790	682, 758	64, 747, 758, 7	682, 758

Notes