Department of Agricultural and Biosystems Engineering - North Dakota State University AGRICULTURAL ENGINEERING CONCENTRATION CURRICULUM GUIDE - FALL 2020*

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16 Adv Biosciences - 9 cr. reg (double-count with Electives above		16				*Complete your Application for Graduation by 3rd week of	17						ith Electricity	0.1016	

² Use this column to tally 36 credits of 300/400 level courses required for graduation.

³ 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

⁴ Completion of Composition I is required for graduation, whether you earn 4 credits at NDSU or 3 credits with a transfer course. If you transfer in a 3 cr. ENGL 110, you will need to add an add'l 1 credit to maintain the 133 total credits required.

⁵ABEN courses may not be used to fulfill CHEM/BIO/ENVIRO Science Electives.

⁶ A minimum of 3 credits must be from non-ABEN courses in the Advanced Bioscience Courses list on page 2.

*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.

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AGRICULTURAL ENGINEERING CURRICULUM GUIDE CONTINUED

The following electives are approved. Alternatives may be available with advisor approval.

Advanced Bioscience Courses

Select 9 credits from the courses listed below. At least 3 credits must be from non-ABEN courses. Additional courses may be available in consultation with your advisor; qualifying courses must have a biological science component with one or more prerequisites.

ABEN Courses eligible for Advanced Bioscience Courses										
Course #	Course Name	Cr.	Prerequisites							
ABEN 444	Transport Processes	3	ABEN 263, ME 352 or CE309, and MATH 266							
ABEN 452	Bioenvironmental Sys Design	3	CE 309 or ME 350							
ABEN 456	Biobased Energy	3	Junior standing in Engineering or Science							
ABEN 458	Process Engr for Food, Biofuels	3	Junior standing							
ABEN 464	Resource Conserv & Irrigation	4	CE 309							
ABEN 484	Drainage & Wetland Engr	3	CE 309 or SOIL 433							

	SOIL Courses										
Course #	Course Name	Cr.	Prerequisites								
SOIL 322	Soil Fertility & Fertilizers	3	SOIL 210, CHEM 121, CHEM 121L								
SOIL 351	Soil Ecology	3	SOIL 210								
SOIL 410	Soils and Land Use	3	SOIL 210, CHEM 121, CHEM 121L								
SOIL 444	Soil Genesis	3	SOIL 210								

PLSC Courses										
Course # Course Name Cr. Prerequisites										
PLSC 320	Princ.of Forage Product	3	PLSC 110							
PLSC 335	Seed Tech & Production	2	PLSC 110							
PLSC 350	Sugarbeet Production	2	PLSC 110 or PLSC 210							
PLSC 411	Genomics	3	BIOL 150, STAT 330							
PLSC 431	Intermediate Genetics	3	PLSC 315							

Updated 07/22/20

Course #	Course Name	Cr.	Prerequisites	
BIOL 364	General Ecology	3	BIOL 150 or BIOL 151	
BOT 380	Plant Physiology	3	BIOL 150	
ANSC 357	Animal Genetics	3	PLSC 315, STAT 330	
RNG 452	Geo Info Sys in Range Sci	3	RNG 336	
BOT 414	Plant Systematics	3	BIOL 151, BIOL 151L	

3 SOIL 210, CHEM 121, CHEM 121L

Suggested Computer Electives						
CE 212	Civil Engineering Graphic Comm.	3				
CSCI 122	Visual Basic	3				
CSCI 160	Computer Science I	4				
ECE 173	Introduction to Computing	3				
GEOG 455	Introduction to GIS	4				
IME 380	CAD/CAM for Manufacturing	3				
ME 213	Modeling of Engineering Systems	3				

	Suggested Business or Communication Electives May count as GenEd D or G, but not A or B.	
ACCT 102	Fundamentals of Accounting	3
ACCT 200	Elements of Accounting I	3
AGEC 242	Intro to Agricultural Mgmt	3
AGEC 244	Agricultural Marketing	3
AGEC 246	Intro to Agricultural Finance I	3
COMM 212	Interpersonal Comm	3
COMM 214	Persuasive Speaking	3
COMM 216	Interculutural Comm	3
COMM 260	Prin/Internet Web-Base Design	3
ECON 201	Principles of Microeconomics	3
ECON 202	Principles of Macroeconomics	3
MGMT 301	Mgmt for non-business majors	3
MRKT 301	Mrkt for non-business majors	3

AGRICULTURAL ENGINEERING CURRICULUM GUIDE CONTINUED The following electives are approved; alternatives may be possible with advisor approval.

	Th				heele e			
	Machine Systems	e Agriculti	ural Engineerin	ng concentration has three suggested emp Processing Systems	hasis ai		Resources and Environmental Syste	ems
	Select electives with emphasis on machine, power, structur	al and	Select elective	es with emphasis on combining engineering,			ives with emphasis on areas that contr	
	electrical/electronic systems to solve problems involving en aspects of food, feed and fiber production.		biological, and	l physical sciences in the application of engine andling and processing of biomaterials for foo		resources	bblems in environmental engineering, r management, hydrology, irrigation, dra ed management, and waste managem	ainage,
	Course # Course Name	Cr.	Course #	Course Name	Cr.	Course #	Course Name	Cr.
	ABEN 358 Electric Energy App in Ag	3	ABEN 358	Electric Energy App in Ag	3	ABEN 358	Electric Energy App in Ag	3
	ABEN 452 Bioenvironmental Systems Design	3	ABEN 444	Transport Processes	3	ABEN 444	Transport Processes	3
res	ABEN 458 Process Engr for Food, Biofuels/products	3	ABEN 450	Bioprocess Engineering	3	ABEN 452	Bioenvironmental Systems Design	3
ectiv	ABEN 464 Resource Conservation & Irrigation	4	ABEN 452	Bioenvironmental Systems Design	3	ABEN 458	Process Engr for Food, Biofuels/prod.	3
Ĕ	ABEN 473 Agricultural Power	3	ABEN 456	Biobased Energy	3	ABEN 464	Resource Conservation & Irrigation	4
ABEN Electives	ABEN 478 Machinery Analysis & Design ABEN 479 Fluid Power Systems Design	3	ABEN 458	Process Engr for Food, Biofuels/products	3	ABEN 484	Drainage & Wetland Engineering	3
	ASM/SOIL/NRM 264 Natural Resource Mgmt Syst.	3	ASM/SOIL/I	NRM 264 Natural Resource Mgmt Syst.	3		264 Natural Resource Mgmt Syst.	3
	ASW/SOLE/NKW 204 Natural Resource Wight Syst. ANSC 220 Livestock Production	3	BIOL 111/L	Concepts of Biology/Lab	3/1	BIOL 111/L	Concepts of Biology/Lab	3/1
	ENT 210 Insects, Humans & the Environment	3	BIOL 124/L	Environmental Science/Lab	3/1	BIOL 124/L	Environmental Science/Lab	3/1
	NRM 322 Environmental Law & Policy	3	BIOL 150/L	General Biology I/Lab	3/1	BIOL 150/L	General Biology I/Lab	3/1
e Electives	PLSC 110 World Food Crops	3	BIOL 151/L	General Biology II/Lab	3/1	BIOL 151/L	General Biology II/Lab	3/1
	PLSC 215 Weed Identification	1	CFS 210	Introduction to Food Science & Tech	2	CHEM 121L	General Chemistry I Lab	3/1
	PLSC 225 Principles of Crop Production	3	CFS 370	Food Processing I	3	CHEM 122L	,	3/1
лсе	PLSC 320 Principles of Forage Production	3	CFS 450	Cereal Technology	3	CHEM 240	Survey of Organic Chemistry	3
Scier	PLSC 323 Principles of Weed Science PLSC 335 Seed Technology & Production	2	CHEM 121L CHEM 122L	,	1	ENT 210 NRM 322	Insects, Humans & the Environ. Environmental Law & Policy	3 3/1
al S	SOIL 210 Intoduction to Soil Science	3	CHEM 122L CHEM 240	Survey of Organic Chemistry	3	MICR 202/L		3/1
menta	SOIL 217 Introduction to Meterology & Climatology	3	MICR 202/L	· · · · · · · · · · · · · · · · · · ·	3/1	MICR 202/L	<i></i>	3/1
шu	SOIL 410 Soils and Land Use	3	MICR 350/L		3/1	PLSC 110	World Food Crops	3
iviro	SOIL 480 Soils and Pollution	3	NRM 322	Environmental Law & Policy	3	PLSC 215	Weed Indentification	1
I/Eu			PLSC 110	World Food Crops	3	PLSC 225	Principles of Crop Production	3
gica			PLSC 215	Weed Identification	1	PLSC 315	Genetics	3
Chemical/Biological/Environmental Science Electives			PLSC 225 PLSC 315	Principles of Crop Production Genetics	3	PLSC 320 PLSC 323	Principles of Forage Production Principles of Weed Science	3
			RNG 225	Natural Resource & Agro-Ecosystems	3	PLSC 325	Seed Technology & Production	2
			SOIL 210	Intoduction to Soil Science	3	RNG 225	Nat. Resource & Agro-Ecosystems	3
			SOIL 410	Soils and Land Use	3	SOIL 210	Intoduction to Soil Science	3
C			SOIL 480	Soils and Pollution	3	SOIL 217	Intro to Meterology & Climatology	3
						SOIL 410	Soils and Land Use	3
						SOIL 480	Soils and Pollution	3
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Notes

	Projected ABEN Course Offerings												
Semester	Requ	lired	Ele	ctive	Graduate								
Fall	110-3	486-2	358-3	473-3	658-3	679-3							
ODD	255-3		458-3	479-3	673-3	765-3							
Years					790-1								
Spring	263-3	482-3	45	56-3	644-3	682-3							
EVEN	377-3	487-2	444-3		656-3	758-3							
Years		391-1	478-3		678-3								
Fall	110-3	486-2	358-3	473-3	652-3	684-3							
EVEN	255-3		452-3	479-3	673-3	747-3							
Years			484-3		679-3	790-1							
Spring	263-3	482-3	444-3	464-4	644-3	682-3							
ODD	377-3	487-2	478-3		664-4	750-3							
Years		391-1			678-3	758-3							