



**SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS**

Substantive Program Modification Form

UNIVERSITY:	SDSU
CURRENT PROGRAM TITLE:	Agricultural Systems Technology (B.S.)
CIP CODE:	01.0201
UNIVERSITY DEPARTMENT:	Agricultural & Biosystems Engineering
BANNER DEPARTMENT CODE:	SABG
UNIVERSITY DIVISION:	Agricultural, Food & Environmental Sciences
BANNER DIVISION CODE:	3F

University Approval

To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.

Dennis D. Hedge

4/29/2020

Vice President of Academic Affairs or
President of the University

Date

1. This modification addresses a change in:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Total credits required within the discipline | <input type="checkbox"/> Total credits of supportive course work |
| <input checked="" type="checkbox"/> Total credits of elective course work | <input checked="" type="checkbox"/> Total credits required for program |
| <input type="checkbox"/> Program name | <input type="checkbox"/> Existing specialization |
| <input type="checkbox"/> CIP Code | <input type="checkbox"/> Other (explain below) |

2. Effective date of change: 2020-2021 Academic Year

3. Program Degree Level: Associate Bachelor's Master's Doctoral

4. Category: Certificate Specialization Minor Major

5. If a name change is proposed, the change will occur:

- On the effective date for all students
- On the effective date for students new to the program (enrolled students will graduate from existing program)
- Proposed new name:

6. Primary Aspects of the Modification:

Existing Curriculum

Proposed Curriculum (Highlight Changes)

Pref	Num	Title	Cr Hrs	Pref	Num	Title	Cr Hrs
System General Requirements				System General Requirements			
	32				32		
SGR 1		Written Communication	6	SGR 1		Written Communication	6
ENGL 101		Composition I (3)		ENGL 101		Composition I (3)	
ENGL 201		Composition II (3)		ENGL 201		Composition II (3)	
SGR 2		Oral Communication	3	SGR 2		Oral Communication	3
SPCM 101		Fundamentals of Speech		SPCM 101		Fundamentals of Speech	
SGR 3		Social Sciences/Diversity	6	SGR 3		Social Sciences/Diversity	6
ECON 202		Macroeconomics (3)		ECON 202		Macroeconomics (3)	
SGR 4		Arts and Humanities/Diversity	6	SGR 4		Arts and Humanities/Diversity	6
SGR 5		Mathematics	3	SGR 5		Mathematics	3

Existing Curriculum

Proposed Curriculum (Highlight Changes)

Pref	Num	Title	Cr Hrs	Pref	Num	Title	Cr Hrs
MATH	114	College Algebra (3)		MATH	114	College Algebra (3)	
SGR	6	Natural Sciences	8	SGR	6	Natural Sciences	8
PHYS	101-101L	Survey of Physics & Lab (4)		PHYS	101-101L	Survey of Physics & Lab (4)	
AND				AND			
CHEM	106-106L	Chemistry Survey & Lab (4)		CHEM	106-106L	Chemistry Survey & Lab (4)	
OR				OR			
CHEM	112-112L	General Chemistry I & Lab (4)		CHEM	112-112L	General Chemistry I & Lab (4)	
College Requirements			9	College Requirements			9
Students who wish to complete a Bachelor of Science in Agriculture must complete a minimum of 11 credits from the approved list of Group 1 courses in Agriculture .				Students who wish to complete a Bachelor of Science in Agriculture must complete a minimum of 11 credits from the approved list of Group 1 courses in Agriculture .			
• PS 213-213L Soils & Lab (3) (Major Requirements)				• PS 213-213L Soils & Lab (3) (Major Requirements)			
AST	333-333L	Soil and Water Mechanics & Lab	3	AST	333-333L	Soil and Water Mechanics & Lab	3
AST	342-342L	Applied Electricity & Lab	3	AST	342-342L	Applied Electricity & Lab	3
PS	103-103L	Crop Production & Lab	3	PS	103-103L	Crop Production & Lab	3
Major Requirements			77	Major Requirements			79
Major Core			45	Major Core			47
ACCT	210	Principles of Accounting I	3	ACCT	210	Principles of Accounting I	3
AST	119	First Year Seminar	2	AST	119	First Year Seminar	1
AST	213-213L	Ag, Industrial & Outdoor Power & Lab (3)	3	AST	213-213L	Ag, Industrial & Outdoor Power & Lab (3)	3
OR				OR			
AST	313-313L	Farm Machinery Systems Management & Lab (3)		AST	313-313L	Farm Machinery Systems Management & Lab (3)	
AST	273-273L	Microcomputer Applications in Agriculture & Lab	3	AST	273-273L	Microcomputer Applications in Agriculture & Lab	3
AST	390	Seminar	1	AST	390	Seminar	1
AST	412-412L	Fluid Power Technology & Lab	3	AST	412-412L	Fluid Power Technology & Lab	3
AST	423-423L	Rural Structures & Lab	3	AST	423-423L	Rural Structures & Lab	3
AST	426-426L	Emerging Technologies & Lab	3	AST	426-426L	Technology Applications for Precision Agriculture & Lab	3
				AST	443-443L	Food Processing and Engineering Fundamentals & Lab	3
AST	463	Agricultural Waste Management	3	AST	463	Agricultural Waste Management	3
AST	494	Internship (2)	2	AST	494	Internship (1)	1
OR				OR			
AST	496	Field Experience (2)		AST	496	Field Experience (1)	
OR				OR			
AST	497	Cooperative Experience (2)		AST	497	Cooperative Experience (1)	
BLAW	350	Legal Environment of Business	3	BLAW	350	Legal Environment of Business	3
BIOL	101-101L	Biology Survey I & Lab	3	BIOL	101-101L	Biology Survey I & Lab	3
GE	121	Engineering Design Graphics I (1)	2	GE	121	Engineering Design Graphics I (1)	2
AND				AND			
GE	123	Computer Aided Drawing (1)		GE	123	Computer Aided Drawing (1)	
OR				OR			
PRAG	326	Precision Ag Data Mapping (2)		PRAG	326	Precision Ag Data Mapping (2)	
MATH	120	Trigonometry	3	MATH	120	Trigonometry	3
PRAG	203-203L	Introduction to Precision Agriculture & Lab	2	PRAG	203-203L	Introduction to Precision Agriculture & Lab	3
PRAG	340	Climate Risk Management with Precision Agriculture	3	PRAG	340	Climate Risk Management with Precision Agriculture	3
PS	213-213L	Soils & Lab	3	PS	213-213L	Soils & Lab	3
Technical Electives			35	Technical Electives			32
It is strongly recommended that students choose one of the following emphasis areas:				Select 32 credits from the following courses. It is strongly recommended that students choose one of the following emphasis areas.			
Business Emphasis				Business Emphasis			
ACCT	211	Principles of Accounting II	3	ACCT	211	Principles of Accounting II	3
AGEC	271	Farm and Ranch Management	3	AGEC	271	Farm and Ranch Management	3

Existing Curriculum

Proposed Curriculum (Highlight Changes)

Pref	Num	Title	Cr Hrs	Pref	Num	Title	Cr Hrs
AGEC	354	Agricultural Marketing and Prices	3	AGEC	354	Agricultural Marketing and Prices	3
AGEC	454	Economics of Grain and Livestock Marketing	3	AGEC	454	Economics of Grain and Livestock Marketing	3
AGEC	479	Agricultural Policy	3	AGEC	479	Agricultural Policy	3
AST	443-443L	Food Processing and Engineering Fundamentals & Lab	3	AST	443-443L	Food Processing and Engineering Fundamentals & Lab	3
ECON	201	Principles of Microeconomics	3	ECON	201	Principles of Microeconomics	3
		Any 200 level or above selected from AGECE, AST, BADM, ACCT, AS, ECON, PS, ENTR	12			Any 200 level or above selected from AGECE, AST , BADM, ACCT, AS, ECON, PS, ENTR, STAT, FIN, MKTG, BLAW, MGMT, DSCI	10
		Science Electives, Selected from CHEM, PHYS, BIOL, MICR	2			Science Electives, Selected from CHEM, PHYS, BIOL, MICR	3
Production Emphasis				Farm Operations Emphasis			
AGEC	271	Farm and Ranch Management	3	AGEC	271	Farm and Ranch Management	3
AGEC	354	Agricultural Marketing and Prices	3	AGEC	354	Ag Marketing and Prices	3
AS OR DS	101-101L 130-130L	Introduction to Animal Science & Lab (3,1) Introduction to Dairy Science & Lab (3)	3-4	AS OR DS	101-101L 130-130L	Introduction to Animal Science & Lab (3,1) Introduction to Dairy Science & Lab (3)	3-4
PRAG	423	Soil Fertility and Plant Nutrient Management	3	PRAG	423	Soil Fertility and Plant Nutrient Management	3
PS	223	Principles of Plant Pathology & Lab	3	PS	223	Principles of Plant Pathology & Lab	3
PS OR PS	405-405L 407-407L	Insect Biology & Lab (3) Insect Pest Management & Lab (2,1)	3	PS OR PS	405-405L 407-407L	Insect Biology & Lab (3) Insect Pest Management & Lab (2,1)	3
PS	440-440L	Crop Management with Precision Ag	4	PS	440-440L	Crop Management with Precision Ag	4
		Any 200 level or above selected from AGECE, AST, BADM, ACCT, AS, ECON, PS, ENTR	10-11			Any 200 level or above selected from AGECE, AST, BADM, ACCT, AS, ECON, PS, ENTR	8-9
		Science Electives, Selected from CHEM, PHYS, BIOL, MICR	2			Science Electives, Selected from CHEM, PHYS, BIOL, MICR	3-4
Precision Ag Emphasis				Precision Ag Emphasis			
AST OR AST	213-213L 313-313L	Ag Industrial and Outdoor Power & Lab (3) Farm Machinery Systems Management & Lab (3)	3	AST OR AST	213-213L 313-313L	Ag Industrial and Outdoor Power & Lab (3) Farm Machinery Systems Management & Lab (3)	3
CSC	130	Visual Basic Programming	3	CSC	130	Visual Basic Programming	3
ET	232-232L	Digital Electronics & Microprocessors & Lab	3	ET	232-232L	Digital Electronics & Microprocessors & Lab	3
ET	210	Introduction to Electronic Systems	4	ET	210-210L	Introduction to Electronic Systems & Lab	4
ET	240	Techniques of Servicing	2	ET	240	Techniques of Servicing	2
GEOG	372-372L	Introduction to GIS & Lab	3	GEOG	372-372L	Introduction to GIS & Lab	3
GEOG	484-484L	Remote Sensing & Lab	3	GEOG	484	Remote Sensing & Lab	3
PRAG	304-304L	Electrical Diagnostics in Farm Machinery & Lab	3	PRAG	304-304L	Electrical Diagnostics in Farm Machinery & Lab	3
PRAG	345	Principles and Implications of Chemical Application Systems	3	PRAG	345-345L	Principles and Implications of Chemical Application Systems & Lab	3
PRAG	423	Soil Fertility and Plant Nutrient Management	3	PRAG	423	Soil Fertility and Plant Nutrient Management	3
PRAG	440-440L	Crop Management with Precision Ag & Lab	3	PRAG	440-440L	Crop Management with Precision Ag & Lab	3
				STAT	281	Introduction to Statistics	3
		Any 300 level or above selected from AST, CSC, ET, GEOG, PHYS, or PS	2			Any 300 level or above selected from AST, CSC, ET, GEOG, PHYS, or PS	1
Processing Emphasis				Processing Emphasis			
ABE	444-444L	Unit Operations of Biological Materials Processing & Lab	4	ABE	444-444L	Unit Operations of Biological Materials Processing & Lab	4

Existing Curriculum

Proposed Curriculum (Highlight Changes)

Pref	Num	Title	Cr Hrs	Pref	Num	Title	Cr Hrs
AS OR DS	101-101L 130-130L	Introduction to Animal Science & Lab (3,1) Introduction to Dairy Science & Lab (3)	3-4	AS OR DS	101-101L 130-130L	Introduction to Animal Science & Lab (3,1) Introduction to Dairy Science & Lab (3)	3-4
AS	241-241L	Introduction to Meat science & Lab	3	AS	241-241L	Introduction to Meat science & Lab	3
AS	350	Meat Prod Safety/HACCP	3	AS	350	Meat Prod Safety/HACCP	3
AST	443	Food Processing and Engineering Fundamentals & Lab	3	AST	443	Food Processing and Engineering Fundamentals & Lab	
DS	321-321L	Dairy Product Processing I & Lab	5	DS	321-321L	Dairy Product Processing I & Lab	5
DS	421-421L	Dairy Plant Management & Lab	4	DS	421-421L	Dairy Plant Management & Lab	4
MICR	231-231L	General Microbiology & Lab	4	MICR	231-231L	General Microbiology & Lab	4
MICR	311-311L	Food Microbiology & Lab	4	MICR	311-311L	Food Microbiology & Lab	4
PS	308-308L	Grain Grading & Lab	2	PS	308-308L	Grain Grading & Lab	3
Electives			2	Electives			0

Summary of Credits Agricultural Systems Technology (B.S.)

System General Requirements	32	System General Requirements	32
College Requirements	9	College Requirements	9
Major Requirements	77	Major Requirements	79
Electives	2	Electives	0

Total number of hours required for major	77	Total number of hours required for major	79
Total number of hours required for degree	120	Total number of hours required for degree	120

7. Explanation of the Change:

The Department of Agricultural & Biosystems Engineering has reviewed the requirements for the Agricultural Systems Technology (AST) major. Changes to the curriculum include:

- AST 119 First Year Seminar has decreased from 2 cr. to 1 cr. One credit from AST 119 has been added to PRAG 203-203L (2 cr. to 3 cr.). The additional credit was needed to expand the course to cover all relevant materials.
- AST 426-426L Emerging Technologies in Agriculture and Lab was taught as part of the ag systems technology curriculum before being added to the precision agriculture curriculum and as such the course has evolved to meet the needs of both programs and to fit amongst the new precision agriculture coursework introduced. The revised title will reflect this course is an advanced course in precision agriculture technologies.
- AST 443-443L Food Processing and Engineering was added to the AST major requirements, which aligns with the efforts to promote careers in bioprocessing. Student could use remaining emphasis electives to pursue a bioprocess certificate or minor if interested in this career field.
- There is also a reduction in credit for AST 494 Internship, AST 496 Field Experience, and AST 498 Undergraduate research from 2 to 1; this change aligns with the changes made in the Precision Agriculture program and consistent with peer majors in the College of Agriculture, Food and Environmental Sciences.
- Technical electives reduced from 35 to 32 credit hours. It is strongly recommended that students choose one of the emphasis areas.