

# AGRICULTURE BUSINESS & MANAGEMENT TECHNOLOGY

## MISSISSIPPI CURRICULUM FRAMEWORK

**Agribusiness Management Technology (Program CIP: 01.0102 - Agribusiness/Agricultural Business Operations)**  
**Animal Science Technology - Beef Option (Program CIP: 01.0302 – Animal/Livestock Husbandry and Production)**  
**Animal Science Technology - Poultry Option (Program CIP: 01.0907 – Poultry Science)**  
**Field Crops (Program CIP: 01.0304 – Crop Production)**  
**Precision Agriculture Technology (Program CIP: 01.1105 – Plant Protection and Integrated Pest Management)**

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The Office of Curriculum and Instruction (OCI) was founded in 2013 under the Division of Workforce, Career, and Technical Education at the Mississippi Community College Board (MCCB). The office is funded through a partnership with The Mississippi Department of Education (MDE), who serves as Mississippi's fiscal agent for state and federal Career and Technical Education (CTE) Funds. The OCI is tasked with developing statewide CTE curriculum, programming, and professional development designed to meet the local and statewide economic demand.

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## ADOPTION OF NATIONAL CERTIFICATION STANDARDS

Agriculture is a highly technical and ever-changing industry upon which everyone is dependent. We will maintain agriculture as our nation's number one industry only if we understand the importance of the different agrisciences, of marketing strategies, of safe food production and of the need for continuous research to improve agriculture.

Strong, relevant agriscience programs are one way we can maintain our nation's agricultural edge.

The National AFNR Career Cluster Content Standards were developed as part of the National FFA 10 x 15 project to provide state agricultural education leaders and teachers with a forward-thinking guide for what students should know and be able to do through the study of agriculture in grades 9 through 14. The National AFNR Career Cluster Content Standards should be used as a guide to develop well-planned curriculum in agriscience education to be delivered to students throughout the country. Just as agriculture varies throughout our nation, so will our agricultural education programs. States should use these standards in conjunction with state and local advisory committees to determine what is most relevant and appropriate for their students in providing that all-important link between the school and the business community. The standards, performance elements, performance indicators and measurements should be used by educators to guide agricultural education curriculum development at the state and local levels. Structure and Organization The National AFNR Career Cluster Content Standards are organized into eight pathways. These pathways are:

\_ ***Agribusiness Systems (ABS)***—the study of business principles, including management, marketing and finance, and their application to enterprises engaged in Agriculture, Food and Natural Resources

\_ ***Animal Systems (AS)***—the study of animal systems, including life processes, health, nutrition, genetics, management and processing, through the study of small animals, aquaculture, livestock, dairy, horses and/or poultry

\_ ***Biotechnology Systems (BS)***—the study of data and techniques of applied science for the solution of problems concerning living organisms

\_ ***Environmental Service Systems (ESS)***—the study of systems, instruments and technology used in waste management and their influence on the environment

\_ ***Food Products and Processing Systems (FPP)***—the study of product development, quality assurance, food safety, production, sales and service, regulation and compliance, and food service within the food science industry

\_ ***Natural Resource Systems (NRS)***—the study of the management of soil, water, wildlife, forests and air as natural resources

\_ ***Plant Systems (PS)***—the study of plant life cycles, classifications, functions, structures, reproduction, media and nutrients, as well as growth and cultural practices, through the study of crops, turf grass, trees and shrubs and/or ornamental plants

\_ ***Power, Structural and Technical Systems (PST)***—the study of agricultural equipment, power systems, alternative fuel sources and precision technology, as well as woodworking, metalworking, welding and project planning for agricultural structures

Permission was granted from the National Council for Agricultural Education. To learn more information about the National AFNR Career Cluster Content Standards contact:

National Council for Agricultural Education  
6060 FFA Drive  
Indianapolis, IN 46268  
(800) 772-0939

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**iCEV Curriculum adoption**

The Agribusiness Management Technology CIP 01.0102 and Animal Science-Beef Option have adopted the iCEV Curriculum which is aligned to the AFNR standards.

iCEV's Agricultural Science curriculum was created with educators and students in mind. Educators have unlimited access to prebuilt, fully customizable courses, complete with media-rich lessons and supporting coursework. Lessons within this site features industry experts and cover important topics such as animal science, plant science, power systems, food science, judging, natural resources, veterinary science and more.

<https://www.icevonline.com/curriculum>

**Mississippi Department of Agriculture and Commerce Bureau of Plant Industry  
Pesticide Applicator Certification**

Under the provisions of the Mississippi Pesticide Application Law, the Bureau carries out various activities to certify commercial and private applicators of pesticides, cooperate with EPA on enforcement of federal pesticide laws, inspect records of applications of restricted-use pesticides and investigate pesticide misuse complaints.

**Private Applicator Certification**

Private applicators are producers of agricultural commodities (farmers). To meet certification requirements, they must attend an approved training course and pass a written examination. For more information go to [extension.msstate.edu/agriculture/pesticide-applicator-certification](http://extension.msstate.edu/agriculture/pesticide-applicator-certification).

# INDUSTRY JOB PROJECTION DATA

Agricultural Business, Animal Agriculture/Husbandry, Agricultural business occupations require a minimal education level of a high school diploma or its equivalent. A summary of occupational data from the Bureau of Labor Statistics Data Center and the MS Occupational Employment Projected

Standard Occupational Classification (SOC)		2016 Employment	2026 Projected Employment	Projected Employment Growth 2016-2026		Total Projected Avg. Annual Job Openings
Code	Occupation			Number	Percent	
45-2000	Agricultural Workers	10,540	10,190	350	3.3%	1,510
45-2011	Agricultural Inspector	320	320	0	0.0%	45
45-2021	Animal Breeders	70	70	0	0.0%	10
45-2092	Farmworkers and Laborers, Crop, Nursery, and Greenhouse	3,460	3,460	30	0.9%	520
45-2099	Agricultural Workers, All Other	70	70	0	0.0%	15



# ARTICULATION

## Agribusiness Management Concentration

SEC Program	PS Program	PS Courses
S Agricultural & Environmental Science & Tech – Animals (CIP 01.0901)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP 01.0302 Animal/Livestock Husbandry and Production)</li> </ul>	AGT 1214 - Applied Principles of Animal Production
S Agricultural & Environmental Science & Tech – Plants (CIP 01.1101)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP: 01.0304 – Field Crops)</li> </ul>	AGT 1313 - Applied Principles of Plant Production
S Agricultural & Environmental Science & Tech - Agribusiness and Entrepreneurship Technology (CIP 01.0102)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302 Animal/Livestock Husbandry and Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1613 - Agricultural Records
S Agriculture & Natural Resources (CIP 01.0003)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302 Animal/Livestock Husbandry and Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1111 - Survey of Agriculture
S Concepts of Agriscience (CIP 01.9999) <b>OR</b> S Introduction to Agriscience (CIP 01.10001)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302 Animal/Livestock Husbandry and Production)</li> <li>(CIP: 01.0304) Field Crops</li> <li>(CIP: 01.1105) Precision Agriculture Technology</li> </ul>	AGT 1111 - Survey of Agriculture

### Animal Science Technology Concentration

SEC Program	PS Program	PS Courses
S Agricultural & Environmental Science & Tech – Animals (CIP 01.0901)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> </ul>	AGT 1214 - Applied Principles of Animal Production
S Agricultural & Environmental Science & Tech – Plants (CIP 01.1101)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP: 01.0304 – Field Crops)</li> </ul>	AGT 1313 - Applied Principles of Plant Production
S Agricultural & Environmental Science & Tech - Agribusiness and Entrepreneurship Technology (CIP 01.0102)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1613 - Agricultural Records
S Agriculture & Natural Resources (CIP 01.0003)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1111 - Survey of Agriculture
S Concepts of Agriscience (CIP 01.9999) <b><u>OR</u></b> S Introduction to Agriscience (CIP 01.10001)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304) Field Crops</li> <li>(CIP: 01.1105) Precision Agriculture Technology</li> </ul>	AGT 1111 - Survey of Agriculture

Field Crops Concentration

SEC Program	PS Program	PS Courses
S Agricultural & Environmental Science & Tech – Animals (CIP 01.0901)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP 01.0302) Animal/Livestock Husbandry and Production</li> </ul>	AGT 1214 - Applied Principles of Animal Production
S Agricultural & Environmental Science & Tech – Plants (CIP 01.1101)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP: 01.0304 – Field Crops)</li> </ul>	AGT 1313 - Applied Principles of Plant Production
S Agricultural & Environmental Science & Tech - Agribusiness and Entrepreneurship Technology (CIP 01.0102)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1613 - Agricultural Records
S Agriculture & Natural Resources (CIP 01.0003)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1111 - Survey of Agriculture
S Concepts of Agriscience (CIP 01.9999) <b><u>OR</u></b> S Introduction to Agriscience (CIP 01.10001)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304) Field Crops</li> <li>(CIP: 01.1105) Precision Agriculture Technology</li> </ul>	AGT 1111 - Survey of Agriculture

### Precision Agriculture Technology Concentration

SEC Program	PS Program	PS Courses
S Agricultural & Environmental Science & Tech – Animals (CIP 01.0901)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> </ul>	AGT 1214 - Applied Principles of Animal Production
S Agricultural & Environmental Science & Tech – Plants (CIP 01.1101)	PS Ag Business & Mgmt Technology <ul style="list-style-type: none"> <li>(CIP: 01.0304 – Field Crops)</li> </ul>	AGT 1313 - Applied Principles of Plant Production
S Agricultural & Environmental Science & Tech - Agribusiness and Entrepreneurship Technology (CIP 01.0102)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1613 - Agricultural Records
S Agriculture & Natural Resources (CIP 01.0003)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304 – Field Crops)</li> <li>(CIP: 01.1105 – Precision Agriculture Technology)</li> </ul>	AGT 1111 - Survey of Agriculture
S Concepts of Agriscience (CIP 01.9999) <b><u>OR</u></b> S Introduction to Agriscience (CIP 01.10001)	PS Ag Business & Mgmt Tech <ul style="list-style-type: none"> <li>(CIP 01.0102) Agricultural Business/Agribusiness</li> <li>(CIP 01.0302) Agricultural Animal Science Technology/Production)</li> <li>(CIP: 01.0304) Field Crops</li> <li>(CIP: 01.1105) Precision Agriculture Technology</li> </ul>	AGT 1111 - Survey of Agriculture

# TECHNICAL SKILLS ASSESSMENT

Colleges should report the following for students who complete the program with a career certificate, technical certificate, or an Associate of Applied Science Degrees for technical skills attainment. To use the approved Alternate Assessment for the following programs of study, colleges should provide a Letter of Notification to the Director of Career Technical Education at the MS Community College Board. Please see the following link for further instructions:  
<http://www.mccb.edu/wkfEdu/CTDefault.aspx>.

CIP Code	Program of Study	
01.0102	Agribusiness/ Agriculture Business Operations	
Level	Standard Assessment	Alternate Assessment
Accelerated /15 Hour		
Level	Standard Assessment	Alternate Assessment
Career	Express Employment Professionals Business Office Technology Certification (iCEV Testing Platform) <b>OR</b> BASF Plant Science Certification (iCEV Testing Platform) <b>OR</b> Elanco Fundamentals of Animal Science Certification (iCEV Testing Platform)	
Level	Standard Assessment	Alternate Assessment
Technical/AAS	Express Employment Professionals Business Office Technology Certification (iCEV Testing Platform)	

\*If Express Employment Professionals Business Office Technology Certification (iCEV Testing Platform) is taken at the Career Certificate level it should not be taken again at the Technical/ AAS level.

CIP Code	Program of Study	
01.0302	Animal/Livestock Husbandry and Production	
Level	Standard Assessment	Alternate Assessment
Accelerated /15 Hour		
Level	Standard Assessment	Alternate Assessment
Career	Express Employment Professionals Business Office Technology Certification (iCEV Testing Platform) <b>OR</b> BASF Plant Science Certification (iCEV Testing Platform) <b>OR</b> Elanco Fundamentals of Animal Science Certification (iCEV Testing Platform)	
Level	Standard Assessment	Alternate Assessment
Technical/AAS	Elanco Fundamentals of Animal Science Certification (iCEV Testing Platform)	

CIP Code	Program of Study	
01.09007	Poultry Science	
Level	Standard Assessment	Alternate Assessment
Accelerated /15 Hour		
Level	Standard Assessment	Alternate Assessment
Career		
Level	Standard Assessment	Alternate Assessment
Technical/AAS	MS CPAS 3 Postsecondary: Year 2 Agricultural Business and Management Technology Test	

CIP Code	Program of Study	
01.0304	Crop Production	
Level	Standard Assessment	Alternate Assessment
Accelerated /15 Hour	OSHA -10 General Industry	
Level	Standard Assessment	Alternate Assessment
Career	MS CPAS: Year 1 Postsecondary Agricultural Business and Management Technology Test  Mississippi Department of Agriculture and Commerce Bureau of Plant Industry Pesticide Applicator Certification	
Level	Standard Assessment	Alternate Assessment
Technical/AAS	MS CPAS 3 Year 2: Postsecondary Agricultural Business and Management Technology Test  Mississippi Department of Agriculture and Commerce Bureau of Plant Industry Pesticide Applicator Certification	

\*The certifications do not meet the current standard of 50% for Student Learning Outcomes (SLO) Alignment. CPAS will still be used as the assessment. The certification may be offered by a community college.

<b>CIP Code</b>	<b>Program of Study</b>	
01.1105	Plant Protection and Integrated Pest Management	
<b>Level</b>	<b>Standard Assessment</b>	<b>Alternate Assessment</b>
Accelerated /15 Hour	OSHA-10 General Industry	
<b>Level</b>	<b>Standard Assessment</b>	<b>Alternate Assessment</b>
Career	MS CPAS 3 Year 1: Postsecondary Agricultural Business and Management Technology Test	
<b>Level</b>	<b>Standard Assessment</b>	<b>Alternate Assessment</b>
Technical/AAS	MS CPAS 3 Year 2: Postsecondary Agricultural Business and Management Technology Test  Mississippi Department of Agriculture and Commerce Bureau of Plant Industry Pesticide Applicator Certification	

\*The certifications do not meet the current standard of 50% for Student Learning Outcomes (SLO) Alignment. CPAS will still be used as the assessment. The certification may be offered by a community college.



## RESEARCH ABSTRACT

The curriculum framework in this document reflects the changes in the workplace and a number of other factors that impact local vocational–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

An industry questionnaire was used to gather feedback concerning the trends and needs, both current and future, of their field. Industry members stated the curriculum was strong, but wanted to encourage students who complete the program to continue becoming certified in additional agricultural areas.

## REVISION HISTORY

2009-Research & Curriculum Unit, Mississippi State University

2015-Office of Curriculum & Instruction, Mississippi Community College Board

2021-Office of Curriculum & Instruction, Mississippi Community College Board

## PROGRAM DESCRIPTIONS

### Agribusiness Management Concentration

The Agribusiness Management option is a program designed to provide students with training in a variety of agriculturally related areas. The program is designed for students desiring to enter the broad range of jobs related to the management of agricultural enterprises and the marketing and sales of agricultural supplies and products. The program involves both technical and academic courses, with provisions for related activities along with on-the- job training (internships).

Emphasis is placed on plant, animal, and soil sciences, along with training in management techniques in production, marketing, and sales. Competencies and objectives for the courses in this program have been correlated to the knowledge and skill statements as listed in *Career Cluster Resources for Agriculture, Food and Natural Resources* as published by the National Association of State Directors of Career and Technical Education Consortium.

The Associate of Applied Science degree is awarded upon successful completion of 60 semester credit hours of coursework. Students completing the following 30 semester credit hours are eligible to receive a certificate in Agriculture Business and Management. After completing 45 hours, students can receive the technical certificate.

### Animal Science Technology Concentration

The Animal Science Technology Concentration of Agriculture Business and Management Technology are designed to prepare the student for a career in the Animal Science Technology industry. Students will receive instruction in feeding, breeding, management, and health care of cattle, sheep, horses, swine, and poultry. In addition, the student will complete course work dealing with agricultural business management, marketing, record keeping, feed crops, and soils. Competencies and objectives for the courses in this program have been correlated to the knowledge and skill statements as listed in *Career Cluster Resources for Agriculture, Food and Natural Resources* as published by the National Association of State Directors of Career and Technical Education Consortium.

The Associate of Applied Science degree is awarded upon successful completion of 60 semester credit hours of coursework. Students completing the following 30 semester credit hours are eligible to receive a certificate in Agriculture Business and Management. After completing 45 hours, students can receive the technical certificate.

### Field Crops Concentration

The Field Crops Concentration of the Agriculture Business and Management Technology program is designed to provide students with a common core of management skills and additional training related to the production of agricultural crops. Emphasis in the second year is placed on production of field crops and weed and insect control. This program relies upon computerized agricultural business simulations. Elective courses in the second year allow the students to tailor their educational programs to their occupational objectives. Competencies and objectives for the courses in this program have been correlated to the knowledge and skill

statements as listed in *Career Cluster Resources for Agriculture, Food, and Natural Resources* as published by the National Association of State Directors of Career and Technical Education Consortium.

The Associate of Applied Science degree is awarded upon successful completion of 60 semester credit hours of coursework. Students completing the following 30 semester credit hours are eligible to receive a certificate in Agriculture Business and Management. After completing 45 hours, students can receive the technical certificate.

#### Precision Agriculture Technology Concentration

Recent developments in entomology, plant pathology, and weed science in conjunction with advanced technologies such as remote sensing, global navigation satellite systems (GNSS), geographic information systems, and variable rate technology and equipment autonomy are dynamically influencing agricultural productivity. In addition, the implementation of these technologies can greatly improve environmental quality by reducing the volume of agricultural chemicals applied. The emergence of these technologies has increased the demand for technically trained workers.

Competencies and objectives for the courses in this program have been correlated to the knowledge and skill statements as listed in *Career Cluster Resources for Agriculture, Food, and Natural Resources* as published by the National Association of State Directors of Career and Technical Education Consortium.

Upon completion of this associate degree program, graduates will possess a working knowledge of these emerging technologies as well as practical hands-on experience in their application and use. The Associate of Applied Science degree is awarded upon successful completion of 60 semester credit hours of coursework. Students completing the following 30 semester credit hours are eligible to receive a certificate in Agriculture Business and Management. After completing 45 hours, students can receive the technical certificate.

## Suggested Course Sequence

### Agribusiness Management Concentration Accelerated Pathway Credential

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1111 <b><u>OR</u></b> AGR 1111	Survey of Agricultural Technology	1	1		15	15		
AGT 1214 <b><u>OR</u></b> AGR 1214	Applied Principles of Animal Production <b><u>OR</u></b> Animal Science	4	3	2	75	45	30	
AGT 1313 <b><u>OR</u></b> AGR 1313	Applied Principles of Plant Production <b><u>OR</u></b> Plant Science	3	2	2	60	30	30	
	Electives	7						
	<b>TOTAL</b>	<b>15</b>	<b>6</b>	<b>4</b>	<b>150</b>	<b>90</b>	<b>60</b>	

# Agribusiness Management Concentration Career Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1111 <u>OR</u> AGR 1111	Survey of Agricultural Technology	1	1		15	15		Express Employment Professionals Business Office Technology Certification (iCEV Testing Platform)  <u>OR</u> BASF Plant Science Certification (iCEV Testing Platform)  <u>OR</u> Elanco Fundamentals of Animal Science Certification (iCEV Testing Platform)
AGT 1214 <u>OR</u> AGR 1214	Applied Principles of Animal Production <u>OR</u> Animal Science	4	3	2	75	45	30	
AGT 1313 <u>OR</u> AGR 1313 <u>OR</u> BIO 1314	Applied Principles of Plant Production <u>OR</u> Plant Science <u>OR</u> Botany I	3	2	2	60	30	30	
AGT 1413 <u>OR</u> AGR 2413	Principles of Agricultural Management <u>OR</u> Farm Management	3	2	2	60	30	30	
AGT 1714 <u>OR</u> AGR 2314	Applied Soils – Conservation and Use <u>OR</u> Basic Soils	4	3	2	75	45	30	
	Instructor Approved Electives per Local Community College	15						
<b>TOTAL</b>		<b>30</b>	<b>11</b>	<b>8</b>	<b>285</b>	<b>165</b>	<b>120</b>	

\* AGR 2713 Principles of Agricultural Economics, ECO 2113 Principles of Economics Macroeconomics, or ECO 2123 Principles of Economics Microeconomics may be taken in lieu of AGT 2263 Applied Agricultural Economics

## Agribusiness Management Concentration Technical Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1613	Agricultural Records	3	2	2	60	30	30	Express Employment Professionals Business Office Technology Certification (iCEV Testing Platform)
AGT 2263	Applied Agricultural Economics *	3	3		45	45		
AGT 1513	Principles of Agricultural Marketing	3	3		45	45		
	Instructor Approved Electives	6						
<b>TOTAL</b>		<b>15</b>	<b>8</b>	<b>2</b>	<b>150</b>	<b>120</b>	<b>30</b>	

\* AGR 2713 Principles of Agricultural Economics, ECO 2113 Principles of Economics Macroeconomics, or ECO 2123 Principles of Economics Microeconomics may be taken in lieu of AGT 2263 Applied Agricultural Economics

\*\* Please see Appendix E for iCEV course alignment

#### Agribusiness Management Concentration – Vegetable Production Option Technical Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1613	Agricultural Records	3	2	2	60	30	30	
AGT 2263	Applied Agricultural Economics *	3	3		45	45		
AGR 1333 <b>OR</b> AGT 1333	Vegetable Crop Production Vegetable Production	3	2	2	60	30	30	
AGT 1513	Principles of Agricultural Marketing	3	3		45	45		
	Instructor Approved Electives	3						
<b>TOTAL</b>		<b>15</b>	<b>10</b>	<b>4</b>	<b>210</b>	<b>150</b>	<b>60</b>	

\* AGR 2713 Principles of Agricultural Economics, ECO 2113 Principles of Economics Macroeconomics, or ECO 2123 Principles of Economics Microeconomics may be taken in lieu of AGT 2263 Applied Agricultural Economics

Agribusiness Management Concentration Electives

			SCH Breakdown				Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Clinical/ Internship	Total Contact Hours	Lecture	Lab	Certification Name
SSP 1003	Smart Start	3	3	0					
ACC 1213	Principles of Accounting I	3	3	0		45	45		
AGR 1333	Vegetable Production	3	3	0		45	45		
AGR 1413	Farm Machinery	3	2	2		60	30	30	
AGR 2314	Basic Soils	3	2	2		60	30	30	
AGR 2613	Poultry Production	3	3	0		45	45		
AGR 2713	Principles of Agricultural Economics	3	2	2		60	30	30	
AGT 1163	Introduction to Spatial Information Systems	3	3	0		45	45		
AGT 1333	Vegetable Crop Production	3	2	2		60	30	30	
AGT 1613	Agricultural Records	3	2	2		60	30	30	
AGT 1813	Fitting/Grooming/Judging	3	2	2		60	30	30	
AGT 2213	Agricultural Sales	3	2	2		60	30	30	
AGT 2263	Applied Agricultural Economics***	3	2	2		60	30	30	
AGT 2363	Crop Production – General	3	2	2		60	30	30	
AGT 2483	Agricultural Pest Management	3	2	2		60	30	30	
AGT 2513	Management of Commercial Layers	3	3	0		45	45		
AGT 2523	Introduction to Poultry Production	3	3	0		45	45		
AGT 2533	Poultry Nutrition	3	3	0		45	45		
AGT 2543	Hatchery/Feed Mill Management	3	3	0		45	45		
AGT 2553	Broiler Production	3	3	0		45	45		
AGT 2573	Broiler Processing	3	2	2		60	30	30	
AGT 2823	Fish Management	3	2	2		60	30	30	

AGT 2563	Agricultural Machinery and Shop Management *	3	2	2		60	30	30	
AGT 2613	Forage and Pasture Crops	3	2	2		60	30	30	
AGT 2663	Applied Animal Nutrition	3	2	2		60	30	30	
AGT 2713	Beef Production I	3	2	2		60	30	30	
AGT 2723	Beef Production II	3	2	2		60	30	30	
AGT 2813	Swine Production	3	2	2		60	30	30	
AGT 2863	Horse Production	3	2	2		60	30	30	
AGT 291 (1-3)	Special Problem in Agriculture Business and Management	1-3		2-6		30-90		30-90	
AGT 292(1-6)	Supervised Agricultural Experience	1-6			3-18	45-270			
ATE 1113	Science and Technology	3	3	0					
BAD 1313	Business Mathematics	3	3	0					
BAD 2413	Business Law	3	3	0					
BOT 1313	Applied Business Mathematics	3	3	0					
CPT 1113	Fundamentals of Microcomputer Applications **	3	3	0		45	45		
CSC 1113	Introduction to Computer Concepts	3	3	0		45	45		
DDT 1413	Elementary Surveying	3	3	0		45	45		
ECO 2113	Principles of Economics (Macroeconomics)	3	3	0		45	45		
ECO 2123	Principles of Economics (Microeconomics)	3	3	0		45	45		
FOT 2124	Forest Surveying	4	3	2		75	45	30	
MTV 1214	Identification of Wholesale & Retail Cuts	4	4	0					
WBL 191(1-3) WBL	Work Based Learning								



192(1-3) WBL 193(1-3) WBL 291(1-3) WBL 292(1-3) WBL 293(1-3)									
	Other Instructor Approved Elective(s)per local community college								

- \* AGR 1413 Farm Machinery may be taken in lieu of AGT 2563 Agricultural Machinery and Shop Management\*\*  
CSC 1123 Microcomputer Applications or ATE 1113 Science and Technology may be taken in lieu of CPT 1113
- \*\*\* AGR 2713 Principles of Agricultural Economics, ECO 2113 Principles of Macroeconomics, or  
ECO 2123 Principles of Microeconomics may be taken in lieu of AGT 2263 Applied  
Agricultural Economics

# Animal Science Technology Accelerated Pathway Credential

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1111 <b>OR</b> AGR 1111	Survey of Agricultural Technology	1	1	0	15	15		
AGT 1214 <b>OR</b> AGR 1214	Applied Principles of Animal Production <b>OR</b> Animal Science	4	3	2	75	45	30	
AGT 1313 <b>OR</b> AGR 1313	Applied Principles of Plant Production <b>OR</b> Plant Science	3	2	2	60	30	30	
	Instructor Approved Electives	7						
	<b>TOTAL</b>	<b>15</b>	<b>6</b>	<b>4</b>	<b>150</b>	<b>90</b>	<b>60</b>	

# Animal Science Technology Career Certificate Required Course

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1111 <b>OR</b> AGR 1111	Survey of Agricultural Technology	1	1	0	15	15		Express Employment Professionals Business Office Technology Certification (iCEV Testing Platform) <b>OR</b> BASF Plant Science Certification (iCEV Testing Platform) <b>OR</b> Elanco Fundamentals of Animal Science Certification (iCEV Testing Platform)
AGT 1214 <b>OR</b> AGR 1214	Applied Principles of Animal Production <b>OR</b> Animal Science	4	3	2	75	45	30	
AGT 1313 <b>OR</b> AGR 1313 <b>OR</b> BIO 1314	Applied Principles of Plant Production <b>OR</b> Plant Science <b>OR</b> Botany I	3	2	2	60	30	30	
AGT 1413 <b>OR</b> AGR 2413	Principles of Agricultural Management <b>OR</b> Farm Management	3	2	2	60	30	30	
AGT 1513	Principles of Agricultural Marketing	3	3		45	45		
AGT 1714 <b>OR</b> AGR 2314	Applied Soils – Conservation and Use <b>OR</b> Basic Soils	4	3	2	75	45	30	
AGT 1613	Agricultural Records	3	2	2	60	30	30	
	Instructor Approved Electives per Local Community College	9						
	<b>TOTAL</b>	<b>30</b>	<b>16</b>	<b>10</b>	<b>390</b>	<b>240</b>	<b>150</b>	

\*Students who wish to receive a career certificate in Animal Science Poultry option are required to take AGT 2523 Introduction to Poultry Production.

\*\* Please see Appendix E for iCEV course alignment

Animal Science Technology – Beef Option Technical Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 2663	Applied Animal Nutrition	3	2	2	60	30	30	Elanco Fundamentals of Animal Science Certification (ICEV Testing Platform)
AGT 1913	Animal Reproduction	3	2	2	60	30	30	
AGT 2613	Forage and Pasture Crops	3	2	2	60	30	30	
	Instructor Approved Technical Electives	6						
<b>TOTAL</b>		<b>15</b>	<b>6</b>	<b>6</b>	<b>180</b>	<b>90</b>	<b>90</b>	

Animal Science Technology – Poultry Option Technical Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 2533	Poultry Nutrition	3	2	2	60	30	30	MS CPAS Postsecondary: Year 2 Agricultural Business and Management Technology Test
AGT 2543	Hatchery/Feed Mill Management	3	3	0	45	45		
	Instructor Approved Technical Electives	9						
<b>TOTAL</b>		<b>15</b>		<b>6</b>	<b>180</b>	<b>90</b>	<b>90</b>	

### Field Crops Concentration Accelerated Pathway Credential

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1111 <b>OR</b> AGR 1111	Survey of Agricultural Technology	1	1	0	15	15		OSHA-10 General Industry
AGT 1163	Spatial Information Systems	3	2	2	60	30	30	
AGR 2314	Basic Soils	4	3	2	75	45	30	
	Instructor Approved Electives per Local Community College	7						
	<b>TOTAL</b>	<b>15</b>	<b>6</b>	<b>4</b>	<b>150</b>	<b>90</b>	<b>60</b>	

### Field Crops Concentration

#### Career Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 1111 <b>OR</b> AGR 1111	Survey of Agricultural Technology	1	1	0	15	15		MS CPAS: Year 1 Postsecondary Agricultural Business and Management Technology Test
AGT 1163	Spatial Information Systems	3	2	2	60	30	30	
AGR 2314 <b>OR</b> AGR 1714	Basic Soils <b>OR</b> Applied Soils Conservation and Use	4	3	2	75	45	30	
AGR 2413 <b>OR</b> AGR 1413	Farm Management <b>OR</b> Principles of Agricultural Management	3	2	2	60	30	30	
AGT 1214 <b>OR</b> AGR 1214	Applied Principles of Animal Production <b>OR</b> Animal Science	4	3	2	75	45	30	Mississippi Department of Agriculture and Commerce Bureau of Plant Industry Pesticide Applicator Certification
AGT 1313 <b>OR</b> AGR 1313	Applied Principles of Plant Production <b>OR</b> Plant Science	3	2	2	60	30	30	
AGR 1413 <b>OR</b> AGR 2563	Farm Machinery <b>OR</b> Agricultural Machinery and Shop Management	3	2	2	60	30	30	
AGT 1513	Principles of Agricultural Marketing	3	2	2	60	30	30	

AGT 2263 <b>OR</b> AGR 2713	Applied Agricultural Economics <b>OR</b> Principles of Agricultural Economics	3	2	2	60	30	30	
	Instructor Approved Electives per Local Community College	3						
<b>TOTAL</b>		<b>30</b>	<b>19</b>	<b>16</b>	<b>525</b>	<b>285</b>	<b>240</b>	

\* CSC 1123 Microcomputer Applications or ATE 1113 Science and Technology may be taken in lieu of CPT 1113  
 \*\* ECO 2113 Principles of Economics Macroeconomics, or ECO 2123 Principles of Economics Microeconomics may be taken in lieu of AGT 2263 Applied Agricultural Economics or AGR 2713 Principles of Agricultural Economics

#### Field Crops Concentration

#### Technical Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 2373	Fiber and Oilseed Crops	3	2	2	60	30	30	MS CPAS: Year 2 Postsecondary Agricultural Business and Management Technology Test  Mississippi Department of Agriculture and Commerce Bureau of Plant Industry Pesticide Applicator Certification
AGT 2383	Grain Crops	3	2	2	60	30	30	
AGT 2413	Weed Control	3	2	2	60	30	30	
AGT 2463	Insects and Controls	3	2	2	60	30	30	
	Instructor Approved Electives per Local Community College	3						
<b>TOTAL</b>		<b>15</b>	<b>8</b>	<b>8</b>	<b>240</b>	<b>120</b>	<b>120</b>	

ECO 2113 Principles of Economics Macroeconomics, or ECO 2123 Principles of Economics Microeconomics may be taken in lieu of AGT 2263 Applied Agricultural Economics or AGR 2713 Principles of Agricultural Economics

### Precision Agriculture Technology Concentration Accelerated Pathway Credential

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGR 1111 <b>OR</b> AGT 1111	Survey of Agricultural Technology							OSHA-10 General Industry
AGT 1163	Spatial Information Systems	1	1	0	15	15		
AGT 1254	GNSS Data Collection	3	2	2	60	30	30	
	Instructor Approved Electives per Local Community College	4	3	2	75	45	30	
		7						
	<b>TOTAL</b>	<b>15</b>	<b>6</b>	<b>4</b>	<b>150</b>	<b>90</b>	<b>60</b>	

### Precision Agriculture Technology Concentration Career Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGR 1111 <b>OR</b> AGT 1111	Survey of Agricultural Technology							MS CPAS: Year 1 Postsecondary Agricultural Business and Management Technology Test
AGT 1163	Introduction to Spatial Information Systems	1	1	0	15	15		
AGT 2413 <b>OR</b> AGT 2463	Weed Control <b>OR</b> Insect Control *	3	2	2	60	30	30	
AGT 1354	Remote Sensing	4	3	2	75	45	30	
AGT 1254	GNSS Data Collection	4	3	2	75	45	30	
AGT 2154	Geographic Information Systems I	4	3	2	75	45	30	
AGT 2434	Crop Management Zones	4	3	2	75	45	30	
	Instructor Approved Electives per Local Community College	7						
	<b>TOTAL</b>	<b>30</b>	<b>17</b>	<b>12</b>	<b>435</b>	<b>255</b>	<b>180</b>	

\* May be substituted with HLT 2133 Entomology or HLT 2143 Plant Pathology.

Precision Agriculture Technology Concentration Technical Certificate Required Courses

			SCH Breakdown			Contact Hour Breakdown		Certification Information
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours	Lecture	Lab	Certification Name
AGT 2164	Variable Rate Technology	4	3	2	75	45	30	MS CPAS Year 2: Postsecondary Agricultural Business and Management Technology Test  Mississippi Department of Agriculture and Commerce Bureau of Plant Industry Pesticide Applicator Certification
AGT 2174	Agricultural Geographic Information Systems	4	3	2	75	45	30	
AGT 2474	Site Specific Pest Management	4	3	2	75	45	30	
	Instructor Approved Electives per Local Community College	3						
<b>TOTAL</b>		<b>15</b>	<b>9</b>	<b>6</b>	<b>225</b>	<b>135</b>	<b>90</b>	



## General Education Core Courses

To receive the Associate of Applied Science degree, a student must complete all of the required coursework found in the Career Certificate option, Technical certificate option, and a minimum of 15 semester hours of General Education core. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester or provided primarily within the last semester. Each community college will specify the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science degree at their college. The Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) Section 9 Standard 3 of the *Principles of Accreditation: Foundations for Quality Enhancement*<sup>1</sup> describes the general education core.

Section 9 Standard 3:

3. The institution requires the successful completion of a general education component at the undergraduate level that
  - a) is based on a coherent rationale.
  - b) is a substantial component of each undergraduate degree program. For degree completion in associate programs, the component constitutes a minimum of 15 semester hours of the equivalent; for baccalaureate programs, a minimum of 30 semester hours or the equivalent.
  - c) ensures breadth of knowledge. These credit hours include at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural science/mathematics. These courses do not narrowly focus on those skills, techniques, and procedures specific to a particular occupation or profession.

<<<Add any additional general education standards as required for programmatic accreditation here and footnote below.>>>

## General Education Courses

Course Number	Course Name	Semester Credit Hours	SCH Breakdown		Total Contact Hours	Contact Hour Breakdown		Certification Information
			Lecture	Lab		Lecture	Lab	Certification Name
	Humanities/Fine Arts	3						
	Social/Behavioral Sciences	3						
	Math/Science	3						
	Academic electives	6						
	<b>TOTAL</b>	<b>15</b>						

<sup>1</sup> Southern Association of Colleges and Schools Commission on Colleges. (2017). *The Principles of Accreditation: Foundations for Quality Enhancement*. Retrieved from <http://www.sacscoc.org/2017ProposedPrinc/Proposed%20Principles%20Adopted%20by%20BOT.pdf>

### Agriculture Business & Management Electives Listing

			SCH Breakdown		
Course Number	Course Name	Semester Credit Hours	Lecture	Lab	Total Contact Hours
SSP 1003	Smart Start 101	3	3	0	45
ACC 1213	Principles of Accounting I	3	3	0	45
AGR 1111	Survey of Agricultural Technology	1	1	0	15
AGR 1313	Vegetable Production	3	3	0	45
AGR 1333	Vegetable Production	3	2	2	60
AGR 1413	Farm Machinery	3	2	2	60
AGT 1613	Agricultural Records	3	2	2	60
AGR 2314	Basic Soils	4			
AGR 2613	Poultry Production	3	2	2	60
AGR 2713	Principles of Agricultural Economics	3	2	2	60
AGT 1163	Introduction to Spatial Information Systems	3	2	2	60
AGT 1313	Vegetable Crop Production	3	2	2	60
AGT 1613	Agricultural Records	3	2	2	60
AGT 1813	Fitting/Grooming/Judging	3	2	2	60
AGT 1913	Animal Reproduction	3	2	2	60
AGT 2213	Agricultural Sales	3	2	2	60
AGT 2263	Applied Agricultural Economics*	3	2	2	60
AGT 2363	Crop Production – General	3	2	2	60
AGT 2483	Agricultural Pest Management	3	2	2	60
AGT 2513	Management of Commercial Layers	3	3	0	45
AGT 2523	Introduction to Poultry Production	3	3	0	45
AGT 2533	Poultry Nutrition	3	3	0	45
AGT 2543	Hatchery/Feed Mill Management	3	3	0	45
AGT 2553	Broiler Production	3	3	0	45

AGT 2563	Agricultural Machinery and Shop Management	3	2	2	60
AGT 2573	Broiler Processing	3	2	2	60
AGT 2583	Poultry Production & Processing Internship	3	3	0	45
AGT 2613	Forage and Pasture Crops	3	2	2	60
AGT 2663	Applied Animal Nutrition	3	2	2	60
AGT 2713	Beef Production I	3	2	2	60
AGT 2723	Beef Production II	3	2	2	60
AGT 2813	Swine Production	3	2	2	60
AGT 2823	Fish Management	3	2	2	60
AGT 2863	Horse Production	3	2	2	60
AGT 291(1-3)	Special Problem in Agriculture Business and Management	1-3		2-6	30-90
AGT 292(1-6)	Supervised Agricultural Experience	1-6		3-18	45-270
ANT 2613	Unmanned Aerial Systems Basic Flight kill Development	3	2	2	60
ANT 2623	Unmanned Aerial Systems Intermediate Flight kill Development	3	2	2	60
ANT 2633	Unmanned Aerial Systems Advanced Flight kill Development	3	2	2	60
ANT 2643	Autonomous Systems	3	2	2	60
ATE 1113	Science and Technology	3	3	0	45
MTV 1214	Identification of Wholesale & Retail Cuts	4	0	0	60
AGT 1714	Applied Soils-Conservation and Use	4	3	2	75
AGT 2373	Fiber and Oilseed Crops	3	2	2	60
AGT 2383	Grain Crops	3	2	2	60
AGT 2413	Weed Control	3	2	2	60
AGT 2463	Insects and Control	3	2	2	60
AGT 291 (1-3)	Special Problem in Agriculture Business and Management	1-3		2-6	
AGT 292 (1-6)	Supervised Agricultural Experience	1-6			3-18

AIT 1813	Equipment Servicing, Cutting, and Welding	3	3	0	45
ATE 1113	Science and Technology	3	3	0	45
BAD 1313	Business Mathematics	3	3	0	45
BAD 2413	Business Law	3	3	0	45
BOT 1313	Applied Business Mathematics	3	0	0	
BIO1314	Botany I	4	3	2	75
CFT 1143	Water Quality Management	3	3	0	45
CHE 1114	General Chemistry Survey –Basic	4	3	2	75
CHE 1314	Principles of Chemistry I	4	3	2	75
CPT 1113	Fundamentals of Microcomputer Applications	3	3	0	45
CSC 1113	Introduction to Computer Concepts	3	3	0	45
DDT 1413	Elementary Surveying	3	3	0	
ECO 2113	Principles of Economics (Macroeconomics)	3	3	0	
ECO 2123	Principles of Economics (Microeconomics)	3	3	0	
FOT 2124	Forest Surveying	4	3	2	45
MTV 1214	Identification of Wholesale & Retail Cuts	4	0	0	
HLT 2133	Entomology	3	0	0	
HLT 2143	Plant Pathology	3	0	0	
PHY 2243	Physical Science Survey I	3	3	0	45
PHY 2253	Physical Science Survey II	3	3	0	45
WBL 191(1-3) WBL 192(1-3) WBL 193(1-3) WBL 291(1-3) WBL 292(1-3) WBL 293(1-3)	Work-Based Learning	1-3			3-18
	<b>Other Instructor Approved Elective(s) per local community college</b>				

# COURSES

Course Number and Name: AGT 1111 Survey of Agricultural Technology

**Description:** The course provides opportunities for students to gain knowledge, practice, and study in agricultural technology. It includes lectures and seminars on current agricultural topics including government programs and policies, current technological trends and practices, international agriculture, agricultural leadership, and employment opportunities in the agribusiness field. Note: AGR 1111 Survey of Agricultural Technology may be substituted for this course.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
1	1	0	15

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Develop leadership and employability skills. CPR.01, .04,.10
  - a. Prepare a job resume and a letter of application.
  - b. Indicate the effectiveness of good personal traits in the area of employment.
  - c. Practice a mock interview.
  - d. Develop and organize career development goals (from human relations).
  - e. Participate in an agricultural student association or local club activities.
2. Identify the major agriculture industries and their relationships to the agricultural community. CS.05, CS.05,.02
  - a. Compare the agriculture sector to the general economy.
  - b. Describe the scope and economic importance of the agribusiness sector, particularly as it relates to the state of Mississippi.
  - c. Describe and differentiate among the three sectors of the agribusiness industry.
  - d. Compile a listing of the agriculture related industries in the regional or local area.
3. Identify alternative crops. PS .02

Course Number and Name: AGT 1163 Introduction to Spatial Information Systems

**Description:** This course provides an overview of spatial information concepts and the tools of spatial information systems (GNSS, GIS, VRT, and remote sensing). Students will recognize the impact of spatial information technology on our lives currently and in the future. They will research potential career opportunities as they relate to the emerging technologies and the basic concepts under which spatial information functions.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe basic principles of the various technologies incorporated in spatial information systems including GNSS, GIS, VRT, and remote sensing. CS.02.01,
  - a. Describe the global navigation satellite system (GNSS).
  - b. Describe the geographic information system (GIS).
  - c. Describe variable rate technology (VRT).
  - d. Describe remote sensing.
2. Describe how the global navigation satellite system (GNSS), the geographic information system (GIS), and remote sensing interact to benefit agriculture, forestry, transportation, urban planning, public health, law enforcement, and so forth. CS.02.01 PST.05.03.02. a. PST05.03.01. a. PST.05.03.02a
  - a. Describe how GIS and GNSS are integrated for problem solving in a variety of disciplines.
  - b. Describe how remote sensing is applied into a GIS for problem solving in these disciplines.
3. Describe the use of spatial information technology in relationship to the environment. NRS.03.02
  - a. Describe how spatial information systems are used to identify environmental problems.
  - b. Describe how spatial information systems are used to implement sound environmental practices.
4. Identify careers and opportunities in emerging spatial information industries. CS.02.02.05.05.05.02
  - a. Identify spatial information industries operating at the state, national, and international level.
  - b. Identify career opportunities in emerging spatial industries.
  - c. Describe activities of employees working with spatial information systems.

Course Number and Name: AGT 1214 Applied Principles of Animal Production

**Description:** A course to provide students with basic principles related to the production of farm animals. This includes instruction in the basic production cycle, breeding, nutrition, and health of beef and dairy cattle, horses, hogs, poultry, and commercial aquaculture. Note: AGR 1214 Animal Science may be substituted for this course.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe the types of production cycle of livestock. AS .06 .01 .02. a
  - a. Identify and contrast the different sectors of beef cattle production.
  - b. Identify and contrast the different sectors of dairy cattle production.
  - c. Identify and contrast the different sectors of poultry production.
  - d. Identify and contrast the different sectors of swine production.
  - e. Identify and contrast the different sectors of sheep and goat production.
  - f. Identify and contrast the different sectors of horse production.
2. Describe and contrast the characteristics of different breeds of livestock. AS.06.01.03. a
  - a. Contrast the characteristics, qualities, and origins of beef cattle breeds.
  - b. Contrast the characteristics, qualities, and origins of dairy cattle breeds.
  - c. Contrast the characteristics, qualities, and origins of poultry breeds.
  - d. Contrast the characteristics, qualities, and origins of swine breeds.
  - e. Contrast the characteristics, qualities, and origins of sheep and goat breeds.
  - f. Contrast the characteristics, qualities, and origins of horse breeds.
3. Describe the reproductive processes of livestock. AS. 04.01.01.a
  - a. Discuss the role of genetics in the reproduction and breeding process.
  - b. Compare the different systems of breeding animals.
  - c. Contrast the different systems of breeding poultry.
  - d. Describe factors that can be used for selection of individual animals in a breeding program.
4. Describe nutritive needs of livestock. A5.03.01.01. a/As.03.01.02. a
  - a. Describe the characteristics of the classes of nutrients, namely, fats, protein, water, carbohydrates, minerals, and vitamins.
  - b. Contrast differences in the digestive systems of cattle, poultry, swine, sheep, horses, and aquaculture.
5. Describe the importance of a livestock herd health program. AS.07.01.03. b /AS.07
  - a. Identify signs and symptoms of animals infected with internal and external parasites.

- b. Identify common diseases associated with the different species of livestock.



Course Number and Name: AGT 1254 GNSS Data Collection

**Description:** A course to introduce students to the general principles and history of Global Navigation Satellite Systems, their use, and realized and potential value in agriculture. Students will learn to acquire, import and export, and use geo-referenced data. The student will also be able to perform basic troubleshooting, grasp the concepts of spatial variability, and interpret different map projections.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Discuss operation of Global Navigation Satellite Systems (GNSS). <sup>PST.05.01.01. a</sup>
  - a. Describe the origination of the GNSS system and its hardware components.
  - b. Describe the data collected by the GNSS system and the data's accuracy.
  - c. Describe the uses of a GNSS system.
2. Discuss basic concepts of precision agriculture. <sup>PST.05.03</sup>
  - a. Describe basic concepts of precision agriculture and its relationship to GNSS, Geographic Information Systems (GIS), Variable Rate Technology (VTR), Remote Sensing (RS), and other PA technologies and tools.
  - b. Discuss spatial variability in data.
  - c. Discuss the economics of precision agriculture technology.
3. Explain basic concepts of maps and geodesy. <sup>PST.05.03.01. NRS.03.02.01</sup>
  - a. Design a map using the data from a GNSS system.
  - b. Describe coordinates, projections, and datum.
  - c. Discuss geo-rectification and ortho-rectification.
4. Identify GNSS equipment and software used in precision agriculture operations. <sup>CS.02.01.01.</sup>
  - a. Research and select GNSS hardware and software.
  - b. Use and troubleshoot GNSS hardware and software.
5. Collect and apply GNSS data for use in navigation and mapping of agricultural interests. <sup>CS.02.01.01</sup>
  - a. Collect GNSS data and use for navigation and mapping of agricultural interests.
  - b. Input GNSS data into a geographic information system.
  - c. Use GNSS data to navigate.

Course Number and Name: AGT 1313 Applied Principles of Plant Production

**Description:** A course to provide information related to the growth, nutrition, and general culture of agricultural and horticultural crops. It includes instruction on photosynthesis and transpiration, plant nutrition, pest control, and reproduction. Note: AGR 1313 Plant Science or BIO 1314 Botany I may be substituted for this course.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

National Assessment: **None**

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe the interrelationship of the major parts of a plant and how they have adapted to the environment. <sup>PS.02</sup>
  - a. Describe the interrelationship of plant roots, stems, and leaves and how they have adapted to the environment.
2. Identify the components of a typical plant cell, and describe their function(s). <sup>PS.02</sup>
  - a. Identify the structure and function of each plant cell organelle.
  - b. Describe the different tissue systems of plants.
3. Describe the processes and interrelationship of photosynthesis and respiration in green plants. <sup>PS.02.03</sup>
  - a. Explain the effects of temperature, light, water, and air on green plants.
  - b. Discuss the translocation of water from the roots to the leaves.
4. Describe the methods of weed, insect, and plant disease control. <sup>PS.03.03</sup>
  - a. Describe different methods of pest control (chemical, mechanical, cultural, and biological).
  - b. Identify the different types of plant pests.
  - c. Describe the damage caused by agricultural crop pests.
5. Describe the genetics of plant breeding. <sup>PS.02.02</sup>
  - a. Describe the advantages and disadvantages of sexual and asexual reproduction.
  - b. Describe the creation of new varieties through plant breeding (hybrids).
6. Explain the nutritional requirements for plants. <sup>PS.01.03</sup>
  - a. Describe the functions of micronutrients and macronutrients in plants.
  - b. Compare the advantages and disadvantages of chemical and organic fertilizers.

Course Number and Name: AGT 1333 Vegetable Crop Production

**Description:** This course is a study of vegetable crop techniques including conventional and minimal tillage, greenhouse management, planting, pest control, harvesting, and physical marketing practices. Note: AGR 1333 Vegetable Production may be substituted for this course.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Pre-requisite:** Instructor Approved

**Student Learning Outcomes:**

1. Identify the different types of vegetable crops to include the following: PS.02 PS.02.01
  - a. Grass family
  - b. Allium family
  - c. Goosefoot family
  - d. Mustard family
  - e. Malvaceae family
  - f. Bindweed family
  - g. Pea family
  - h. Parsley family
  - i. Solanaceae family
  - j. Gourd family
  - k. Composite family
2. Identify natural resource/crop relationships. NRS .01, NRS .01.01, PS .04
  - a. Define the role that soil types play in vegetable crop selection and production.
  - b. Examine the different types of water management practices.
  - c. Determine the fertility levels for vegetable crop enterprises.
  - d. Apply techniques for greenhouse production.
3. Classify the different types of environmental problems experienced in vegetable crop production in Mississippi. PS .03.03, NRS .01.02, ESS .02.01
  - a. Identify weeds and alternative control measures.
  - b. Identify insects and alternative control measures available.
  - c. Identify plant diseases and factors affecting diseases for vegetable crops grown in Mississippi.
  - d. Discuss government regulation concerning the use of vegetable production practices that alter or impact the environment.
4. Explain the inputs used in vegetable crop production. NRS .01 .03, ABS .01.01, ABS .01.01 PS .02.03 ESS .02.02
  - a. Measure the heat index in reference to vegetable production.
  - b. Observe vegetable growth stages.
  - c. Apply principles of climatic environment to vegetable growth.
  - d. Identify fertility needs for vegetable production.
  - e. Identify irrigation requirements for vegetable production.

5. Compare harvesting techniques used in vegetable production. PS .03 NRS .02.03, CS 06.01.02
  - a. Discuss hand harvesting.
  - b. Discuss mechanical harvesting.
6. Identify marketing techniques used in the sale of vegetables. ABS .01 CS .02 CS .02.01/.02
  - a. Discuss contract production.
  - b. Discuss farmer's markets.
7. Identify marketing techniques used in the sale of vegetables.
  - a. Discuss contract production.
  - b. Discuss on the farm sales.
  - c. Discuss farmers markets.

Course Number and Name: AGT 1354 Remote Sensing

**Description:** This course provides an overview of remote sensing technologies for agricultural operations. The course will emphasize basic concepts and satellite-based, airborne, and ground-based sensing methods. Digital image interpretation and analysis will be a major component. The student will understand how remote sensing is used with spatial information and variable-rate technologies for precision agriculture management.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe fundamental principles of remote sensing. PST.05.03.01. PST.01.01.01.ESS.03.01.01
  - a. Describe the general background of remote sensing applications.
  - b. Discuss the fundamental characteristics of electromagnetic radiation-light, heat, and radio waves.
  - c. Discuss fundamental energy interactions including reflected, absorbed, and transmitted energy.
  - d. Define reflectance and thermal properties of surfaces.
  - e. Describe how remote sensing is used with Geographic Information Systems (GISs).
2. Discuss remote sensing platforms and characteristics of imagery. PST.05.03.02. a.b.
  - a. Summarize sources of remotely sensed imagery, including availability and how to obtain.
  - b. Identify characteristics of satellite imagery from platforms such as GEOEYE-1, LANDSAT(MSS, TM), SPOT, IKONOS, and TRWIS.
  - c. Identify the characteristics of airborne platforms including RDACS, AVIRIS, and ADAR.
  - d. Identify characteristics of aerial videography and photography.
  - e. Describe the applications of active sensors such as synthetic aperture radar (SAR) and LIDAR.
  - f. Discuss UAS (Unmanned Aerial Systems) trends and standards.
3. Describe the characteristics of nonphotographic passive systems. PST.05.01.01. a
  - a. Discuss multispectral and hyper-spectral scanners including different types, characteristics, advantages over photographic systems, and calibration issues.
  - b. Discuss the types, characteristics, and advantages of thermal scanners.
  - c. Discuss the types, characteristics, and advantages of ground-based spectroradiometers and their utility in agricultural management.
  - d. Discuss the characteristics and advantages of ground-based thermal sensing.

4. Develop skills in image interpretation, processing, analysis, and classification.  
NRS.04.01.01. a. NRS.04.01.02. a
  - a. Identify factors, landmarks, and characteristics to examine in interpreting images.
  - b. Discuss rectification and image enhancement processes including ground control selection, re- sampling, mosaicing methods, and GNSS location interfacing.
  - c. Describe the sources, features, and limitations of low-cost or free image processing and analysis software.
  
5. Examine data collection and processing processes for airborne remote sensing.
  - a. Discuss collection of data using digital photography from an airborne platform.
  - b. Describe the process for setting ground control points in the field.
  - c. Discuss the processing, enhancement, and classification of an image to extract features of interest using graphics packages and image analysis software.
  - d. Discuss the process for geo-referencing and registering an image using a GIS.
  - e. Discuss the process for exporting remote sensing data to a variable-rate sprayer for real-time precision management.

Course Number and Name: AGT 1413 Principles of Agricultural Management

**Description:** A course that provides instruction in organization and structure of agricultural businesses, decision making, and the planning process for farming operations. Note: AGR 2413 Farm Management may be taken in lieu of this course.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain the role and function of management in an agricultural production system. ABS 04.02.01.a
  - a. Describe management skills needed to operate an agricultural business.
  - b. Explain and differentiate among the functions of planning, organizing, directing, and controlling in an agricultural business.
  - c. Discuss the characteristics of problems and decision making in agriculture, and understand the steps in the planning process.
2. Identify the most important factors to consider when selecting an organizational structure for an agribusiness. ABD 02. 02.03.c /ABS .04.01 .02. a
  - a. Develop an understanding, and list the advantages and disadvantages of the sole proprietorship, partnerships, corporations, and limited liability companies as forms of business organizations available to agribusiness.
  - b. Identify how taxes affect the form of business organizations.
  - c. Describe the involvement of cooperatives in the agribusiness industries today.
3. Describe the use and importance of financial statements in the management practice of agribusiness today. ABS 02.02.01.a
  - a. Develop a balance sheet and an income statement, and illustrate how agribusiness managers utilize these financial statements today.
  - b. Develop a statement of owner's equity and a statement of cash flows and illustrate how agribusiness managers utilize these financial statements today.
  - c. Calculate and analyze financial statement ratios and explain how they can aid the decision-making process for an agribusiness manager.
4. Discuss the different aspects of financing the agribusiness. ABS .02.01.02. a/ ABS 03.02.01.a
  - a. List the reasons why an agribusiness manager might choose to increase its financial resources.
  - b. List and discuss the different methods of external sources of financing.

- c. Describe the use of equity capital as a means of internally financing an agribusiness.
  - d. Discuss the advantages and disadvantages of leasing alternatives in agribusiness today.
- 5. Perform whole farm planning and budgeting. ABS .02.02.03.c
  - a. Develop inventory formats for various agricultural resources.
  - b. Develop a resource use plan identifying the difference between long-term and short-term planning.
  - c. Incorporate tax management strategies into developing production plans.



.Course Number and Name:

AGT 1513 Principles of Agricultural Marketing

**Description:**

An introduction to general principles of marketing agricultural products. This course includes instruction in general marketing practices and the use of futures contracts.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	3	0	45

**Pre-requisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe how a marketing system develops. ABS .05.01.01. a
  - a. Define marketing as it refers to agricultural commodities.
  - b. Discuss the development of organized marketing.
  - c. Identify the technical components of marketing.
  - d. Discuss the role of information in marketing including modern satellite and computer systems.
2. Identify the factors that affect basic commodity prices. ABS .05 .01 .01. b.
  - a. Describe price determination as it relates to the forces of supply and demand.
  - b. Discuss the difference between farm and consumer prices.
  - c. Discuss the fallacy of composition and the dangers associated with rapid response to price changes with production.
3. Discuss the use of hedging and the futures market with agricultural commodities. ABS .05 .01 .01.c
  - a. Discuss the role of the futures market in assisting firms in the protection against price risk.
  - b. Explain how farmers and marketing firms utilize hedging and options strategies associated with risk management.
  - c. Differentiate among hedges, options, and forward contracts.
  - d. Calculate and explain the use of basis for a particular commodity.
4. Develop an understanding of the basics of meat and livestock marketing. ABS .05 .01 .01. a
  - a. Discuss how the production and product characteristics of livestock and meat influence the marketing of these products.
  - b. Develop an understanding of the changing market patterns and distribution channels of the meat and livestock sector.
  - c. Explain the different methods of marketing livestock in use today in the state of Mississippi.
  - d. Explain the consumer's role in the meat and livestock industry and how the industry is responding to these demands.
5. Develop an understanding of the basics of field crops marketing. ABS .05 .01 .01. c
  - a. Discuss how the production and product characteristics of field crops influence the marketing of these products.

- b. Develop an understanding of the changing market patterns and distribution channels of field crops.
- c. Explain the different methods of marketing field crops in use today in the state of Mississippi.
- d. Understand how government price supports can influence the demand and prices of field crops.

Course Number and Name: AGT 1613 Agriculture Records

**Description:** An introduction to agricultural record keeping techniques including single entry accounting methods, field and enterprise records, credit purchases, and sinking funds. Note: ACC 1213 Principles of Accounting I may be substituted.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe the components of agriculture records. ABS .02.01.01. a / ABS 0.4 .02.01. a
  - a. Compare financial to production records.
  - b. Identify the different components of financial records.
  - c. Identify the types of production records.
  - d. Discuss the major uses of record types.
2. Describe capital accounts and their financial components. ABS .02.01.01. b
  - a. Develop depreciation work sheets for the major types of depreciation.
  - b. Develop a depreciation schedule combining several different types of depreciation and depreciable items.
3. Describe the different types of credit. ABS .03.02.01. a
  - a. Identify the different types of farm loans.
  - b. Calculate a loan amortization factor for the purchase of a major item of machinery.
  - c. Develop a repayment schedule for a major equipment purchase.
  - d. Develop records used to manage accounts payable for short-term credit accounts using a single entry format.
4. Develop components for production records. ABS .04.02.02. a/ABS .03.02.02. a
  - a. Develop data collection components for land and/or enterprise records.
5. Distinguish between single entry accounting and double entry accounting systems. ABS 02.01.01a
  - a. Describe the cash accounting method.
  - b. Describe the accrual accounting method.

Course Number and Name: AGT 1714 Applied Soils – Conservation and Use

**Description:** A course to introduce students to the general principles of soil conservation and safe use. It includes instruction in the soil formation process, properties of soils, soil texture, and soil management for optimum safe use. Note: AGR 2314 Basic Soils may be substituted for this course.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe the soil formation process. ESS .03, ESS .03.03, ESS .03.05
  - a. Describe the chemical and biological properties of soils.
  - b. Discuss the different types of erosion.
  - c. Identify the horizons of a soil profile.
2. Describe the different physical properties of soils. ESS .03.05
  - a. Define the term soil texture, and relate texture to productivity and management.
  - b. Classify soils as to general textural class.
  - c. Describe the effects of soil texture, structure, permeability, and compaction/tilth on soil productivity.
3. Develop soil management strategies for sustaining soil productivity. ESS .03.05
  - a. Define and contrast the terms fertility and productivity as applied to a soil.
  - b. Describe the effects of tillage and traffic as related to soil structure and productivity.
  - c. Describe how soil pH affects plant growth and nutrient availability, and state methods that can be used to raise or lower pH.
4. Describe the properties of soil water. NRS 02.02, ESS 03.02
  - a. Define the relationship between soil type and water holding capacity.
  - b. Discuss the need for water conservation.
  - c. Describe the mechanics of soil drainage (man-made and natural).
  - d. Compare the advantages and disadvantages of different types of irrigation systems.

Course Number and Name: AGT 1813 Fitting/Grooming/Judging

**Description:** Provides information and practice on fitting, grooming, and judging livestock products.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Practice the processes and procedures used in fitting and grooming livestock. AS .02.02.01. b AS .02.02.01.c
  - a. Make a rope halter.
  - b. Select an animal for show or sale.
  - c. Break the selected animal to lead at halter.
  - d. Clip the selected animal.
  - e. Wash the selected animal.
  - f. Groom the selected animal.
  - g. Prepare the selected animal for show or sale.
  - h. Show the selected animal.
2. Explain the importance of livestock production. AS .06.01.03. b
  - a. Identify the trends in livestock selection since World War II.
  - b. Describe the future trends in livestock selection within the next 10 years.
3. Explain the evaluation process of beef cattle. AS.06.01.03. b
  - a. Identify the parts of beef cattle.
  - b. Describe the general and specific terms utilized in judging breeding beef and market beef cattle.
  - c. Write and orally deliver reasons for placement of beef cattle, using proper terminology and organization of reasons.
  - d. Describe the importance of utilizing expected progeny difference (EPD) in beef cattle evaluation.
4. Explain the evaluation process of swine. AS .06.01.03. b
  - a. Identify the parts of swine.
  - b. Describe the general and specific terms utilized in judging breeding and market swine.
  - c. Write and orally deliver reasons for the placement of swine, using proper terminology and organization of reasons.
  - d. Describe the importance of utilizing performance data in swine evaluation.
5. Explain the evaluation process of sheep. AS.06.01.03. b
  - a. Identify the parts of sheep.
  - b. Describe the general and specific terms utilized in judging breeding and market sheep.
  - c. Write and orally deliver reasons for the placement of sheep,

- using proper terminology and organization of reasons.
  - d. Describe the importance of utilizing performance data in sheep evaluation.
- 6. Explain the evaluation process of horses. AS.06.01.03. b
  - a. Identify the parts of horses.
  - b. Describe the general and specific terms utilized in judging horses.
  - c. Write and orally deliver reasons for the placement of horses, using proper terminology and organization of reasons.
  - d. Describe the importance of utilizing performance data in horse evaluation.

Course Number and Name: AGT 1913 Animal Reproduction

**Description:** This course provides information and laboratory opportunities to assist students in learning about animal reproduction.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Differentiate between phenotype and genotype. AS .04.02.02.02. a
  - a. Explain how environment affects phenotype.
  - b. Describe the effect of genetics on phenotype.
  - c. Explain how genotype is derived.
2. Explain the male reproductive tract. AS .04.01.01. b
  - a. Draw and label the male reproductive tract.
  - b. Describe the function of the accessory sex glands.
  - c. Describe how malformation affects reproduction.
3. Explain the function of sperm. AS .04.01.01. b.
  - a. Draw and label the parts of sperm.
  - b. Describe the types of sperm abnormalities.
  - c. Describe the tests normally performed on sperm.
  - d. Describe the properties of a good semen diluter.
  - e. Identify the causes of sperm death.
  - f. Explain how environment affects sperm quality.
4. Explain the female reproductive tract. AS.04.02.02. a/AS.04.02.03. b
  - a. Draw and label the female reproductive tract.
  - b. Describe the functions of the ovary.
  - c. Describe the relationship of the pituitary gland and the ovary.
  - d. Identify the causes of reproductive failure.
5. Explain the estrus cycle. AS .04.01.01b / AS .04.02.03. b
  - a. Describe the methods of genetic manipulation.
  - b. Describe genetic sex determination.
  - c. Classify the types of sex abnormalities.
6. Perform reproductive management techniques. AS.04.05.01. a./ AS 04.03.03.a. /AS 04.03.02.b
  - a. Demonstrate the ability to pass a catheter through the cervix.
  - b. Perform pregnancy testing.
  - c. Cite methods of heat synchronization.
  - d. Discuss embryo transfer protocols and techniques.

Course Number and Name: AGT 2154 Geographic Information Systems I

**Description:** This course is an overview of applications of Geographic Information Systems. Commercial software is used to cover user interface, views, themes, tables, and layouts. Basic functions of building, editing, querying, and spatial analysis of layers and databases will be reviewed. Hands-on exercises will encompass several disciplines and will include mobile GIS applications.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
4	3	2	75

**Pre-requisite:** Instructor Approved

**Student Learning Outcomes:**

1. Define and describe the components of a Geographic Information System (GIS).  
PST.05.03.01.a.b.c.S.02.01.01.a
  - a. Describe the user interface of GIS.
  - b. Describe the mapping components of GIS.
  - c. Describe the database components of GIS.
  - d. Describe how the interface, mapping, and database are interrelated and used.
2. Practice the use of map views and data layers in a Geographic Information System.  
PST.05.03.01.c
  - a. Use map views to display a variety of data layers.
  - b. Add, open, or edit a map view.
  - c. Define properties of map view.
  - d. Add a theme to view.
  - e. Create or edit a theme (layer).
  - f. Define properties of a theme.
3. Use tables and databases in a Geographic Information System. PST.05.03.01.c
  - a. Manipulate and edit data in tables and databases.
  - b. Add, open, import, or create a table or database.
  - c. Add, delete, or edit a record or field to table or database.
4. Construct a layout using map features, tables, and database information. PST.05.03.01.c
  - a. Define a layout.
  - b. Add, delete, or edit map components.
5. Use the query function to retrieve information in a Geographic Information System.
  - a. Define a query.
  - b. Maintain query results in a table or database.
  - c. Present query results in a report or map view.
6. Use spatial analysis to address questions in a Geographic Information System.



- a. Add, delete, or edit attributes of view components.
  - b. Link spatial data to create a model.
- 7. Describe the components of a mobile Geographic Information System. PST.05.03.01. a.b.
  - a. Define the components and processes for linking the desktop GIS to the mobile GIS.
- 8. Describe the use of mobile GIS for data accession.
  - a. Define the properties of the data layers.
  - b. Define the data input, import, and export procedures.

Course Number and Name: AGT 2164 Variable Rate Technology

**Description:** An introductory course on basic principles of variable rate technology (VRT) (site-specific, precision farming technology). This course will provide instruction on the importance of variable rate technology; data collection techniques for variable rate applications; development of prescription application maps and components; and calibration, installation, and troubleshooting of variable rate equipment.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe how variable rate technologies and precision farming techniques benefit agricultural producers and the general public. PST.05.03.01.a.b. CS.02.01.01.a.  
PST.02.01.01.a
  - a. Describe fundamental operating processes of VRT.
  - b. Identify economic factors related to VRT.
  - c. Describe environmental impact factors related to VRT.
  - d. Describe how UAS (Unmanned Aerial Systems) could impact VRT in the future.
2. Describe various components of VRT equipment and their relationship to other components (e.g., GNSS, GIS, controllers, planter, sprayer, nutrient applicator, etc.). PST.05.03.01.a.b. CS.02.01.01.a
  - a. Describe applications of GNSS in VRT.
  - b. Describe the applications of GIS in VRT.
  - c. Describe the relationship of GNSS and GIS to other components of VRT.
3. Describe how various types of data can be used for VRT. PST.05.03.01.a.b. CS.02.01.01.a.  
PST.05.03.02.a.PS.01.03.01
  - a. Discuss geo-referenced field scouting (e.g., soil sampling, plant population, percent vegetation, crop stage, weed infestations, soil moisture, insect populations, plant height, etc.).
  - b. Describe the use of sensor based data collectors [e.g., Veris (soil electrical conductivity) soil mapping system, yield monitor, profiler (geo-referenced penetrometer - soil compaction), geo-referenced weed sensor, etc.].
  - c. Identify remote imagery (e.g., aerial photography, multispectral, video, etc.).
  - d. Discuss the collection and use of historical data (e.g., knowledge of farmer).
4. Apply mathematical relationships to convert collected data into prescription application maps (e.g., field scouting data, geo-referenced sensor devices, scanned imagery, remote imagery, historical data, zone management versus pixel based, etc.).
  - a. Discuss data requirements and analysis techniques for prescription generation.

5. Apply principles of VRT equipment operation to include calibration, operation, and troubleshooting (e.g., GNSS, planter, sprayer, nutrient applicator, etc.). PST.05.03.01. a.b. CS.02.01.01
- a. Discuss principles of application equipment calibration.
  - b. Discuss the limitations of VRT equipment and procedures.
  - c. Describe how to make variable rate applications without using a GNSS and GIS.
  - d. Describe troubleshooting procedures for VRT equipment.

Course Number and Name: AGT 2174 Agricultural Geographic Information Systems

**Description:** This course reviews several agricultural Geographic Information Systems, including the use of spatial data and spatial analysis for record keeping, modeling, and management of an agronomic ecosystem.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Apply GIS for record keeping and spatial analysis of data. PST.05.03.01. a.b. CS.02.01.01. a. PST.02.01.01. a
  - a. Construct a directory structure of farm data.
  - b. Create tables of spatial and temporal data for a farm's spatial management units.
  - c. Create relational links for spatial management unit tables.
  - d. Query, display, and analyze management unit data.
2. Apply spatial data analysis techniques. PST.05.03.01. a.b. CS.02.01.01.a. PST.02.01.01.a
  - a. Identify and process the data needed to make management decisions.
  - b. Create models relating various data layers associated with production management.
  - c. Create and implement maps to control variable rate technologies.
  - d. Analyze yield data.
3. Apply management and use of shape files. PST.05.03.02.a.PS.01.03.01

Course Number and Name: AGT 2213 Agricultural Sales

**Description:** A course in the advertising, sales, and promotion of agricultural supplies and services.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Pre-requisite:** Instructor Approved

**Student Learning Outcomes:**

1. Analyze consumer needs and services. ABS .01, ABS .04
  - a. Describe the concept of marketing as applied to the sales of agricultural supplies.
  - b. Analyze marketing strategies and systems.
  - c. Identify problems in market development.
  - d. Discuss the importance of developing a market share.
2. Describe techniques for selling. ABS .05
  - a. Develop and deliver a sales presentation.
  - b. Develop an advertising scheme for an agricultural product.
  - c. Develop a plan for using follow-up as a sales tool.
  - d. Describe how credit is used as a sales tool.
3. Describe sales from the customer's viewpoint. ABS .05.03
  - a. Identify characteristics of a salesperson.
  - b. Describe the difference between customer needs and wants.
  - c. Prepare a survey for establishing a market for an agricultural product.

Course Number and Name: AGT 2263 Applied Agricultural Economics

**Description:** A course to introduce the student to economic principles as applied to agribusiness operations. Note: AGR 2713 Principles of Agricultural Economics, ECO 2113 Principles of Micro Economics Macroeconomics, or ECO 2123 Principles of Economics Microeconomics may be substituted for this course.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe agribusiness relationship to the domestic and foreign economies. <sup>ABS .01.01.01. a</sup>
  - a. Identify agribusiness structures.
  - b. Describe methods for organizing agribusiness.
  - c. Name the causes for seasonal output.
  - d. Show how graphs and charts are used to display and present economic facts and concepts.
2. Discuss demand theory and how a demand curve is developed. <sup>ABS .01.01.01. a</sup>
  - a. Identify how the consumer relays information concerning wants and needs to the suppliers of goods and services.
  - b. Develop and label the demand curve.
  - c. Show the relationship between the slope of the demand curve and the concept of elasticity of demand.
  - d. Discuss factors that influence demand elasticities.
3. Discuss the economic facts associated with single variable inputs. <sup>ABS .01.01.01. a.</sup>
  - a. Identify the profit motive and how it affects the use of variable inputs in crop production.
  - b. Identify the derived demand for an input.
  - c. Describe and apply the concept of marginalism to use of variable inputs.
  - d. State the law of diminishing returns and the relationship to use of single variable inputs.
4. Define the relationship between cost and length of run when used in planning and decision making. <sup>ABS .01.01.01. b./ ABS .01.01.01. c</sup>
  - a. Discuss the term production function.
  - b. Identify the different cost concepts used to describe the production of agricultural products.
  - c. Describe the factors that affect farm size.
5. Analyze government influence on the production and price of farm commodities. <sup>ABS .01.01.01. b</sup>
  - a. Define equilibrium price.
  - b. Analyze public policy in production system.

- c. Discuss the influence of government regulations and foreign policy on stability and profitability of agricultural systems.
- d. Identify the causes of surplus and shortage and the role government programs play.
- e. Define the benefactor of all government subsidies and payments.
- f. Identify relationships between government agencies and the cost of producing food and fiber.

Course Number and Name: AGT 2363 Crop Production General

**Description:** This course is a study of crop production techniques including tillage and planting, pest control, and physical marketing practices for crops in Mississippi.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe the utilization of field crops.
  - a. Describe the history and development of field crops.
  - b. Identify products that utilize grain products.
2. Describe processes involved in the production and marketing grain crops. <sup>PS.02.03</sup>
  - a. Discuss the different factors that determine the suitability of crops to product in your location.
  - b. List and describe the major field crops produced in Mississippi.
  - c. Discuss the different production systems for each major field crop produced in Mississippi.
  - d. List the different marketing strategies, and discuss the advantage and disadvantages of each.
  - e. Discuss the different climatic factors and their effect on crop production.
3. Classify the different types of disease and pest problems experienced in the production of field crops in Mississippi. <sup>PS.03.03</sup>
  - a. Identify prominent weeds and insects and their control.
  - b. Identify plant diseases and their control.
  - c. Explain integrated crop management.
  - d. Discuss the role of certified crop advisors.
4. Identify tillage and harvesting systems and production practices used for the production of grain crops in Mississippi. <sup>ESS.03.05</sup>
  - a. Differentiate between conventional, conservation, and no-till tillage systems.
  - b. Compare the different tillage systems as to their profitability and sustainability in filed crop production.
  - c. Identify equipment necessary for seedbed preparation, cultivation, and harvesting of field crops.
5. Identify methods for maintaining soil productivity in Mississippi. <sup>PS.01.03</sup>
  - a. Define the role that soil types play in grain crop selection and production.
  - b. Determine proper fertility levels essential for field crop production.
  - c. Identify sources of nutrients for grain production.
  - d. Describe different irrigation systems and their feasibility.
  - e. Describe soil drainage and its impact on crop production.



Course Number and Name: AGT 2373 Fiber and Oilseed Crops

**Description:** This course is a study of crop production techniques including tillage and planting, pest control, and physical marketing practices for cotton, peanuts and soybeans.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Develop and determine knowledgeable skills concerning crop production.
  - a. Describe the history of cotton, peanuts and soybeans.
  - b. Describe the utilization of cotton, peanuts and soybeans.
2. Identify natural resource/crop relationships. PS .01.01, 01.02, 01.03, ESS .03.05
  - a. Define the role that soil types play in crop selection and production.
  - b. Examine the different types of water management practices.
  - c. Determine the fertility levels for alternative crop enterprises.
3. Classify the different types of environmental problems experienced in crop production in Mississippi. PS .03.03
  - a. Identify weeds and alternative control measures.
  - b. Identify insects and alternative control measures available.
  - c. Identify plant diseases and factors affecting diseases for crops grown in Mississippi.
  - d. Discuss government regulation concerning the use of production practices that alter or impact the environment.
4. Identify tillage systems and production practices used for crop production in Mississippi. ESS .03.05
  - a. Discuss the characteristics of conventional tillage systems.
  - b. Discuss the characteristics of conservation tillage systems.
  - c. Discuss the characteristics of no-till tillage systems.
  - d. Compare tillage systems as to profitability and sustainability for production.
5. Apply the principles of plant mapping to production of cotton.
  - a. Describe plant mapping.
  - b. Explain how plant mapping can have an effect upon crop yields.
  - c. Collect data, and manipulate the variables on plant mapping in cotton.
6. Explain the inputs used in cotton, peanuts and soybean production. PS .02.03
  - a. Measure the heat index in reference to cotton, peanut and soybean production.
  - b. Observe cotton, peanut and soybean growth stages.
  - c. Apply principles of climatic environment to cotton, peanut and soybean growth.
  - d. Identify fertility needs for cotton, peanut and soybean production. PS .01.03, ESS .03.05
  - e. Identify irrigation requirements for cotton, peanut and soybean production. NRS .02.02, ESS .03.02

7. Explain the principles of using chemical growth regulators and their use in controlling cotton growth. PS .02.03.04a
  - a. Identify sources of plant growth regulation.
  - b. Apply plant growth regulators to growing crops.

Course Number and Name:

AGT 2383 Grain Crops

**Description:**

This course is a study of grain production techniques including tillage, planting, pest control, and physical marketing practices for grain crops in Mississippi. (Crops included are corn or maize, rice, wheat, and milo.)

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

- Describe the utilization of grain crops.
  - Describe the history and development of grain crops.
  - Identify products that utilize grain products.
  - Describe processes involved in processing and marketing grain crops.
- Identify resource/crop relationships. PS.01.01, 01.02, 01.03, ESS.03.05, NRS.01.01, PS.04
  - Define the role that soil types play in grain crop selection and production.
  - Determine fertility levels for grain crops.
- Classify the different types of environmental problems experienced in the production of grain crops in Mississippi. PS.03.03, NRS.01.01, PS.304, NRS.04.02
  - Identify weeds and alternative control measures.
  - Identify insects and alternative control measures.
  - Identify plant diseases and alternative control measures.
- Identify tillage systems and production practices used for the production of grain crops in Mississippi. ESS.03.05
  - Identify conventional tillage systems.
  - Identify conservation tillage systems.
  - Identify no-till systems.
  - Compare alternative tillage systems as to their profitability and sustainability in grain production.
- Identify methods for maintaining soil productivity in Mississippi. PS.01.03
  - Determine levels of macronutrients essential for grain production.
  - Determine levels of micronutrients essential for grain production.
  - Identify sources of supplementary nutrients for grain production.
- Examine water management practices for grain production. PS.01.02
  - Describe irrigation practices.
  - Describe drainage factors.
- Identify machinery needs for grain production.
  - Identify equipment necessary for seedbed preparation, cultivation, and harvesting of grain crops.

- b. Contrast the equipment needs for conventional versus conservation production systems.
- 8. Identify environmental factors that affect grain production in Mississippi. <sup>PS.02.03</sup>
  - a. Describe how temperature, cloud cover, and humidity affect the growth of grain crops.
  - b. Describe how different levels of rainfall affect the growth of grain crops.

Course Number and Name:

AGT 2413 Weed Control

**Description:**

A course to provide students with information and skills for controlling plant pests in agricultural crops. This course includes instruction in the use and application of chemicals for weed control.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

Prerequisite: Instructor Approved

**Student Learning Outcomes:**

1. Define and identify weeds. <sup>NRS .04.03, PS .03.03.01</sup>
  - a. Define terms associated with weeds.
  - b. Identify weeds according to the growing season.
2. Explain ways in which weeds harm agricultural crops. <sup>NRS .04.03, PS.03.03.01</sup>
  - a. Describe how weeds can reduce crop yields.
  - b. Describe how weeds can lower human efficiency.
3. Describe the different types, classes, and formulations of herbicides and how each affects crops and weeds. <sup>PAT</sup>
  - a. Describe inorganic herbicides.
  - b. Describe organic herbicides.
  - c. Identify different ways that herbicides are formulated.
4. Explain precautions to be followed to avoid injury to people, animals, and crops when applying herbicides. <sup>PAT</sup>
  - a. Determine Environmental Protection Agency regulations pertaining to pesticide application.
  - b. Determine ways in which pesticides enter the body.
  - c. Describe selectivity in herbicides.
  - d. Identify safety equipment associated with herbicide application.
5. Interpret information on a herbicide container label. <sup>PAT</sup>
  - a. Determine signal words.
  - b. Determine formulations.
  - c. Determine crops labeled for an herbicide.
6. Determine how and when to apply herbicides. <sup>PAT</sup>
  - a. Establish time periods in which herbicides should be applied for maximum effectiveness.
  - b. Determine equipment and methods used to apply herbicides.
7. Calculate drift, and determine amounts of herbicides to be applied.
  - a. Calculate drift.
  - b. Explain the reasoning behind applying herbicides in certain quantities to avoid weed resistance and crop damage.

8. Calibrate a herbicide applicator to deliver the prescribed amount of an herbicide to a given area.
  - a. Identify equipment needed for calibration.
  - b. Calculate the calibration from data supplied.
9. Discuss emerging trends and issues in weed control.

Course Number and Name: AGT 2434 Crop Management Zones

**Description:** The focus of this course will be on the identification and management of production zones within crop fields. This course will provide students a working knowledge of geo-spatial tools and remote imaging techniques to identify regions of distinction within a field and methods to develop management strategies to maximize economic gains for cropping systems. The course will introduce the use of various decision support tools available for crop management, including geographic information systems and crop models.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	4	3	2	75

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Discuss basic principles of soil mapping. PS.01.01.01-03.a. PS.01.03.01.a. . PS.01.03.02.a. PS.01.03.04.a.
  - a. Describe soil types, characteristics, and classes including nutrients, water holding capacity, texture, and topography.
  - b. Describe crop suitability to soils.
  - c. Describe the extent of soil variances within fields.
2. Discuss factors that determine crop production capabilities. PS.01.01.01-03.a. PS.01.03.01.a. . PS.01.03.02.a. PS.01.03.04.a.
  - a. Describe factors contributing to crop production.
  - b. Describe crop stressors and indications of crop stress.
  - c. Describe methodologies of crop sampling including nutrient analysis (petiole N), weed sampling, insect sampling, and yield mapping.
3. Discuss basic principles of remote imaging techniques as applied to crop management zones. PST.05.03.01.a. PST.05.03.02.a.
  - a. Describe types of remote sensing technologies including panchromatic, hyperspectral, multispectral, and infrared.
  - b. Describe sources and availability of imagery including commercial providers, expenses, and analysis.
4. Apply sampling strategies. PS.01.01.01-03.a. PS.01.03.01.a. . PS.01.03.02.a. PS.01.03.04.a. PS.01.03.05.a. ESS.01.01.01.a.
  - a. Describe how to translate the acquired knowledge of soil and crop variability into sampling strategy for ground-truthing of remote imagery.
  - b. Describe soil electrical conductivity and how it relates to sampling.
  - c. Describe various sampling methodologies.
  - d. Design suitable strategies for optimal identification of variability.
  - e. Compare the pros and cons of each strategy, such as regular grid, staggered grid, directed grid, and zone sampling.
5. Discuss analysis strategies. PS.01.01.01-03.a. PS.01.03.01.a. . PS.01.03.02.a. PS.01.03.04.a. PS.01.03.05.a.
  - a. Describe the importance of proper analysis strategy for type and frequency of sampling.
  - b. Describe the analysis of soil and plant samples.

6. Develop management strategies. PS.01.01.01-03.a. PS.01.03.01.a. . PS.01.03.02.a. PS.01.03.04.a. PS.01.03.05.a.
- a. Understand the relationships among soil characteristics, crop production, and management zone theory in precision agriculture operations.
  - b. Incorporate information from the production system to develop management strategies.
  - c. Describe methods to query across layers using map algebra, yield, soil, pest and crop variability, and profit margin.



- d. Describe the use of models to develop management strategies such as MZA, Cotman, and CropGro.

Course Number and Name: AGT 2463 Insects and Controls

**Description:** A course to provide instruction and training in techniques of control of insect pests. This includes instruction in the safe and proper use of chemical and other control methods.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Identify insects associated with field crops. NRS .04.03, PS .03.03.01, PS.03.03.03 NRS.04.03.01.
  - a. Describe early season insects.
  - b. Describe mid-season insects.
  - c. Describe late season insects.
2. Identify the basic anatomy of insects.
  - a. Describe the main body segments.
  - b. Describe structures that originate from the three main body segments.
3. Identify types of insect damage incurred in field crops. NRS .04.03, PS.03.03, PS.03.03.03 NRS.04.03.
  - a. Describe damage to leaves.
  - b. Describe damage to stems.
  - c. Describe damage to roots.
  - d. Describe damage to fruiting structures.
4. Explain the life cycle of various insects. PS .03.03, PS.03.03.03
  - a. Describe complete metamorphosis.
  - b. Describe incomplete metamorphosis.
5. Identify different insecticide/pesticide categories. PAT, PS.03.03.03
  - a. Describe contact chemicals and how they work.
  - b. Describe residuals and how they work.
  - c. Describe systemics and how they work.
  - d. Describe transgenic crops and how they work.
6. Identify different classes and formulations of insecticides and how each affects insects. PS.03.03.03c
7. Describe precautions to be followed to protect people, animals, and crops when applying insecticides. PAT, PS.03.03.04 CS.03.03.01-04.a-b.
  - a. Determine Environmental Protection Agency regulations pertaining to insecticide application.
  - b. Determine ways in which pesticides enter the body.
  - c. Identify safety equipment and supplies involved with insecticide application.
8. Interpret information on an insecticide container label. PAT
  - a. Identify signal words.

- b. Describe formulations of insecticides.
  - c. Identify crops labeled for a particular insecticide.
- 9. Explain the relationship between how and when to apply insecticides. PS .03.03.03.c PS.03.03.04  
ESS.01.01 BS.01.01.01.a,
  - a. Determine when insecticides should be applied.
  - b. Identify equipment and methods used in insecticide application.
- 10. Compare aerial versus ground applications.
  - a. Contrast advantages and disadvantages of aerial and ground applications.
  - b. Calibrate ground application equipment.
- 11. Identify alternative methods of insect control. NRS .04.03
  - a. Describe biological insect control.
  - b. Describe cultural insect control.
- 12. Identify insect damage levels. PS.03.03.02c, PS.03.03a, PS.03.03.03 BS.01.01.01.a
  - a. Evaluate economic thresholds.
  - b. Evaluate zero damage level.
  - c. Evaluate equilibrium status.

Course Number and Name: AGT 2474 Site Specific Pest Management

**Description:** This course provides instruction and training in conventional and site- specific techniques used in control of agricultural pests including insects, diseases, weeds, and nematodes. Students will use pest management techniques and tools including spatial information systems to evaluate impact of pest injury and costs associated with control. Students will learn how variable rate technologies are applied in the field for site specific pest management.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
4	3	2	75

**Pre-requisite:** Instructor Approved

**Student Learning Outcomes:**

1. Review the most common insects, diseases, and weeds associated with agricultural crops in the midsouth and the damage they cause. <sup>PS.03.03</sup>
  - a. Describe basic taxonomic methods for identification of agricultural pests.
  - b. Describe common pests found in agricultural production systems in the midsouth.
  - c. Describe pest damage to plants, economic injury levels, and thresholds.
2. Explain principles of integrated pest management. <sup>PS.03.03</sup>
  - a. Describe chemical control methods.
  - b. Describe biological control methods.
  - c. Describe cultural control methods.
  - d. Describe how these and other methods are used together for pest management.
3. Identify different classes and formulations of pesticides and how they affect target pests. <sup>PS.03.03</sup>
  - a. Describe different classes and formulations of pesticides.
  - b. Describe how different pesticides work.
  - c. Describe precautions needed to protect people when applying pesticides.
  - d. Describe and identify equipment and methods used in pesticide application.
4. Describe how Global Navigation Satellite Systems (GNSS), geographic information systems (GISs), and remote sensing interact to aid in the control of crop pests. <sup>PST.05.03.01. a. PST.05.03.02.a.</sup>
  - a. Describe how spatial information systems are used to locate and identify pest problems.
  - b. Describe how spatial information systems are used to evaluate pest damage levels.
  - c. Describe how GIS, GNSS, and remote sensing are integrated for problem solving in pest management.
  - d. Analyze and interpret geo-spatial data gathered for solving pest management problems.

- e. Describe economic benefits derived from the spatial information systems technology.
- 5. Describe and demonstrate how variable rate technology is applied for pest management. PST.05.03.01. a
  - a. Describe how variable rate technology is used in site-specific pest management.
  - b. Describe the calibration and operation of variable rate application equipment.

Course Number and Name: AGT 2483 Agricultural Pest Management

**Description:** A course to provide students with information and skills for controlling pests. This includes instruction in the use and application of chemicals for control of weeds, insects, and diseases.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Identify common pests in row crops.
  - a. Define terms associated with weeds, insects, and crop diseases.
  - b. Identify common weeds, insects, and diseases of plants.
2. Discuss ways in which pests harm agricultural crops.
  - a. Describe how weeds, insects, and plant diseases can reduce crop yields.
  - b. Describe how weeds, insects, and plant diseases can lower human efficiency.
3. Describe the different types, classes, and formulations of pesticides and how each affects crops and pests.
  - a. Describe transgenic crops and how they resist pests.
  - b. Identify the characteristics of different pesticide formulations.
4. Analyze precautions to be followed to avoid injury to people, animals, crops, and the general environment when applying pesticides.
  - a. Identify Environmental Protection Agency regulations pertaining to pesticide application.
  - b. Determine ways in which pesticides can enter the human body.
  - c. Describe the concept of selectivity as related to pesticides.
  - d. Identify and describe the use of safety equipment used with pesticide application.
5. Interpret information on a pesticide label.
  - a. Interpret signal words.
  - b. Interpret formulations.
  - c. Identify crops labeled for a specific pesticide.
  - d. Interpret application instructions and procedures for a specific pesticide.
6. Determine how and when to apply pesticides.
  - a. Establish time periods for maximum effectiveness of an application.
  - b. Determine equipment and methods for applying a specific pesticide.
  - c. Compare aerial versus ground applications of pesticides.
  - d. Calibrate a ground applicator.
7. Identify alternative methods of pest control.
  - a. Describe biological pest control methods.
  - b. Describe cultural pest control methods.

8. Examine pest damage levels.
  - a. Evaluate economic thresholds for damage.
  - b. Evaluate the zero damage level.
  - c. Evaluate an equilibrium status.

**Course Number and Name:** AGT 2513 Management of Commercial Layers

**Description:** This course is designed to give the student practical principles and application techniques in the management of commercial layers.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe hatching and transportation to the farm. <sup>AS 01.02</sup>
2. Describe the starting and growing of pullets. <sup>AS .02.01</sup>
3. Understand management of laying hens. <sup>AS .06.02</sup>
4. Discuss animal welfare of laying hens. <sup>AS .02.01</sup>
5. Understand the molting process. <sup>AS.06.03</sup>



Course Number and Name: AGT 2523 Introduction to Poultry Production

**Description:** This course is designed to give the student practical principles and application techniques in the production, processing, and marketing of poultry and/or poultry products.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Understand the components of the poultry industry. <sup>AS.05.01</sup>
2. Describe the anatomy and structure of a fowl. <sup>AS.06.01</sup>
3. Describe the physiology and reproduction of poultry. <sup>AS.06.01</sup>
4. Describe the genetics and breeding of poultry. <sup>AS.06.03</sup>
5. Describe the incubation process in hatchery management. <sup>AS.08.01</sup>
6. Describe the social behavior of animal welfare in poultry. <sup>AS.07.02</sup>
7. Discuss environment and housing of poultry. <sup>AS.07.02</sup>
8. Describe diseases and parasites in poultry. <sup>AS.07.02</sup>
9. Describe poultry and egg marketing. <sup>AS.05.02</sup>
10. Describe broiler, egg and turkey production. <sup>AS.01.02</sup>
11. Discuss various miscellaneous poultry. <sup>AS.01.01</sup>
12. Discuss waste management systems. <sup>AS.01.02</sup>

**Course Number and Name:** AGT 2533 Poultry Nutrition

**Description:** This course is designed to give the student practical principles and application techniques in poultry nutrition.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Label the digestive tract of poultry. <sup>AS.06.02</sup>
2. Identify the functions of each component of the digestive tract in poultry. <sup>AS.03.01</sup>
3. Describe the digestive process (metabolism and feeding water). <sup>AS.06.02</sup>
4. Describe feed components of poultry (protein, carbohydrates, water, vitamins, minerals, energy, etc.). <sup>AS.03.01</sup>
5. Determine the nutrient requirements of broilers/laying hens. <sup>AS.03.01</sup>
6. Convert nutritional units of measurement. <sup>AS.03.01</sup>
7. Understand ration formulation and least cost analysis. <sup>AS.03.02</sup>

Course Number and Name: AGT 2543 Hatchery/Feed Mill Management

**Description:** This course is designed to give the student practical principles and application techniques in hatchery/feed mill management.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Understand the storage and selection of hatching eggs. <sup>AS.08.02</sup>
2. Discuss modern incubators. <sup>AS.08.0</sup>
3. Describe the factors affecting hatchability. <sup>AS.07.01</sup>
4. Understand of the National Poultry Improvement Plan. <sup>AS.04.02</sup>
5. Understand Hatchery Sanitation. <sup>AS.07.02</sup>
6. Describe the different feedstuffs for poultry diets. <sup>AS.03.03</sup>
7. Describe the design of a feed mill. <sup>AS.08.0</sup>
8. Understand feed formulations, ingredients and additives. <sup>AS.02.02</sup>
9. Understand poultry feed manufacturing. <sup>AS.03.03</sup>
10. Describe feed storage and transportation. <sup>AS.08.02</sup>

Course Number and Name: AGT 2553 Broiler Production

**Description:** This course is designed to give the student practical principles and application techniques in broiler production.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Discuss broiler breeders. <sup>AS.01.01</sup>
2. Describe housing for broilers. <sup>AS.02.01</sup>
3. Understand chick quality. <sup>AS.02.01</sup>
4. Describe types of brooding methods. <sup>AS.04.01</sup>
5. Describe brooding, water, feeding and other equipment. <sup>AS.07.01</sup>
6. Discuss feed, water and lighting programs. <sup>AS.08.01</sup>
7. Discuss ventilation in broiler production. <sup>AS.07.02</sup>
8. Understand catching and hauling of broilers. <sup>AS.08.02</sup>
9. Understand grower and company responsibilities. <sup>AS.05.02</sup>

Course Number and Name: AGT 2563 Agricultural Machinery and Shop Management

**Description:** A comprehensive course studying operation and management of farm power machinery and shop repairs and maintenance. Note: Farm Machinery (AGR 1413) may be taken in lieu of this course.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Identify safety procedures with all tools and equipment. PST.01.02, 02.02, .03, CS.03.04, OSHA 10
  - a. Pass a general shop safety test.
  - b. Pass a tractor and farm equipment safety test.
  - c. Pass a tool identification test.
2. Measure machine capacity.
  - a. Determine capacity measuring methods.
  - b. Select the optimum machine operating speed.
3. Determine how to improve field efficiency of machines.
  - a. Calculate machine performance rate.
  - b. Assess the value of preventive maintenance.
  - c. Assess the impact of technological obsolescence.
4. Calculate the economic alternatives of acquiring farm machinery.
  - a. Select tractors and equipment based on farm size.
  - b. Understand how to allow for expansion.
5. Demonstrate the skills needed to perform structural repair to farm machinery. PST.01.02, PST.02.02, PST .03.01, OSHA 10
  - a. Demonstrate the proper procedures for use of a cutting torch.
  - b. Demonstrate the ability to perform basic gas welding.
  - c. Demonstrate the ability to perform basic arc welding.
6. Demonstrate the ability to perform minor mechanical maintenance on farm machinery. PST .02.01, PST .03.01
  - a. Perform ordinary maintenance and service of machinery.
  - b. Demonstrate the ability to perform troubleshooting for power equipment using technical manuals, parts manuals, and service guides.

Course Number and Name: AGT 2573 Broiler Processing

**Description:** This course is designed to give the student practical principles and application techniques in broiler processing.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Understand plant layout and operation.
2. Discuss food safety/microbiology.
3. Understand sanitation/maintenance.
4. Describe live poultry/yield.
5. Describe evisceration.
6. Understand moisture and chilling.
7. Describe USDA inspection/grading.
8. Describe second processing and shipping.
9. Describe sales and waste water.

Course Number and Name: AGT 2583 Poultry Production & Processing Internship

**Description:** This course is designed to give the student practical principles and application techniques in poultry production and processing.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	3	0	45

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Prepare a training agreement.
  - a. Compile a written training agreement in cooperation with the instructor and employer that details work schedule and specific tasks/skills to be mastered in the program.
2. Prepare and submit written reports of the supervised experience.
  - a. Submit weekly reports to the instructor summarizing activities and tasks completed.
  - b. Submit a final report of activities and experiences.
3. Follow written guidelines for work experience programs.
  - a. Complete all required activities in the training agreement.
  - b. Adhere to all written and oral instructions for the supervised experience.

Course Number and Name: AGT 2613 Forage and Pasture Crops

**Description:** This course is designed to give the student a comprehensive course in the production and management of forage and pasture crops.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Describe the uses of forages. PS .01, ABS .01
  - a. Explain how forages are used for watershed management.
  - b. Identify the role of forages to livestock in the national economy.
  - c. Define grassland agriculture.
  - d. Identify problems faced by world population in relation to forages.
2. Compare the composition and nutritive value of forages. AS .03
  - a. Name the stages of growth for grasses and legumes and their relationships to nutritive value.
  - b. Describe the formation of nodules by legumes.
  - c. Compare hay to silage as an animal feed.
3. Examine the effects that farm management practices have on forage. AS .08, PS .03.05, ESS .03.02
  - a. Examine the effects of grazing pressure on new plant seedlings.
  - b. Describe the relationship among plants, animals, and soils.
  - c. Describe harvest and storage methods of forage crops.
  - d. Determine the best practices for producing, harvesting, and storing high-quality hay.
4. Identify common forages found in the South. PS .01, PS .02, NRS.04.01
  - a. Describe the management practices and nutritive values for each of the warm season annuals and perennials.
  - b. Describe the management practices and nutritive values for each of the cool season annuals and perennials.
  - c. Explain growth stages of legumes.
  - d. Design a mixed grass and legume system for pastures.
  - e. Calculate fertilizer requirements of grasses and legumes on existing soil test.
5. Identify weed control methods utilized in forage and pasture crops. NRS .02.02, NRS .04.03 ESS .03.05
  - a. Describe broadleaf weed control methods.
  - b. Describe competitive grass control methods.



Course Number and Name: AGT 2663 Applied Animal Nutrition

**Description:** This course is designed to introduce the students a comprehensive course of study on the practical principles and applications of nutrition.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Identify the classes of nutrients including protein, fat, carbohydrates, vitamins, minerals, and water. <sup>AS .03, AS .03.03</sup>
  - a. Describe the sources and major functions of water on the animal.
  - b. Describe the general structure, functions, and classification of carbohydrates.
  - c. Cite the general classification and functions of fat.
  - d. Explain the amino acid makeup of protein, and contrast essential and nonessential amino acids.
  - e. Identify and contrast macro minerals and micro minerals.
  - f. Identify and contrast water soluble and fat soluble vitamins.
2. Identify and contrast the differences in the digestive systems of the different species of farm animals. <sup>AS.03</sup>
  - a. Identify, in order of passage, the digestive organs of a monogastric animal.
  - b. Contrast the difference between the monogastric and ruminant stomach.
  - c. Explain the concept of horses utilizing forage.
  - d. Describe the digestion and absorption process in monogastric and ruminant animals.
3. Explain the process by which feedstuffs are analyzed. <sup>AS .03.02</sup>
  - a. Describe the processes to calculate the nutritive ratio and apparent digestibility.
  - b. Construct the energy scheme.
  - c. Compare the advantages and disadvantages of the proximate analysis, bomb calorimeter, and Van Soest Fiber Determination.
  - d. Compare the advantages and disadvantages of feeding trials, digestion trials, and balance trials.
4. Formulate rations for all classes of farm animals. <sup>AS .03</sup>
  - a. Formulate a ration for CP or energy using the Pearson Square.
  - b. Formulate a ration using the Double Pearson Square.
  - c. Formulate a least-cost ration using a computer.
5. Identify the various sources of feedstuffs for livestock. <sup>AS .03</sup>
  - a. Identify and distinguish between different categories of feedstuffs used as sources of roughage, protein, and energy.
  - b. Describe the uses of mineral and vitamin additives in livestock rations.
  - c. Describe the use of nonnutritive additives in feedstuffs.

Course Number and Name: AGT 2713 Beef Production I

**Description:** This course will provide knowledge and practice in the area of beef production. The course includes instruction in animal breeding and nutrition and livestock handling practices.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Classify the common breeds by ease of management. AS 01.01.01. c
  - a. Describe size of beef cattle breeds in relationship to ease of management.
  - b. Describe climate in relation to different beef cattle breeds.
2. Describe the genetics and breeding of beef cattle. AS .04 .02.01. a/AS 04.01.01.c
  - a. Name the principles of animal breeding.
  - b. Describe the systems of beef cattle breeding.
  - c. Identify the fundamentals of heredity in beef cattle.
  - d. Define selection response in relation to genetics and environment.
  - e. Compare the benefits of pure breeding versus crossbreeding.
3. Explain the importance of sire selection and cow selection. AS .04.01.02. a/AS .04.02.03.c/AS .04.01 .01. c.
  - a. Name the criteria for selecting artificial insemination (AI) sires.
  - b. Specify criteria for selecting replacement heifers.
  - c. Compile a list of factors to consider in selecting the productive female.
  - d. Describe the circumstances normally used in culling cows.
4. Compare fall calving versus spring calving. AS .06.01.02.c
  - a. Describe the different market avenues for spring and fall calves.
  - b. Compare the costs of producing fall and spring calves.
  - c. Compare requirements for cows producing fall and spring calves.
5. Examine factors that influence herd size. AS.05.01.01. a
  - a. Describe land requirements.
  - b. Describe investments in animals.
6. Demonstrate beef cattle management skills. AS .05.01.01. a
  - a. Perform and or explain the dehorning of cattle.
  - b. Perform and or explain castration of cattle.
  - c. Perform and or explain ear tagging of cattle.
  - d. Perform and or explain hoof trimming of cattle.
  - e. Perform and or explain tattooing of cattle.
  - f. Perform and or explain branding of cattle.
  - g. Perform and or explain weighing of cattle.
  - h. Perform and or explain worming of cattle.
7. Explain beef cattle nutrition. AS .03.01.01.01. a / AS.03.01.01. b

- a. Identify the major feeds for beef cattle.
- b. Describe nutrient requirements as related to the season.
- c. Develop a preconditioning program for calves.

Course Number and Name: AGT 2723 Beef Production II

**Description:** This course covers a continuation of Beef Production I with emphasis on management, herd health, and marketing.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Pre-requisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain how the cost of beef production can be reduced by improving efficiency. <sup>AS 04.03.01.c</sup>
  - a. Demonstrate a method of adjusting weaning weights.
  - b. Demonstrate how crossbreeding improves efficiency.
  - c. Describe how pasture improvement reduces production costs.
2. Manage beef cattle health. <sup>AS.06.03.01. a/AS .07.01.04. b</sup>
  - a. Identify the major diseases that affect beef cattle.
  - b. Cite causes, prevention, and treatment of diseases in cattle.
  - c. Describe symptoms of specific diseases in beef cattle.
  - d. Design a program of beef cattle health, disease prevention, and parasite control.
3. Discuss beef cattle production. <sup>AS .04.03.01. a</sup>
  - a. Identify reproductive failures associated with nutrition.
  - b. Describe the effect of fever on reproduction.
  - c. Explain the use of hormones to improve reproduction.
4. Describe facilities required for beef cattle. <sup>AS. 02.01.02.a</sup>
  - a. Explain the use of natural weather breaks.
  - b. Design a cattle handling and working facility.
  - c. Design a feed storage facility.
5. Explain methods for marketing cattle. <sup>ABS .05.01.01. a</sup>
  - a. Compare cattle as to USDA grading system.
  - b. Compare direct packer sales to auction sales.
  - c. Describe the use of satellite marketing.
  - d. Discuss how management practices can be adjusted to fit a particular market.
6. Design a feed lot. <sup>AS .02.01.01.a./ AS .05.01.01.c</sup>
  - a. Discuss location of feed mill to pens.
  - b. Describe the rations used for feed lot cattle.
  - c. Contrast breeds as to feed lot efficiency.
  - d. Explain the types of feeding contracts.

Course Number and Name: AGT 2813 Swine Production

**Description:** This course is designed to give a comprehensive overview in the production and management of swine.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Compare swine production to other agriculture production systems. <sup>AS .01</sup>
  - a. Identify the factors favorable and unfavorable to swine production.
  - b. Formulate factors to consider in establishing a herd.
  - c. Compare different types of buildings, quarters, and waste disposal systems.
2. Choose methods of selection for herd improvement. <sup>AS .01</sup>
  - a. Compare genetic principles as related to heredity.
  - b. Describe different systems of breeding.
3. Discuss swine nutrition. <sup>AS .03</sup>
  - a. Specify how pastures, roughages, and silages can be used in a swine feeding program.
  - b. Specify the nutrient requirements for swine in different stages of production.
4. Cite causes of prevention and cure of diseases in swine. <sup>AS .07</sup>
  - a. Describe methods used in vaccinating swine.
  - b. Name diseases common in swine.
  - c. Define factors that affect the way the body copes with pathogens.
  - d. Differentiate between the way viruses and bacteria work in causing diseases.
  - e. Compare types of immunity.
  - f. Classify the basic types of immunizing agents.
  - g. Describe how nutrition, parasitism, heredity, and people contribute to diseases in animals.
5. Discuss the major breeds of swine in the U.S. <sup>AS .02</sup>
  - a. Identify the color patterns and ear shapes of different breeds of swine.
  - b. Identify difference in size, growth rate, muscle, backfat, and libido in the different breeds of swine.
6. Explain swine reproduction. <sup>AS .04</sup>
  - a. Identify the major organs in the reproductive tract of the boar and sow.
  - b. Discuss the reproductive cycle of a sow.
  - c. Discuss the reproductive life of the boar and sow.
  - d. Discuss the significance of artificial insemination in swine.

Course Number and Name: AGT 2823 Fish Management

**Description:** This course is designed to give the student practical principles and application techniques in the production, harvesting, and marketing of fish.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
3	2	2	60

**Prerequisite:** Instructor Approved

Student Learning Outcomes:

1. Analyze the trends of commercial fish farming. <sup>AS.01.02</sup>
  - a. Interpret supply and demand for commercial fish products.
  - b. Determine species preference and product to be produced.
2. Determine pond requirements.
  - a. Calculate size of ponds.
  - b. Determine site selection of ponds.
  - c. Estimate construction costs of a specific size pond.
  - d. Determine type of drainage needed for ponds.
  - e. Determine availability of water.
  - f. Identify types of water pumps and their application.
3. Determine stocking rates.
  - a. Determine water volume.
  - b. Calculate stocking rate based upon age of fish and volume of water.
4. Analyze feeding plan. <sup>AS .03.01, AS.03.02</sup>
  - a. Determine feeding requirements.
  - b. Determine feed conversion ratio and least cost of feeding.
5. Determine water quality.
  - a. Sample water and analyze water quality.
  - b. Determine time and methods to take oxygen measurements.
  - c. Prescribe corrective steps to be taken to improve water quality.
  - d. Maintain water quality.
6. Manage fish health. <sup>AS.07.01</sup>
  - a. Perform field dissection to determine the health of the fish.
  - b. Identify and treat fish diseases.
  - c. Identify and treat fish parasites.
7. Control fish predation.
  - a. Identify bird predation and controls.
  - b. Identify animal predation and controls.
8. Determine factors involved in harvesting and marketing fish.
  - a. Establish a market.

- b. Determine time to harvest according to size and market demand.
  - c. Determine handling, seining, and hauling requirements.
- 9. Describe other systems of aquaculture than catfish production.
  - a. Describe tank culture systems.
  - b. Describe production of alternate species.
- 10. Describe controls for off-flavor.
  - a. Sample fish for off-flavor.
  - b. Identify causes of off-flavor.
  - c. Recommend prevention and treatment of off-flavor.

Course Number and Name: AGT 2863 Horse Production

**Description:** This is a comprehensive course in the production and management of horses.

<b>Hour Breakdown:</b>	Semester Hours	Lecture	Lab	Contact Hours
	3	2	2	60

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Explain the history and development of the horse industry. <sup>AS .01</sup>
  - a. Describe the role of the horse in the development of the nation.
  - b. Describe the decline of the horse.
  - c. Determine uses of the horse today.
2. Assess the functional anatomy of the horse. <sup>AS .06</sup>
  - a. Describe the skeletal system in relationship to unsoundness.
  - b. Determine age in horses by teeth.
  - c. Draw and describe head markings.
  - d. Describe the different gaits of the horse.
3. Examine the difference in types of horse breeding programs. <sup>AS .04</sup>
  - a. Compare linebreeding and closebreeding as types of inbreeding.
  - b. Describe how different breeds are bred for particular functions.
  - c. Compare the characteristics of different breeds.
  - d. Determine the facilities needed for a breeding station.
  - e. Compare management and heredity as to development.
4. Develop a horse nutrition program. <sup>AS .03</sup>
  - a. Compare differences between horse feeds and cattle feeds.
  - b. Evaluate different hays according to suitability for horses.
5. Develop a horse health program. <sup>AS .07</sup>
  - a. Identify routine vaccinations.
  - b. Describe causes, prevention, and treatment of diseases.
  - c. Prepare a parasite control program.
  - d. Collect feces samples, and examine for parasites.
  - e. Describe how nutrition, parasitism, heredity, and people contribute to diseases of horses.
  - f. Identify factors that affect the way the body copes with disease.
6. Examine market avenues for horses. <sup>ABS .05</sup>
  - a. Compare production sales with auction sales.
  - b. Describe factors that cause horses to increase/decrease in value.
  - c. Describe the role of the meat industry in relation to the horse..



Course Number and Name: AGT 291(1-3) Special Problem in Agricultural Business and Management Technology

**Description:** This course is designed to provide students with an opportunity to utilize skills and knowledge gained in other Agricultural Business and Management courses. The instructor and student work closely together to select a topic and establish criteria for completion of the project.

**Hour Breakdown:**

Semester Hours	Lecture	Lab	Contact Hours
1		2	30
2		4	60
3		6	90

**Prerequisite:** Instructor Approved

**Student Learning Outcomes:**

1. Prepare a written plan. ARP .04.02.01. a
  - a. Compile a written plan in cooperation with the instructor and student that details the schedule and specific tasks/skills to be mastered in the program.
2. Prepare a written report of activities. CRP .10.04.01. b
  - a. Compile a daily log of activities and tasks.
  - b. Submit weekly reports to the instructor summarizing activities and tasks completed.
  - c. Submit a final report of activities and experiences.
3. Follow written guidelines for special problems courses. CRP .04.02.01. a
  - a. Complete all required activities in the plan.
  - b. Adhere to all written and oral instructions for the special problem.

Course Number and Name: AGT 292(1-6)Supervised Agricultural Work Experience

**Description:** This internship course provides actual work experience in an agriculture business under the direction of the employer and the instructor.

**Prerequisite:** Instructor Approved

**Hour Breakdown:**

Semester Hours	Lecture	Externship	Contact Hours
1		3	45
2		6	90
3		9	135
4		12	180
5		15	225
6		18	270

**Student Learning Outcomes:**

1. Prepare a training agreement. CRP .04.02.01. a
  - a. Compile a written training agreement in cooperation with the instructor and employer that details work schedule and specific tasks/skills to be mastered in the program.
2. Prepare and submit written reports of the supervised experience. CRP .10.04.01. b
  - a. Submit weekly reports to the instructor summarizing activities and tasks completed.
  - b. Submit a final report of activities and experiences.
3. Follow written guidelines for work experience programs. CRP .04.02.01. a
  - a. Complete all required activities in the training agreement.
  - b. Adhere to all written and oral instructions for the supervised experience.

# Appendix A: RECOMMENDED TOOLS AND EQUIPMENT

## **Capitalized** Animal Science Technology Concentration

1. Computer with Internet access (16)
2. Computer, notebook (1)
3. Microscope, dissecting with lights (8)
4. Microscope, with lights (8)
5. Oven, soil drying
6. Plant mobil (1)
7. Printer, color inkjet with cables and switches (8)
8. Remote weather station (Temperature, barometric pressure, and rainfall) (1)
9. Table, soils lab (2)
10. Tank, artificial insemination (1)
11. Transit level with Philadelphia rods (3)
12. Greenhouse (1)

## **Non-Capitalized**

1. pH tester (2)
2. Root view chamber (1)
3. Seed germination oven (1)
4. Soil compaction tester (1)
5. Soil moisture tester (Tensiometer) (1)
6. Soil sample probe (4)
7. Table, printer (8)
8. Workstation, computer with hatches (16)

## **Capitalized Items** Field Crops Concentration

1. Chute, blocking (1)
2. Chute, cattle squeeze (1)\* Disk harrow (1)\*
3. Electro-ejaculator (1) Feed grinder/mixer (1)\* Grain drill (1)
4. Drag harrow (1)\* Hay roller (1)\* Hay rake (1)\*
5. Hay cutter, disc (1)\* Pasture clipper (1)\* Scales, livestock (1)\*
6. Sprayer, pasture with tank (1) Stock trailer (1)\*
7. Tractor (1)\*
8. Truck, 3/4 - 1 ton (1)\*
9. Artificial insemination kit/supplies (1) Artificial insemination breeding simulator (1) Hay Transport Trailer (1)
10. Utility Vehicle (with trailer) (1)
11. Used equipment is acceptable provided it is available and in satisfactory condition.

### **Non-Capitalized Items**

1. Blow dryer (1)
2. Clippers, large animal (1)
3. Electric fence charger (1)

### **Capitalized Items** Additional Tools and Equipment for Maintenance and Repair Courses

1. Air compressor (1)\*
2. Applicator, herbicide (rope wick) (1)
3. Arbor press (1)\*
4. Arc welder (2)
5. Band saw, metal cutting (1)\*
6. Bin, grain storage (Small scale with loading and unloading capacity) (2)
7. Blade, box (1)\*
8. Blade, grader (1)\*
9. Chisel plow (1)\*
10. Chop saw (1)\*
11. Combine with grain and corn headers (1)\*
12. Cotton picker (1)\*
13. Cultivator, row crop (1)\*
14. Cultivator, field (1)\*
15. Dirt bucket (1)\*
16. Disk harrow (1)\*
17. Ditcher, water furrow (1)\*
18. Drill press (1)\*
19. Eye wash and shower, portable (1)
20. Fertilizer applicator, dry (1)
21. Grain drill (modern) (1)
22. Grinder, bench (1)\*
23. Grinder, surface (1)\*
24. Harrow, tumbling (1)\*
25. Hipper (1)\*
26. Land plane (1)\*
27. Laser system (For leveling land on grade) (1)\*
28. Marker, row (1 set)\*
29. Parts washer (1)\*
30. Pesticide storage unit, portable (1)
31. Planter (modern row crop no-till, variable rate) (1)\*
32. Plow, rice levee (1)\*
33. Rotary cutter (1)\*
34. Rotary hoe (1)\*
35. Separator/tester, grain foreign material, portable (1)
36. Shop ventilation system (1)
37. Soil roller/packer (1)\*
38. Spray boom, overhead with pump and tanks (1)
39. Sub-soiler, parabolic (1)\*
40. Tractor (120 hp minimum) (1)\*
41. Trailer, equipment (1)\*
42. Trailer, goose neck equipment (1)\*
43. Trailer, water (1)\*

44. Trailer, cotton (1)\*
45. Trailer, small grain transport (1)\*
46. Truck, 3/4 - 1 ton, (equipped with tool boxes) (1)\*
47. Vise, bench (2)\*
48. Welder/torch, oxyacetylene (2)
49. Table, gas welding (1)
50. Table, shop (4)
51. Utility Vehicle (with trailer) (1)

\* Used equipment is acceptable provided it is available and in satisfactory condition.

#### **Non- Capitalized Items**

1. Anvil (1)\*
2. Chain hoist (1)\*
3. Probe, grain (2)
4. Tester, grain moisture (2)

\* Used equipment is acceptable provided it is available and in satisfactory condition.

#### **Capitalized Items** Precision Agriculture Technology\_

1. Air compressor
2. Arc welder (MIG and/or flux core) (2)
3. Band saw, metal (1)
4. Arbor press (1)
5. Drill press (1)
6. Plasma arc cutter (1)
7. Oxyfuel cutting and welding set (1)
8. Bench grinder (1)
9. Surface grinder (1)
10. Parts washer (1)
11. Hand tools, assorted English (1)
12. Hand tools, assorted metric (1)
13. Chop saw (1)
14. Pipe bender (1)
15. Hot air welder (1)
16. Utility Vehicle (with trailer) (1)

#### **Non-Capitalized Items**

1. Vise, bench (2)
2. Table, shop (4)
3. Pipe threader (1)
4. Table, gas welding (1)

#### **Capitalized Items** Agriculture Technology Option

1. Agriculture-specific application for Smartphones (1 per student and 1 for instructor) Wide format color printer, copier, and scanner (Network accessible)
2. Color scanner with software
3. Geographical information system software package with spatial analysis and geo-processing tools

4. Office suite with word processing, spreadsheet, presentation, and database
5. VRT chemical applicator (Demonstration version or access to required)
6. High precision GNSS unit
7. Autonomous UAV camera and software

## Recommended Instructional Aids

It is recommended that instructors have access to the following items:

1. Digital camera (1)
2. Smart board (1)
3. VCR/DVD player (1)
4. Data projector (1)
5. High speed Internet access (Cable, T1, or DSL)
6. Imagery data provider (Aerial and/or satellite)

**“Other equipment items can be added when deemed appropriate by the community college industry craft committee or by industry/business training requirements.”**

## Appendix B: CURRICULUM DEFINITIONS AND TERMS

- Course Name – A common name that will be used by all community colleges in reporting students
- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students
- Classification – Courses may be classified as the following:
  - Career Certificate Required Course – A required course for all students completing a career certificate.
  - Technical Certificate Required Course – A required course for all students completing a technical certificate.
  - Technical Elective – Elective courses that are available for colleges to offer to students.
- Description – A short narrative that includes the major purpose(s) of the course
- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course
- Corequisites – A listing of courses that may be taken while enrolled in the course
- Student Learning Outcomes – A listing of the student outcomes (major concepts and performances) that will enable students to demonstrate mastery of these competencies

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:
  - Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
  - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
  - Activities that include integration of academic and career–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary career–technical programs
  - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas
- Sequencing of the course within a program is left to the discretion of the local college. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other

courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors. Programs that offer an Associate of Applied Science Degree must include all of the required Career Certificate courses, Technical Certificate courses **AND** a minimum of 15 semester hours of General Education Core Courses. The courses in the General Education Core may be spaced out over the entire length of the program so that students complete some academic and Career Technical courses each semester. Each community college specifies the actual courses that are required to meet the General Education Core Requirements for the Associate of Applied Science Degree at their college.

- In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:

Adding new student learning outcomes to complement the existing competencies and suggested objectives in the program framework

- Revising or extending the student learning outcomes
- Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the Mississippi Community College Board [MCCB] of the change)



## Appendix C: COURSE CROSSWALK

<b>Agribusiness Management Technology</b> <b>CIP 01.0102 –Agribusiness Management Technology</b> <b>CIP 01.0302-Animal Science Technology Beef Option</b> <b>CIP 01.0907 -Animal Science Technology Poultry Option</b> <b>CIP 01.0304-Field Crop</b>  <b>CIP 01.1105 Precision Agriculture Technology</b>					
Note: Courses that have been added or changed in the 2021 curriculum are highlighted.					
Existing			Revised		
2015 MS Curriculum Framework			2021 MS Curriculum Framework		
Course Number	Course Title	Hours	Course Number	Course Title	Hours
AGT 1111 <b>OR</b> AGR 1111	Survey of Agricultural Technology	1 1	AGT 1111 <b>OR</b> AGR 1111	Survey of Agricultural Technology	1
AGT 1163	Spatial Information Systems	3	AGT 1163	Spatial Information Systems	3
AGT 1214 <b>OR</b> AGR 1214	Applied Principles of Animal Production <b>OR</b> Animal Science	4	AGT 1214 <b>OR</b> AGR 1214	Applied Principles of Animal Production <b>OR</b> Animal Science	4
AGT 1313 <b>OR</b> AGR 1313 <b>OR</b> BIO 1314	Applied Principles of Plant Production <b>OR</b> Plant Science <b>OR</b> Botany I	3	AGT 1313 <b>OR</b> AGR 1313 <b>OR</b> BIO 1314	Applied Principles of Plant Production <b>OR</b> Plant Science <b>OR</b> Botany I	3
AGT 1413 <b>OR</b> AGR 2413	Principles of Agricultural Management <b>OR</b> Farm Management	3	AGT 1413 <b>OR</b> AGR 2413	Principles of Agricultural Management <b>OR</b> Farm Management	3
AGT 1513	Principles of Agricultural Marketing	3	AGT 1513	Principles of Agricultural Marketing	3
AGT 1714 <b>OR</b> AGR 2314	Applied Soils – Conservation and Use <b>OR</b> Basic Soils	4	AGT 1714 <b>OR</b> AGR 2314	Applied Soils – Conservation and Use <b>OR</b> Basic Soils	4
AGT 1613	Agricultural Records	3	AGT 1613	Agricultural Records	3
AGT 2663	Applied Animal Nutrition	3	AGT 2663	Applied Animal Nutrition	3
AGT 1913	Animal Reproduction	3	AGT 1913	Animal Reproduction	3
AGT 2613	Forage and Pasture Crops	3	AGT 2613	Forage and Pasture Crops	3
AGT 2523	Introduction to Poultry Production	3	AGT 2523	Introduction to Poultry Production	3

AGT 2533	Poultry Nutrition	3	AGT 2533	Poultry Nutrition	3
AGT 2543	Hatchery/Feed Mill Management	3	AGT 2543	Hatchery/Feed Mill Management	3
AGT 2563	Agricultural Machinery and Shop Management	3	AGT 2563	Agricultural Machinery and Shop Management	3
AGT 2713	Principles of Agricultural Economics		AGT 2713	Principles of Agricultural Economics	
AGT 2373	Fiber and Oilseed Crops	3	AGT 2373	Fiber and Oilseed Crops	3
AGT 2383	Grain Crops	3	AGT 2383	Grain Crops	3
AGT 2413	Weed Control	3	AGT 2413	Weed Control	3
AGT 2463	Insects and Controls	3	AGT 2463	Insects and Controls	3
AGT 1354	Remote Sensing	4	AGT 1354	Remote Sensing	4
AGT 1254	GNSS Data Collection	4	AGT 1254	GNSS Data Collection	4
AGT 2154	Geographic Information Systems I	4	AGT 2154	Geographic Information Systems I	4
AGT 2434	Crop Management Zones	4	AGT 2434	Crop Management Zones	4
AGT 2164	Variable Rate Technology	4	AGT 2164	Variable Rate Technology	4
AGT 2174	Agricultural Geographic Information Systems	4	AGT 2174	Agricultural Geographic Information Systems	4
AGT 2474	Site Specific Pest Management	4	AGT 2474	Site Specific Pest Management	4

## Appendix D: Recommended Textbook List

<b>Recommended Agriculture Business &amp; Management Textbook Lists</b> <b>CIP 01.0102 –Agribusiness Management Technology</b> <b>CIP 01.0302-Animal Science Technology Beef Option</b> <b>CIP 01.0907 -Animal Science Technology Poultry Option</b> <b>CIP 01.0304-Field Crop</b> <b>CIP 01.1105 Precision Agriculture Technology</b>		
<b>Title</b>	<b>Author</b>	<b>ISBN</b>
The Nature and Properties of Soils: 15 <sup>th</sup> Edition	Brady and Weil	ISBN No. 0133254488
Science Simplified 5 <sup>th</sup> ed	Donald P. Franzmeier	ISBN 147862907X
Fundamentals of Plant Science	Marihelen Glass and Rick Parker	ISBN – 13:978 – 1 – 4180 - 0081-3
Principles of Agricultural Economics (Routledge Textbooks in Environmental and Agricultural Economics) 2nd Edition	Andrew Barkley (Author), Paul W. Barkley	ISBN-10: 113891410X

## Appendix E: AFNR to iCEV Alignment

<b>AGT 1111   Survey of Agricultural Technology</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Develop leadership and employability skills.</b>	<b>CRP. 01 CRP. 04 CRP. 10</b>	
Prepare a job resume and a letter of application		Formulas for Career Success: Resumes Formulas for Career Success: Cover Letters
Indicate the effectiveness of good personal traits in the area of employment		Employability Skills
Practice a mock interview		Formulas for Career Success: Interview Preparation Formulas for Career Success: The Interview Process
Develop and organize career development goals		Exploring Careers: Agriculture, Food & Natural Resources
Participate in an agricultural student association or local club activities		Citizenship Basics
<b>2. Identify the major agriculture industries and their relationships to the agricultural community.</b>	<b>CS. 05 CS. 05. 02</b>	
Compare the agriculture sector to the general economy		The World of Agriculture
Describe the scope and economic importance of the agribusiness sector, particularly as it relates to the state of Mississippi		The World of Agriculture
Describe and differentiate among the three sectors of the agribusiness industry		The World of Agriculture
Compile a listing of the agriculture related industries in the regional or local area		The World of Agriculture
<b>3. Identify alternative crops</b>	<b>PS. 02</b>	N/A

AGT 1214   Applied Principles of Animal Production	AFNR Career Cluster Standards	iCEV Alignment:
<b>1. Describe the types of production cycle of livestock.</b>	<b>AS. 06.01.02.a.</b>	
Identify and contrast the different sectors of beef cattle production		Beef Cattle Management Practices
Identify and contrast the different sectors of dairy cattle production		Dairy Management Practices
Identify and contrast the different sectors of poultry production		N/A
Identify and contrast the different sectors of swine production		Swine Management Practices
Identify and contrast the different sectors of sheep and goat production		Sheep Management Practices Goat Management Practices
Identify and contrast the different sectors of horse production		The Equine Industry
<b>2. Describe and contrast the characteristics of different breeds of livestock.</b>	<b>AS.06.01.03.a.</b>	
Contrast the characteristics, qualities, and origins of beef cattle breeds		Livestock Breed Identification: Cattle
Contrast the characteristics, qualities, and origins of dairy cattle breeds		Cattle Breed ID: Dairy
Contrast the characteristics, qualities, and origins of poultry breeds		Livestock Breed Identification: Poultry
Contrast the characteristics, qualities, and origins of swine breeds		Livestock Breed Identification: Swine
Contrast the characteristics, qualities, and origins of sheep and goat breeds		Livestock Breed Identification: Sheep Livestock Breed Identification: Goats
Contrast the characteristics, qualities, and origins of horse breeds		Horse Breeds ID I Horse Breeds ID II
<b>3. Describe the reproductive processes of livestock.</b>	<b>AS.04.01.01.a.</b>	
Discuss the role of genetics in the reproduction and breeding process		Advanced Animal Genetics
Compare the different systems of breeding animals		Livestock Breeding Systems Livestock Reproduction
Contrast the different systems of breeding poultry		Basic Poultry Reproduction
Describe factors that can be used for selection of individual animals in a breeding program		Livestock Breeding Systems
<b>4. Describe nutritive needs of livestock.</b>	<b>AS.03.01.01.a.</b> <b>AS.03.01.02.a.</b>	
Describe the characteristics of the classes of nutrients, namely, fats, protein, water, carbohydrates, minerals, and vitamins		Advanced Livestock Nutrition

Contrast differences in the digestive systems of cattle, poultry, swine, sheep, horses, and aquaculture		Digestive Systems of Livestock: A Basic Look
<b>5. Describe the importance of a livestock herd health program.</b>	<b>AS.07.01.03.b</b> <b>AS.07.</b>	
Identify signs and symptoms of animals infected with internal and external parasites		Parasites of Livestock
Identify common diseases associated with the different species of livestock		Common Animal Diseases

AGT 1313   Applied Principles of Plant Production	AFNR Career Cluster Standards	iCEV Alignment:
<b>1. Describe the interrelationship of major parts of plant and how they have adapted to the environment.</b>	PS.02	
Describe the interrelationship of plant roots, stems, and leaves and how they have adapted to the environment		Anatomy of Plants
<b>2. Identify the components of a typical plant cell, and describe their function(s).</b>	PS.02	
Identify the structure and function of each plant cell organelle		Anatomy of Plants
Describe the different tissue systems of plants		Anatomy of Plants
<b>3. Describe the processes and interrelationship of photosynthesis and respiration in green plants.</b>	PS.02.03	
Explain the effects of temperature, light, water, and air on green plants		Fundamental Plant Processes
Discuss the translocation of water from the roots to the leaves		Fundamental Plant Processes
<b>4. Describe the methods of weed, insect, and plant disease control.</b>	PS.03.03	
Describe different methods of pest control (chemical, mechanical, cultural, and biological)		Pesticides & Herbicides: An Introduction
Identify the different types of plant pests		Plant Pests: Bacterial Diseases Plant Pests: Fungal Diseases Plant Pests: Viruses Plant Pests: Chewing Insects Plant Pests: Sucking Insects Plant Pests: Vertebrates Plant Pests: Weeds

Describe the damage caused by agricultural crop pests		Plant Pests: Bacterial Diseases Plant Pests: Fungal Diseases Plant Pests: Viruses Plant Pests: Chewing Insects Plant Pests: Sucking Insects Plant Pests: Vertebrates Plant Pests: Weeds
<b>5. Describe the genetics of plant breeding.</b>	<b>PS.02.02</b>	
Describe the advantages and disadvantages of sexual and asexual reproduction		Plant Genetics
Describe the creation of new varieties through plant breeding (hybrids)		Plant Genetics
<b>6. Explain the nutritional requirements for plants.</b>	<b>PS.01.03</b>	
Describe the functions of micronutrients and macronutrients in plants.		Fertilizers & the Environment
Compare the advantages and disadvantages of chemical and organic fertilizers		Fertilizers & Soil Amendments



<b>AGT 1413   Principles of Agricultural Management</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Explain the role and function of management in an agricultural production system.</b>	<b>ABS.04.02.01.a</b>	
Describe management skills needed to operate an agricultural business		Agricultural Business: Management
Explain and differentiate among the functions of planning, organizing, directing, and controlling in an agricultural business		Agricultural Business: Management
Discuss the characteristics of problems and decision making in agriculture, and understand the steps in the planning process		Agricultural Business: Management
<b>2. Identify the most important factors to consider when selecting an organizational structure for an agribusiness.</b>	<b>ABS.02.02.03.c ABS.04.01.02.a</b>	
Develop an understanding, and list the advantages and disadvantages of the sole proprietorship, partnerships, corporations, and limited liability companies as forms of business organizations available to agribusiness		Agricultural Business: Management
Identify how taxes affect the form of business organizations		Government's Role in Agricultural Business
Describe the involvement of cooperatives in the agribusiness industries today		Agricultural Business: Management
<b>3. Describe the use and importance of financial statements in the management practice of agribusiness today.</b>	<b>ABS.02.02.01.a</b>	
Develop a balance sheet and an income statement, and illustrate how agribusiness managers utilize these financial statements today		Basic Accounting Principles

Develop a statement of owner's equity and a statement of cash flows and illustrate how agribusiness managers utilize these financial statements today		Basic Accounting Principles
Calculate and analyze financial statement ratio and explain how they can aid the decision-making process for an agribusiness manager		N/A
<b>4. Discuss the different aspects of financing the agribusiness.</b>	<b>ABS.02.01.02.a</b> <b>ABS.03.02.01.a</b>	
List the reasons why an agribusiness manager might choose to increase its financial resources		Agricultural Business: Financing, Saving & Investing
List and discuss the different methods of external sources of financing		Agricultural Business: Financing, Saving & Investing
Describe the use of equity capital as a means of internally financing and agribusiness		Agricultural Business: Financing, Saving & Investing
Discuss the advantages and disadvantages of leasing alternatives in agribusiness today		Agricultural Business: Financing, Saving & Investing
<b>5. Perform whole farm planning and budgeting.</b>	<b>ABS.02.02.03.c</b>	
Develop inventory formats for various agricultural resources		Accounting Fundamentals: Inventory
Develop a resource use plan identifying the difference between long-term and short-term planning		Agricultural Business: Financing, Saving & Investing
Incorporate tax management strategies into developing production plans		Tax Management

<b>AGT 1513   Principles of Agricultural Marketing</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Describe how a marketing system develops.</b>	<b>ABS.05.01.01.a.</b>	
Define marketing as it refers to agricultural commodities		Agricultural Business: Marketing & Pricing
Discuss the development of organized marketing		Promoting the Product in Agriculture
Identify the technical components of marketing		Promoting the Product in Agriculture
Discuss the role of information in marketing including modern satellite and computer systems		Marketing Technology
<b>2. Identify the factors that affect basic commodity prices.</b>	<b>ABS.05.01.01.b.</b>	
Describe price determination as it relates to the forces of supply and demand		Agricultural Markets: Commodities & Contracts
Discuss the difference between farm and consumer prices		Agricultural Markets: Commodities & Contracts
Discuss the fallacy of composition and the dangers associated with rapid response to price changes with production		N/A
<b>3. Discuss the hedging and the futures market with agricultural commodities.</b>	<b>ABS.05.01.01.c</b>	
Discuss the role of the futures market in assisting firms in the protection against price risk		Agricultural Markets: Commodities & Contracts
Explain how farmers and marketing firms utilize hedging and options strategies associated with risk management		Agricultural Markets: Commodities & Contracts
Differentiate among hedges, options, and forward contracts		Agricultural Markets: Commodities & Contracts
Calculate and explain the use of basis for a particular commodity		N/A
<b>4. Develop an understanding of the basics of meat and livestock marketing.</b>	<b>ABS.05.01.01.a.</b>	
Discuss how the production and product characteristics of livestock and meat influence		Livestock Harvest & Red Meat Production: Grading, Fabrication & Marketing

the marketing of these products		
Develop and understanding of the changing market patterns and distribution channels of the meat and livestock sector		Livestock Harvest & Red Meat Production: Grading, Fabrication & Marketing
Explain the different methods of marketing livestock in use today in the state of Mississippi		Livestock Harvest & Red Meat Production: Grading, Fabrication & Marketing
Explain the consumer's role in the meat and livestock industry and how the industry is responding to these demands		Farm to Plate
<b>5. Develop an understanding of the basics of field crops marketing.</b>	<b>ABS.05.01.01.c</b>	
Discuss how the production and product characteristics of field crops influence the marketing of these products		Farm to Plate Hot Topics - GMO Labeling
Develop and understanding of the changing market patterns and distribution channels of field crops		N/A
Explain the different methods of marketing livestock in use today in the state of Mississippi		Livestock Harvest & Red Meat Production: Grading, Fabrication & Marketing
Understand how government price supports can influence the demand and prices of field crops		N/A

AGT 1613   Agriculture Records	AFNR Career Cluster Standards	iCEV Alignment:
<b>1. Describe the components of agriculture records.</b>	<b>ABS.02.01.0 1.a</b>	
Compare financial to production records	<b>ABS.04.02.0 1.a</b>	Introduction to Record Keeping (Record Keeping Basics)
Identify the different components of financial records		Introduction to Record Keeping (Record Keeping Basics)
Identify the types of production records		Introduction to Record Keeping (Record Keeping Basics)
Discuss the major uses of records types		Introduction to Record Keeping (Record Keeping Basics)
<b>2. Describe capital accounts and their financial components.</b>	<b>ABS.02.01.0 1.b</b>	
Develop depreciation work sheets for the major types of depreciation		Basic Accounting Principles
Develop a depreciation schedule combining several different types of depreciation and depreciable items		Basic Accounting Principles
<b>3. Describe the different types of credit.</b>	<b>ABS.03.02.0 1.a</b>	
Identify the different types of farm loans		Introduction to Agricultural Credit
Calculate a loan amortization factor for the purchase of a major item of machinery		Basics of Financial Contracts
Develop a repayment schedule for a major equipment purchase		Basics of Financial Contracts
Develop records used to manage accounts payable for short-term credit accounts using a single entry format		Accounting Fundamentals: Accounts Payable
<b>4. Develop components for production records.</b>	<b>ABS.04.02.0 2.a</b>	
Develop data collection components for land and/or enterprise records	<b>ABS.03.02.0 2.a</b>	N/A
<b>5. Distinguish between single entry accounting and double entry accounting systems.</b>	<b>ABS.02.01.0 1.a</b> <b>ABS.04.02.0 1.a</b>	
Describe the cash accounting method		N/A
Describe the accrual accounting method		N/A

<b>AGT 1714   Applied Soils- Conservation and Use</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Describe the soil formation process.</b>	<b>ESS.03 ESS.03.03</b>	
Describe the chemical biological properties of soil		Soil Formation & Evaluation
Discuss the different types of erosion		Soil Conservation
Identify the horizons of soil profile		Field Trip: Dig It! The Secrets of Soil
<b>2. Describe the different physical properties of soils.</b>	<b>ESS.03.0 5</b>	
Define the term soil texture, and relate texture to productivity and management		Soil Formation & Evaluation
Classify soils as to general textural class		Soil Formation & Evaluation
Describe the effects of soil texture, structure, permeability, and compaction/tilth on soil productivity		Soil Formation & Evaluation
<b>3. Develop soil management strategies for sustaining soil productivity.</b>	<b>ESS.03.0 5</b>	
Define and contrast the terms fertility and productivity as applied to a soil		Soil Formation & Evaluation
Describe the effects of tillage and traffic as related to soil structure and productivity		Soil Conservation
Describe how soil pH affects plant growth and nutrient availability, and state methods that can be used to raise or lower pH		Fertilizer & Soil Amendments
<b>4. Describe the properties of soil water.</b>	<b>NRS.02.01 ESS.03.02</b>	
Define the relationship between soil type and water holding capacity		Soil Formation & Evaluation
Discuss the need for water conservation		Water Resources
Describe the mechanics of soil drainage (man-made and natural)		Soil Conservation
Compare the advantages and disadvantages of different types of irrigation systems		Introduction to Irrigation

<b>AGT 1813   Fitting/Grooming/Judging</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Practice the processes and procedures used in fitting and grooming livestock.</b>	<b>AS.02.02.01.b AS.02.02.01.c</b>	
Make a rope halter		N/A
Select an animal for show or sale		Fundamentals of Exhibiting Livestock
Break the selected animal to lead at halter		Fundamentals of Exhibiting Livestock
Clip the selected animal		Fundamentals of Exhibiting Livestock
Wash the selected animal		Fundamentals of Exhibiting Livestock
Groom the selected animal		Fundamentals of Exhibiting Livestock
Prepare the selected animal for show or sale		Fundamentals of Exhibiting Livestock
Show the selected animal		Fundamentals of Exhibiting Livestock
<b>2. Explain the importance of livestock production.</b>	<b>AS.06.01.03.b</b>	
Identify the trends in livestock selection since World War II		The Livestock Industry
Describe the future trends in livestock selection within the next 10 years		N/A
<b>3. Explain the evaluation process of beef cattle.</b>	<b>AS.06.01.03.b</b>	
Identify the parts of beef cattle		Livestock Judging Fundamentals
Describe the general and specific terms utilized in judging breeding beef and market beef cattle		Livestock Judging Fundamentals
Write and orally deliver reasons for placement of beef cattle		N/A
Describe the importance of utilizing expected progeny difference (EPD) in beef cattle evaluation		Livestock Judging Fundamentals Livestock Breeding Systems
<b>4. Explain the evaluation process of swine.</b>	<b>AS.06.01.03.b</b>	

Identify the parts of swine		Livestock Judging Fundamentals
Describe the general and specific terms utilized in judging breeding and market swine		Livestock Judging Fundamentals
Write and orally deliver reasons for placement of swine		N/A
Describe the importance of utilizing performance data in swine evaluation		Livestock Judging Fundamentals Livestock Breeding Systems
<b>5. Explain the evaluation process of sheep.</b>	<b>AS.06.01.03.b</b>	
Identify the parts off sheep		Livestock Judging Fundamentals
Describe the general and specific terms utilized in judging breeding and market sheep		Livestock Judging Fundamentals
Write and orally deliver reasons for placement of sheep		N/A
Describe the importance of utilizing performance data in sheep evaluation		Livestock Judging Fundamentals Livestock Breeding Systems



<b>AGT 1813   Fitting/Grooming/Judging (cont.)</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignme nt:</b>
<b>6. Explain the evaluation process of horse.</b>	<b>AS.06.01.03.b</b>	
Identify the parts off horses		Horse Evaluation: Halter
Describe the general and specific terms utilized in judging horses		Horse Evaluation: Halter Horse Evaluation: Hunt Seat Equitation Horse Evaluation: Hunter Hack Horse Evaluation: Hunter Under Saddle Horse Evaluation: Reining Horse Evaluation: Western Horsemanship Horse Evaluation: Western Pleasure
Write and orally deliver reasons for placement of horses		N/A

AGT 1913   Animal Reproduction	AFNR Career Cluster Standards	iCEV Alignm ent:
<b>1. Differentiate between phenotype and genotype.</b>	<b>AS.04.02.02.a</b>	
Explain how environment affects phenotype		Advanced Animal Genetics
Describe the effect of genetics on phenotype		Advanced Animal Genetics
Explain how genotype is derived		Advanced Animal Genetics
<b>2. Explain the male reproductive tract.</b>	<b>AS.04.01.01.b</b>	
Draw and label the male reproductive tract		Basic Animal Reproduction
Describe the function of the accessory sex glands		Basic Animal Reproduction
Describe how malformation affects reproduction		Beef Reproduction - I
<b>3. Explain the function of sperm.</b>	<b>AS.04.01.01.a</b> <b>AS.06.02.02.a</b>	
Draw and label the parts of sperm		N/A
Describe the types of sperm abnormalities		Beef Reproduction - II
Describe the tests normally performed on sperm		Beef Reproduction - II
Describe the properties of a good semen diluter		Beef Reproduction - II
Identify the cases of sperm death		Beef Reproduction - II
Explain how environment affects sperm quality		Beef Reproduction - II
<b>4. Explain the female reproductive tract.</b>	<b>AS.04.02.02.a</b> <b>AS.04.02.03.b</b>	
Draw and label the female reproductive tract		Basic Animal Reproduction
Describe the functions of the ovary		Basic Animal Reproduction
Describe the relationship of the pituitary gland and the ovary		Basic Animal Reproduction
Identify the cases of reproductive failure		Beef Reproduction - I
<b>5. Explain the estrus cycle.</b>	<b>AS.04.02.02.a</b> <b>AS.04.02.03.b</b>	
Describe the methods of genetic manipulation		Advanced Animal Genetics
Describe genetic sex		Advanced Animal Genetics

determination		
Classify the types of sex abnormalities		Livestock & Carcass Abnormalities
<b>6. Perform reproductive management techniques.</b>	<b>AS.04.05.01.a</b> <b>AS.04.03.03.a</b> <b>AS.04.03.02.b</b>	
Demonstrate the ability to pass a catheter through the cervix		Livestock Reproduction
Perform pregnancy testing		Beef Reproduction - II
Cite methods of heat synchronization		Livestock Reproduction
Discuss embryo transfer protocols and techniques		Embryo Transfer

AGT 2213   Agricultural Sales	AFNR Career Cluster Standards	iCEV Alignm ent:
<b>1. Analyze consumer needs and services.</b>	<b>ABS.01 ABS.04</b>	
Describe the concept of marketing as applied to the sales of agricultural supplies		Agricultural Business: Marketing & Pricing
Analyze marketing strategies and systems		Agricultural Business: Marketing & Pricing
Identify problems in market development		N/A
Discuss the importance of developing a market share		N/A
<b>2. Describe techniques for selling.</b>	<b>ABS.05</b>	
Develop and deliver a sales presentation		Agricultural Business: The Selling Process
Develop an advertising scheme for an agricultural product		Advertising for Agriculture
Develop a plan for using follow-up as a sales tool		Agricultural Business: The Selling Process
Describe how credit is used as a sales tool		N/A
<b>3. Describe sales from the customer's viewpoint.</b>	<b>ABS.05.03</b>	
Identify characteristics of a salesperson		N/A
Describe the difference between customer needs and wants		Determine Customer Needs
Prepare a survey for establishing a market for an agricultural product		Marketing Research

AGT 2263   Applied Agricultural Economics	AFNR Career Cluster Standards	iCEV Alignm ent:
<b>1. Describe agribusiness relationship to the domestic and foreign economies.</b>	<b>ABS.01.01.01.a</b>	
Identify the agribusiness structures		Agricultural Business: Management
Describe methods for organizing agribusiness		Agricultural Business: Management
Name the causes for seasonal output		N/A
Show how graphs and charts are used to display and present economic facts and concepts		N/A
<b>2. Discuss demand theory and how a demand curve is developed.</b>	<b>ABS.01.01.01.a</b>	
Identify how the consumer relays information concerning wants and needs to suppliers of goods and services		Supply & Demand
Develop and label the demand curve		Supply & Demand
Show the relationship between the slopes of the demand curve and the concept of elasticity of demand		Agricultural Business: Marketing & Pricing
Discuss factors that influence demand elasticities		Agricultural Business: Marketing & Pricing
<b>3. Discuss the economic facts associated with single variable inputs.</b>	<b>ABS.01.01.01.a</b>	
Identify the profit motive and how it affects the use of variable inputs in crop production		N/A
Identify the derived demand for an input		N/A
Describe and apply the concept of marginalism to use of variable inputs		N/A
State the law of diminishing		N/A

returns and the relationship to use of single variable inputs		
<b>4. Define the relationship between cost and length of run when used in planning and decision making.</b>	<b>ABS.01.01.01.b</b> <b>ABS.01.01.01.c</b>	
Discuss the term production function		N/A
Identify the different cost concepts used to describe the production of agricultural products		N/A
Describe the factors that affect farm size		N/A
<b>5. Analyze government influence on the production and price of farm commodities.</b>	<b>ABS.01.01.01.b</b>	
Define equilibrium price		N/A
Analyze public policy in production system		N/A
Discuss the influence of government regulations and foreign policy on stability and profitability of agricultural systems		N/A
Identify the causes of surplus and shortage and the role government programs play		N/A
Define the benefactor of all government subsidies and payments		N/A
Identify relationships between government agencies and the cost of producing food and fiber		N/A

<b>AGT 2613   Forage and Pasture Crops</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Describe the uses of forages.</b>	<b>PS.01 ABS.01</b>	
Explain how forages are used for watershed management		N/A
Identify the role of forages to livestock in the national economy		N/A
Define grassland agriculture		N/A
Identify problems faced by world population in relation to forages		N/A
<b>2. Compare the composition and nutritive value of forages.</b>	<b>AS.03</b>	
Name the stages of growth for grasses and legumes and their relationships to nutritive value.		N/A
Describe the formation of nodules by legumes		N/A
Compare hay to silage as an animal feed		N/A
<b>3. Examine the effects that farm management practices have on forage.</b>	<b>AS.08 PS.03.05 ESS.03.02</b>	
Examine the effects of grazing pressure on new plant seedlings		N/A
Describe the relationship among plants, animals, and soils		N/A
Describe harvest and storage methods of forage crops		N/A
Determine the best practices for producing, harvesting, and storing high-quality hay		N/A
<b>4. Identify common forages found in the south.</b>	<b>PS.01 PS.02 NRS.04.01</b>	
Describe the management practices and nutritive values for each of the warm season annuals and perennials		N/A
Describe the management practices and nutritive values for each of the cool season annuals and perennials		N/A
Explain growth stages of legumes		N/A
Design a mixed grass and legume system for pastures		N/A
Calculate fertilizer requirements of grasses and legumes on existing soil test		N/A
<b>5. Identify weed control methods utilized in forage and pasture crops.</b>	<b>NRS.02.03 NRS.04.03 ESS.03.05</b>	
Describe broadleaf weed control methods		N/A
Describe competitive grass control methods		N/A

<b>AGT 2663   Applied Animal Nutrition</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Identify the classes of nutrients including protein, fat, carbohydrates, vitamins, minerals, and water.</b>	<b>AS.03/AS.03.03</b>	
Describe the sources and major functions of water on the animal		Basic Livestock Nutrition
Describe the general structure, functions, and classification of carbohydrates		Advanced Livestock Nutrition
Cite the general classification and functions of fat		Advanced Livestock Nutrition
Explain the amino acid makeup of protein, and contrast essential and nonessential amino acids		Advanced Livestock Nutrition
Identify and contrast macro minerals and micro minerals		Advanced Livestock Nutrition
Identify and contrast water soluble and fat soluble vitamins		Advanced Livestock Nutrition
<b>2. Identify and contrast the differences in the digestive systems of the different species of farm animals.</b>	<b>AS.03</b>	
Identify, in order of passage, the digestive organs of a monogastric animal		Digestive Systems of Livestock: A Basic Look
Contrast the difference between the monogastric and ruminant stomach		Digestive Systems of Livestock: A Basic Look
Explain the concept of horses utilizing forage		N/A



Describe the digestion and absorption process in monogastric and ruminant animals		Digestive Systems of Livestock: A Basic Look Ruminant Digestive Systems: A Closer Look
<b>3. Explain the process by which feedstuffs are analyzed.</b>	<b>AS.03.02</b>	
Describe the processes to calculate the nutritive ratio and apparent digestibility		N/A
Construct the energy scheme		N/A
Compare the advantages and disadvantages of the proximate analysis, bomb calorimeter, and Van Soest Fiber Determination		N/A
Compare the advantages and disadvantages of feeding trails, digestion trails, and balance trail		N/A
<b>4. Formulate rations for all classes of farm animals.</b>	<b>AS.03</b>	
Formulate a ration for CP or energy using the Pearson Square		Advanced Livestock Nutrition
Formulate a ration using the Double Pearson Square		N/A
Formulate a least-cost ration using a computer		N/A
<b>5. Identify the various sources of feedstuffs for livestock.</b>	<b>AS.03</b>	
Identify and distinguish between different categories of feedstuffs used as a sources of roughage, protein and energy		Advanced Livestock Nutrition
Describe the uses of mineral and vitamin additives in livestock rations		N/A
Describe the use of nonnutritive additives in feedstuffs		N/A

AGT 2713   Beef Production I	AFNR Career Cluster Standards	iCEV Alignment:
<b>1. Classify the common breeds by ease of management.</b>	AS.01.01.01.c	
Describe size of beef cattle breeds in relationship to ease of management		Livestock Breed Identification: Cattle
Describe climate in relation to different cattle breeds		Livestock Breed Identification: Cattle
<b>2. Describe the genetics and breeding of beef cattle.</b>	AS.04.02.01.a/AS.04.01.01.c	
Name the principles of animal breeding		Livestock Breeding Systems
Describe the systems of beef cattle breeding		Livestock Reproduction Beef Reproduction - II
Identify the fundamentals of heredity in beef cattle		Advanced Animal Genetics
Define selection response in relation to genetics and environment		Beef Reproduction - I
Compare the benefits of pure breeding versus crossbreeding		Livestock Breeding Systems
<b>3. Explain the importance of sire selection and cow selection.</b>	AS.04.01.02.a/AS.04.02.03.c/AS.04.01.01.c	
Name the criteria for selecting artificial insemination sires		Beef Reproduction - I
Specify criteria for selecting replacement heifers		Beef Reproduction - I
Compile a list of factors to consider in selecting the productive female		Beef Reproduction - I
Describe the circumstances		N/A

normally used in culling cows		
<b>4. Compare fall calving versus spring calving.</b>	<b>AS.06.01.02.c</b>	
Describe the different market avenues for spring and fall calves		N/A
Compare the cost of producing fall and spring calves		N/A
Compare requirements for cows producing fall and spring calves		N/A
<b>5. Examine factors that influence herd size.</b>	<b>AS.05.01.01.a</b>	
Describe land requirements		N/A
Describe investments in animals		N/A
<b>6. Demonstrate beef cattle management skills.</b>	<b>AS.05.01.02.c</b>	
Perform dehorning of cattle		Beef Cattle Management Practices
Perform castration of cattle		Beef Cattle Management Practices
Perform ear tagging of cattle		Beef Cattle Management Practices
Perform hoof trimming of cattle		N/A
Perform tattooing of cattle		Beef Cattle Management Practices
Perform branding of cattle		Beef Cattle Management Practices
Perform weighing of cattle		N/A
Perform worming of cattle		Beef Cattle Management Practices
<b>7. Explain beef cattle nutrition</b>	<b>AS.03.01.01.a/AS.03.01.01.b</b>	
Identify the major feeds for beef cattle		Beef Cattle Management Practices
Describe nutrient requirements as related to the season		N/A
Develop a preconditioning program for calves		N/A

AGT 2723   Beef Production II	AFNR Career Cluster Standards	iCEV Alignment:
<b>1. Explain how the cost of beef production can be reduced by improving efficiency.</b>	<b>AS.04.03.01.c</b>	
Demonstrate a method of adjusting weaning weights		N/A
Demonstrate how crossbreeding improves efficiency		Livestock Breeding Systems
Describe how pasture improvement reduces production costs		N/A
<b>2. Manage beef cattle health.</b>	<b>AS.06.03.01.a AS.07.01.04.b</b>	
Identify the major diseases that affect beef cattle		Beef Cattle Management Practices
Cite causes, prevention, and treatment of diseases in cattle		Common Animal Diseases
Describe symptoms of specific diseases in beef cattle		Common Animal Diseases
Design a program of beef cattle health, disease prevention, and parasite control		N/A
<b>3. Discuss beef cattle production.</b>	<b>AS.04.03.01.a</b>	
Identify reproductive failures associated with nutrition		N/A
Describe the effect of fever on reproduction		N/A
Explain the use of hormones to improve reproduction		N/A
<b>4. Describe facilities required for beef cattle.</b>	<b>AS.02.01.02.a</b>	
Explain the use of natural weather breaks		N/A
Design a cattle handling and working facility		Cattle Handling Principles to Reduce Stress
Design a feed storage		N/A

facility		
<b>5. Explain methods for marketing cattle.</b>	<b>ABS.05.01.01.a</b>	
Compare cattle as to USDA grading system		Beef Grading: Quality
Compare direct packer sales to auction sales		N/A
Describe the use of satellite marketing		N/A
Discuss how management practices can be adjusted to fit a particular market		N/A
<b>6. Design a feed lot.</b>	<b>AS.02.01.02.a</b> <b>AS.05.01.01.c</b>	
Discuss location of feed mill to pens		N/A
Describe the rations used for feed lot cattle		N/A
Contrast breeds as to feed lot efficiency		N/A
Explain the types of feeding contrasts		N/A

<b>AGT 2813   Swine Production</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Compare swine production to other agriculture production systems.</b>	<b>AS.01</b>	
Identify the factors favorable and unfavorable to swine production		N/A
Formulate factors to consider in establishing a herd		Swine Management Practices
Compare different types of buildings, quarters, and waste disposal systems	<b>AS.05.01</b>	Swine Management Practices
<b>2. Choose methods of selection for herd improvement.</b>	<b>AS.04</b>	
Compare genetic principles as related to heredity		Advanced Animal Genetics
Describe different systems of breeding		Livestock Reproduction Swine Management Practices
<b>3. Discuss swine nutrition.</b>	<b>AS.03</b>	
Specify how pastures, roughages, and silages can be used in a swine feeding program		N/A
Specify the nutrient requirements for swine in different stages of production		N/A
<b>4. Cite causes of prevention and cure of diseases in swine.</b>	<b>AS.07</b>	
Describe methods used in vaccinating swine		Swine Management Practices
Name diseases common in swine		Common Animal Diseases
Define factors that affect the way the body copes with pathogens		Common Animal Diseases
Differentiate between the way viruses and bacteria work in causing diseases		Common Animal Diseases

Compare types of immunity		Common Animal Diseases
Classify the basic types of immunizing agents		N/A
Describe how nutrition, parasitism, heredity, and people contribute to diseases in animals		N/A
<b>5. Discuss the major breeds of swine in the U.S.</b>	<b>AS.02</b>	
Identify the color patterns and ear shapes of different breeds of swine		Livestock Breed Identification: Swine
Identify difference in size, growth rate, muscle, backfat, and libido in the different breeds of swine		Livestock Breed Identification: Swine
<b>6. Explain swine reproduction.</b>	<b>AS.04</b>	
Identify the major organs in the reproductive tract of the boar and sow		Basic Reproduction of Animals
Discuss the reproduce cycle of a sow		Basic Swine Reproduction
Discuss the reproductive life of a boar and sow		Basic Swine Reproduction
Discuss the significance of artificial insemination in swine		Swine Management Practices

<b>AGT 2863   Horse Production</b>	<b>AFNR Career Cluster Standards</b>	<b>iCEV Alignment:</b>
<b>1. Explain the history and development of the horse industry.</b>	<b>AS.01</b>	
Describe the role of the horse in the development of the nation		The Equine Industry
Describe the decline of the horse		The Equine Industry
Determine uses of the horse today		The Equine Industry
<b>2. Assess the functional anatomy of the horse.</b>	<b>AS.06</b>	
Describe the skeletal system in relationship to unsoundness		Equine Anatomy & Physiology
Determine age in horses by teeth		Equine Anatomy & Physiology
Draw and describe head markings		N/A
Describe the different gaits of the horse		Horse Evaluation: Western Pleasure
<b>3. Examine the difference in types of horse breeding programs.</b>	<b>AS.04</b>	
Compare linebreeding and closebreeding as types of inbreeding		N/A
Describe how different breeds are bred for particular functions		Horse Breeds ID I Horse Breeds ID II
Compare the characteristics of different breeds		Horse Breeds ID I Horse Breeds ID II
Determine the facilities needed for a breeding station		Equine Reproduction
Compare management and heredity as to development		N/A
<b>4. Develop a horse nutrition program.</b>	<b>AS.03</b>	
Compare differences between horse feeds and cattle feeds		Equine Management: Nutrition, Health & Exercise



Evaluate different hays according to suitability for horses		Equine Management: Nutrition, Health & Exercise
<b>5. Develop a horse health program.</b>	<b>AS.07</b>	
Identify routine vaccinations		Equine Management: Nutrition, Health & Exercise
Describe causes, prevention, and treatment of diseases		Common Equine Diseases
Prepare a parasite control program		N/A
Collect feces samples, and examine for parasites		N/A
Describe how nutrition, parasitism, heredity, and people contribute to diseases of horses		N/A
Identify factors that affect the way the body copes with disease		N/A
<b>6. Examine market avenues for horses.</b>	<b>ABS.05</b>	
Compare production sales with auction sales		N/A
Describe factors that cause horses to increase/decrease in value		N/A
Describe the role of the meat industry in relation to the horse		N/A