Course Description:
Plant science is a basic component of the agriscience pathway. This course introduces students to the scientific theories, principles, and practices involved in the production and management of plants for food, feed, fiber, conservation and ornamental use. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

Course Standard 1
AFNR-PSB-1
The following standard is included in all CTAE courses adopted for the Career Cluster/Pathways. Teachers should incorporate the elements of this standard into lesson plans during the course. The topics listed for each element of the standard may be addressed in differentiated instruction matching the content of each course. These elements may also be addressed with specific lessons from a variety of resources. This content is not to be treated as a unit or separate body of knowledge but rather integrated into class activities as applications of the concept.

Standard: Demonstrate employability skills required by business and industry.
The following elements should be integrated throughout the content of this course.
1.1 Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.

<table>
<thead>
<tr>
<th>Person-to-Person Etiquette</th>
<th>Telephone and Email Etiquette</th>
<th>Cell Phone and Internet Etiquette</th>
<th>Communicating At Work</th>
<th>Listening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interacting with Your Boss</td>
<td>Telephone Conversations</td>
<td>Using Blogs</td>
<td>Improving Communication Skills</td>
<td>Reasons, Benefits, and Barriers</td>
</tr>
<tr>
<td>Interacting with Subordinates</td>
<td>Barriers to Phone conversations</td>
<td>Using Social Media</td>
<td>Effective Oral Communication</td>
<td>Listening Strategies</td>
</tr>
<tr>
<td>Interacting with Co-workers</td>
<td>Making and Returning Calls</td>
<td>Effective Written Communication</td>
<td>Ways We Filter What We Hear</td>
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</tr>
<tr>
<td>Interacting with Suppliers</td>
<td>Making Cold Calls</td>
<td>Effective Nonverbal Skills</td>
<td>Developing a Listening Attitude</td>
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</tr>
<tr>
<td></td>
<td>Handling Conference Calls</td>
<td>Effective Word Use</td>
<td>Show You Are Listening</td>
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</tr>
<tr>
<td></td>
<td>Handling Unsolicited Calls</td>
<td>Giving and Receiving Feedback</td>
<td>Asking Questions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nonverbal Communication</th>
<th>Written Communication</th>
<th>Speaking</th>
<th>Applications and Effective Résumés</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating Nonverbally</td>
<td>Writing Documents</td>
<td>Using Language Carefully</td>
<td>Completing a Job Application</td>
</tr>
<tr>
<td>Reading Body Language and mixed Messages</td>
<td>Constructive Criticism in Writing</td>
<td>One-on-One Conversations</td>
<td>Writing a Cover Letter</td>
</tr>
<tr>
<td>Matching Verbal and Nonverbal communication</td>
<td>Small Group Communication</td>
<td>Things to Include in a Résumé</td>
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</tr>
<tr>
<td>Improving Nonverbal Indicators</td>
<td>Large Group Communication</td>
<td>Selling Yourself in a Résumé</td>
<td></td>
</tr>
</tbody>
</table>
1.2 Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.

<table>
<thead>
<tr>
<th>Teamwork and Problem Solving</th>
<th>Meeting Etiquette</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinking Creatively</td>
<td>Preparation and Participation in Meetings</td>
</tr>
<tr>
<td>Taking Risks</td>
<td>Preparation and Participation in Meetings</td>
</tr>
<tr>
<td>Building Team Communication</td>
<td>Conducting Two-Person or Large Group Meetings</td>
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<td></td>
<td>Inviting and Introducing Speakers</td>
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<tr>
<td></td>
<td>Facilitating Discussions and Closing</td>
</tr>
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<td></td>
<td>Preparing Visual Aids</td>
</tr>
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<td></td>
<td>Virtual Meetings</td>
</tr>
</tbody>
</table>

1.3 Exhibit critical thinking and problem solving skills to locate, analyze and apply information in career planning and employment situations.

<table>
<thead>
<tr>
<th>Problem Solving</th>
<th>Customer Service</th>
<th>The Application Process</th>
<th>Interviewing Skills</th>
<th>Finding the Right Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transferable Job Skills</td>
<td>Gaining Trust and Interacting with Customers</td>
<td>Providing Information, Accuracy and Double Checking</td>
<td>Preparing for an Interview</td>
<td>Locating Jobs and Networking</td>
</tr>
<tr>
<td>Becoming a Problem Solver</td>
<td>Learning and Giving Customers What They Want</td>
<td>Online Application Process</td>
<td>Questions to Ask in an Interview</td>
<td>Job Shopping Online</td>
</tr>
<tr>
<td>Identifying a Problem</td>
<td>Keeping Customers Coming Back</td>
<td>Following Up After Submitting an Application</td>
<td>Things to Include in a Career Portfolio</td>
<td>Job Search Websites</td>
</tr>
<tr>
<td>Becoming a Critical Thinker</td>
<td>Seeing the Customer’s Point</td>
<td>Effective Résumés:</td>
<td>Traits Employers are Seeking</td>
<td>Participation in Job Fairs</td>
</tr>
<tr>
<td>Managing</td>
<td>Selling Yourself and the Company</td>
<td>Matching Your Talents to a Job</td>
<td>Considerations Before Taking a Job</td>
<td>Searching the Classified Ads</td>
</tr>
<tr>
<td>Handling Customer Complaints</td>
<td>When a Résumé Should be Used</td>
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<td></td>
<td>Using Employment Agencies</td>
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<tr>
<td>Strategies for Customer Service</td>
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<td>Landing an Internship</td>
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<td></td>
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<td></td>
<td>Staying Motivated to Search</td>
</tr>
</tbody>
</table>

1.4 Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.

<table>
<thead>
<tr>
<th>Workplace Ethics</th>
<th>Personal Characteristics</th>
<th>Employer Expectations</th>
<th>Business Etiquette</th>
<th>Communicating at Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrating Good Work Ethic</td>
<td>Demonstrating a Good Attitude</td>
<td>Behaviors Employers Expect</td>
<td>Language and Behavior</td>
<td>Handling Anger</td>
</tr>
<tr>
<td>Behaving Appropriately</td>
<td>Gaining and Showing Respect</td>
<td>Objectionable Behaviors</td>
<td>Keeping Information Confidential</td>
<td>Dealing with Difficult Coworkers</td>
</tr>
<tr>
<td>Maintaining Honesty</td>
<td>Demonstrating Responsibility</td>
<td>Establishing Credibility</td>
<td>Avoiding Gossip</td>
<td>Dealing with a Difficult Boss</td>
</tr>
</tbody>
</table>

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## 1.5 Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply team work skills.

<table>
<thead>
<tr>
<th>Expected Work Traits</th>
<th>Teamwork</th>
<th>Time Management</th>
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</thead>
<tbody>
<tr>
<td>Demonstrating Responsibility</td>
<td>Teamwork Skills</td>
<td>Managing Time</td>
</tr>
<tr>
<td>Dealing with Information Overload</td>
<td>Reasons Companies Use Teams</td>
<td>Putting First Things First</td>
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<tr>
<td>Transferable Job Skills</td>
<td>Decisions Teams Make</td>
<td>Juggling Many Priorities</td>
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<tr>
<td>Managing Change</td>
<td>Team Responsibilities</td>
<td>Overcoming Procrastination</td>
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<tr>
<td>Adopting a New Technology</td>
<td>Problems That Affect Teams</td>
<td>Organizing Workspace and Tasks</td>
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<td></td>
<td>Expressing Yourself on a Team</td>
<td>Staying Organized</td>
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<tr>
<td></td>
<td>Giving and Receiving Constructive Criticism</td>
<td>Finding More Time</td>
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<tr>
<td></td>
<td></td>
<td>Managing Projects</td>
</tr>
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<td></td>
<td>Prioritizing Personal and Work Life</td>
</tr>
</tbody>
</table>

## 1.6 Present a professional image through appearance, behavior and language.

<table>
<thead>
<tr>
<th>On-the-Job Etiquette</th>
<th>Person-to-Person Etiquette</th>
<th>Communication Etiquette</th>
<th>Presenting Yourself</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using Professional Manners</td>
<td>Meeting Business Acquaintances</td>
<td>Creating a Good Impression</td>
<td>Looking Professional</td>
</tr>
<tr>
<td>Introducing People</td>
<td>Meeting People for the First Time</td>
<td>Keeping Phone Calls Professional</td>
<td>Dressing for Success</td>
</tr>
<tr>
<td>Appropriate Dress</td>
<td>Showing Politeness</td>
<td>Proper Use of Work Email</td>
<td>Showing a Professional Attitude</td>
</tr>
<tr>
<td>Business Meal Functions</td>
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<td>Proper Use of Cell Phone</td>
<td>Using Good Posture</td>
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<tr>
<td>Behavior at Work Parties</td>
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<td>Proper Use in Texting</td>
<td>Presenting Yourself to Associates</td>
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<tr>
<td>Behavior at Conventions</td>
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<td>Accepting Criticism</td>
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<tr>
<td>International Etiquette</td>
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<td>Demonstrating Leadership</td>
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<td>Cross-Cultural Etiquette</td>
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<tr>
<td>Working in a Cubicle</td>
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</tbody>
</table>
Support of CTAE Foundation Course Standards and Common Core GPS and Georgia Performance Standards
L9-10RST 1-10 and L9-10WHST 1-10:
Common Core ELA/Literacy standards have been written specifically for technical subjects and have been adopted as part of the official standards for all CTAE courses. Additional Common Core ELA/Literacy standards for Speaking and Listening are listed in the foundational course standards below.

Course Standard 2
AFNR-PSB-2
Explore, develop, and implement the comprehensive program of agricultural education, learn and demonstrate safe working habits in the agriculture lab and work sites, demonstrate selected competencies in leadership through the FFA and agricultural industry organizations, and develop plans for a Supervised Agricultural Experience Program (SAEP).
2.1 Explain the role of the Agricultural Education program and the FFA in personal development.
2.2 Demonstrate knowledge learned through a SAEP.
2.3 Develop leadership and personal development skills through participation in the FFA.
2.4 Explore career opportunities in horticulture/plant science through the FFA and Agricultural Education Program.
2.5 Explore the professional agricultural organizations associated with the course content.

Course Standard 3
AFNR-PSB-3
Define and explain the importance of plant science in biotechnology.
3.1 Define science and agriscience.
3.2 Demonstrate the scientific method.
3.3 Explain why agriculture is an applied science.
3.4 Describe at least three advances in agriculture resulting from agricultural research.
3.5 Compile a list of historical events related to agricultural research and development.
3.6 Distinguish between basic and applied research.
3.7 Describe the role of plants in the food chain.
3.8 Describe the role plants play in the environment.
3.9 Explain how plants are used in the food and fiber system and ornamental purposes.
3.10 Trace the origin of common crop and ornamental plants.
3.11 Discuss the economic importance of plant production.
3.12 Demonstrate proper use of the compound and dissecting microscopes.

Course Standard 4
AFNR-PSB-4
Differentiate between plants utilizing scientific plant classification.
4.1 Write scientific names according to set guidelines.
4.2 Distinguish the differences between the levels of the classification system.
4.3 Explain the importance of using a universal classification system.
4.4 Discuss the importance of the plant patent system.
4.5 Define and explain the dichotomous key and use it to identify unknown plants and other items.
4.6 Identify terms used to describe the characteristics of plants.
4.7 Name and describe the major plant types.
4.8 Identify plant species within the major plant types.
4.9 Discuss the differences between vascular and nonvascular plants.

Course Standard 5

AFNR-PSB-5
Identify the parts of plant cells and describe their physiology.
  5.1 Identify and describe the components of plant cells.
  5.2 List the functions of plant cell components in relation to plant growth.
  5.3 Distinguish between plant cells and animal cells.
  5.4 Summarize the three kinds of plant cell activity (division, enlargement, and differentiation).
  5.5 Describe the life cycle of a plant cell.
  5.6 List phases of plant growth.
  5.7 Identify the zone of elongation and differentiation.
  5.8 Identify ways that osmosis affects plants.
  5.9 Describe how water moves into and out of plant cells.
  5.10 Define important terms and functions related to plant cells including osmosis, diffusion, etc.

Course Standard 6

AFNR-PSB-6
Explain technological advancements in plant development, reproduction, and protection.
  6.1 Trace the development of modern species and varieties.
  6.2 Outline a procedure that early plant breeders might have used to domesticate a wild plant species.
  6.3 Define biotechnology terms including plant evolution, natural and artificial selection, genetic variation, etc.
  6.4 Explain the role of biotechnology and bioengineering in modern plant production.
  6.5 Compare traditional plant breeding and genetic engineering of plants.
  6.6 Demonstrate plant tissue culture procedures and successfully propagate plant through plant tissue culture.
  6.7 Describe the effects of growth hormones on tissue culture success.
  6.8 Explain the importance of rhizobia bacteria to legumes.
  6.9 Describe the importance of using legumes in agricultural operations.
  6.10 Inoculate legumes with rhizobia bacteria.
  6.11 Control plant growth through the application of growth inhibitors, stimulants, and cultural practices.
  6.12 Identify the major plant hormones that are important to plant growth.
  6.13 Explain why forcing of plants is important to the horticulture and related plant industries.
  6.14 Discuss and give examples of the importance of genetic variation in the gene pool.
  6.15 Debate the use of genetically modified organisms.
Course Standard 7

AFNR-PSB-7
Identify and describe plant nutritional needs.
7.1 Describe the role of nutrients in plant growth and development.
7.2 List primary and secondary plant nutrients.
7.3 Define plant needs for micro nutrients (trace elements).
7.4 Describe the role primary nutrients play in plant growth and development.
7.5 Explain the role of secondary and micro nutrients in plant growth and development.
7.6 Identify natural methods of supplying plants with nutrients.
7.7 Identify and prescribe artificial sources of plant nutrients.
7.8 Describe common symptoms of plants with excess nutrients and prescribe remedies.
7.9 Describe common symptoms of nutrient deficient plants and prescribe remedies.
7.10 Use concepts to solve soluble salt problems in soils.
7.11 Discuss the importance of soil tests and the application of prescribed remedies.
7.12 Conduct soil samples and interpret sample test results.
7.13 Analyze plant tissue sample.
7.14 Describe soil sampling procedures.
7.15 Identify key plant parts involved in nutrient transport.
7.16 Describe the process of nutrient transport.

Course Standard 8

AFNR-PSB-8
Evaluate soil characteristics for production capability.
8.1 Identify functions of soils on plant production.
8.2 Identify acids and bases using the pH scale.
8.3 Describe the importance of soil pH on crops.
8.4 Recommend and describe compounds that will change the soil pH.
8.5 Identify the soil pH best suited for certain crops.
8.6 Describe the composition of an ideal soil.
8.7 List factors that contribute to soil composition.
8.8 Identify various problems with soils that effect plant growth.
8.9 Estimate the amount of organic matter in a soil sample.
8.10 Describe the effect of macro and micro animal and plant products/waste on the soil.
8.11 Discuss the major horizons of mineral soils and identify their characteristics.
8.12 Classify soil horizons by color, texture, or structural composition.
8.13 Identify the soil structural classes.
8.14 Describe the effects of soil structure on crop production.
8.15 Identify the ways humans, animals and machinery can affect soil structure.
8.16 Sort and identify the three major constituents of mineral soil.
8.17 Describe each soil constituent relative to size and other characteristics.
8.18 Describe the effect of soil texture in agricultural operations.
8.19 Identify commonly used artificial soils, listing their advantages and disadvantages.
8.20 Select an artificial soil mixture for specific uses.
8.21 List sources and characteristics of commonly used soil mix ingredients.
Course Standard 9

AFNR-PSB-9
Diagram the life cycles of plants and explain plant reproduction.

9.1 Describe sexual and asexual reproduction in plants.
9.2 Identify the advantages of each type of plant propagation.
9.3 Categorize important agronomic and ornamental plants based on commercial propagation methods.
9.4 Define annual, winter annual, perennial, and biennial.
9.5 Trace the life cycle of plants and phases of growth.
9.6 Identify the male and female parts of flowering plants.
9.7 Describe the functions of each flower part.
9.8 Describe the processes of pollination and fertilization in plants.
9.9 Explain the process by which gametes are produced in both the male and female parts of the flower.
9.10 Distinguish between monoecious and dioecious plants.
9.11 Distinguish between complete and incomplete flowers.
9.12 Define cross-pollination and self-pollination.
9.13 Define fruit set and parthenocarpic fruit.
9.14 Classify the types of fruits and flowers.
9.15 Describe the formation and role fruits play in reproduction.
9.16 Discuss seed dispersal.
9.17 Identify methods of dispersal of common plants.
9.18 Identify factors necessary for seed germination.
9.19 Describe the process of germination.
9.20 Explain the importance of seed dormancy in plant survival.
9.21 Demonstrate scarify and stratify of seeds.
9.22 Describe and apply hypogeal and epigeal germination.

Course Standard 10

AFNR-PSB-10
Explain the importance of genetics in plant breeding.

10.1 Describe Mendel’s experiments in plant breeding.
10.2 Describe Law of Independent Assortment.
10.3 Discuss the difference between heterozygous and homozygous.
10.4 List the seven plant characteristics of the garden pea used extensively by Mendel.
10.5 Discuss the two factors that influenced Mendel to use garden peas as his plant variety for studying inheritance of plants.
10.6 Predict genetic outcome using a Punnett Square.
10.7 Describe the structure of a DNA (Deoxyribonucleic acid) molecule.
10.8 Define DNA and RNA (Ribonucleic acid).
10.9 Discuss and list examples of major advances in agronomic production due to heterosis.
10.10 Determine the difference between F1 and F2 generations and describe the use of each in plant breeding.
10.11 Generate crossbred plants through plant breeding.
Course Standard 11

AFNR-PSB-11
Analyze the environmental requirements of plants.
11.1 Differentiate between climatic regions of Georgia and the United States.
11.2 Explain climatic effects on soils and the resulting effect on plant production.
11.3 Determine temperature and the effects of temperature on plant production.
11.4 Convert temperature measurements from Fahrenheit to Celsius and Celsius to Fahrenheit.
11.5 Distinguish between cool season and warm season plants.
11.6 Explain the importance of temperature on germination, pollination, and other plant functions.
11.7 Utilize the plant hardiness zoning classification system for plants.
11.8 Measure precipitation.
11.9 Determine the amount of annual precipitation in the various parts of Georgia, and the United States and describe the limitations of plant production based on rainfall.
11.10 Match plants adapted to regions based on rainfall.
11.11 Measure humidity and explain the importance to agriculture.
11.12 Explain evaporative cooling and limitation.
11.13 Explain the effect of light on plants and agricultural production practices.
11.14 Define photoperiodism and demonstrate the use in plant production.
11.15 Distinguish between light sources, intensity, and quality and prescribe light needs for plants.
11.16 Demonstrate the effects of light colors (chromatography) and intensity on plants.
11.17 Measure wind velocity and explain the effects of wind on plants, structures, etc.
11.18 Determine the best location for orchards, greenhouses, and related essential structures based on climatic conditions.
11.19 Differentiate among the various tropisms including geotropism, phototropism, and chemotropism.
11.20 Explain why plants respond to stimuli and grow in certain directions.

Course Standard 12

AFNR-PSB-12
Explain the uses of plants in medicine, food crops, animal feeds, and ornamental applications.
12.1 Describe how and what plants can be used for medicinal purposes.
12.2 Describe the importance of food crops and identify food crops grown locally.
12.3 Explain the economic impact of food crops.
12.4 List major agronomic foods crops and identify the region of Georgia or the United States where each is grown.
12.5 Define the use and economic importance of ornamental plants.

Course Standard 13

AFNR-PSB-13
Propagate plants using methods of vegetative cloning and sexual reproduction.
13.1 Define cloning and describe the materials and methods of cloning.
13.2 Explain the benefits of cloning plants.
13.3 Prescribe plant propagation procedures based on economics and reproduction success rate.
13.4 Differentiate between sexual and asexual reproduction.
13.5 Select and utilize plant hormones in plant propagation.
13.6 Explain the stimuli and response effect of plant hormones used in plant propagation.
13.7 Propagate plants through sexual and asexual reproduction.

**Course Standard 14**

**AFNR-PSB-14**
**Identify and classify weeds, prescribe control methods, and describe the economic and environmental effects that weeds have on agricultural production.**
14.1 Define and classify weeds according to plant characteristics.
14.2 Identify the economic and aesthetic impact of weeds.
14.3 Explain how weeds compete with plants in fields, greenhouses, landscapes, etc.
14.4 Calculate the economic threshold for weed control measures to be implemented.
14.5 Describe actions, conditions, vectors, and weed characteristics that help in distribution of weed seeds.
14.6 Identify characteristics of weeds that affect treatment type and effectiveness of treatment.
14.7 Identify common weed plants and the crops/locations they infest.
14.8 Prescribe methods of weed control and the appropriate use of weed control measures.
14.9 Explain the importance of Integrated Pest Management (IPM).
14.10 Interpret and implement pesticide label application instructions.
14.11 Debate environmental concerns related to weed control.
14.12 Prescribe alternative methods to chemical weed control.
14.13 Compare and contrast advantages and disadvantages of specific weed control measures.
14.14 Discuss and explain methods of safe herbicide use.
14.15 Demonstrate the proper application method for herbicides.

**Course Standard 15**

**AFNR-PSB-15**
**Identify, determine control methods, and define the environmental and economic impact insects have on plant production.**
15.1 Explain why the study of entomology is important.
15.2 Classify insects using a dichotomous key, and reference materials.
15.3 Describe and identify body parts of insects.
15.4 Identify common agricultural pests by sight and describe the damage done by insects.
15.5 Distinguish between beneficial and harmful insects.
15.6 Describe beneficial insects and the ways in which beneficial insects control pests.
15.7 Identify common beneficial insects by sight and prescribe measures to encourage their continued presence.
15.8 Discuss the importance of insects in relation to pollination.
15.9 Describe chemical and mechanical insect control measures available to producers to protect plants.
15.10 Discuss how natural pest control measures can be utilized by producers to protect plants.
15.11 Compare and contrast the advantages and disadvantages of using insecticides with non-chemical, organic plant production.
15.12 Explain why environmentally safe insect controls are needed.
15.13 Discuss the use of Integrated Pest Management for controlling insects.
15.14 Demonstrate the safe use of pesticides.
Course Standard 16

AFNR-PSB-16
Identify diseases, related organisms, and physiological disorders affecting plants, and prescribe methods of prevention and control.

- 16.1 Discuss the impact of diseases, nematodes, and physiological disorders on plant production.
- 16.2 Classify the types of plant diseases and casual organism.
- 16.3 Prescribe methods of preventing and controlling plant disease, nematodes, and physiological disorders.
- 16.4 Explain factors necessary for disease infection in plants.
- 16.5 Diagram the life cycle of common diseases.
- 16.6 Explain how fungi, bacteria, and viruses are spread.
- 16.7 Identify common plant diseases by symptoms and signs.
- 16.8 Define key terms related to plant pathology.
- 16.9 Trace the history and importance of plant pathology.
- 16.10 Describe the types of nematodes and how they damage plants.
- 16.11 Explain how unfavorable environmental conditions can affect disease or disease-like infestations in plants.
- 16.12 Differentiate between pathogenic and non-pathogenic diseases.
- 16.13 Demonstrate the safe use of pesticides.

Course Standard 17

AFNR-PSB-17
Analyze the water-plant relationship and describe how water and other materials move through the plant.

- 17.1 Describe the three categories of water that may be present in the soil.
- 17.2 Describe hydraulic conductivity, infiltration, and percolation.
- 17.3 Distinguish between soil texture and bulk density and how they affect soil-water.
- 17.4 Define absorption and describe how absorption takes place.
- 17.5 Explain how soil solution enters root hairs.
- 17.6 Describe and explain the movement of water in plant cells.
- 17.7 Distinguish between xylem and phloem based on function.

Course Standard 18

AFNR-PSB-18
Evaluate environmentally controlled plant growth systems.

- 18.1 Discuss why environmentally-controlled structures are used and describe their advantages.
- 18.2 Determine the use of each of the environmentally-controlled structures based on the plants to be produced.
- 18.3 Diagram the environmental control components of greenhouses, cold frames, and other plant growth structures.
- 18.4 Describe how hydroponic systems are used in horticulture and plant science.
- 18.5 Describe the essential elements of a hydroponic system.
Course Standard 19

AFNR-PSB-19

Analyze the effect of plant production on the environment.

19.1 Explain the importance of plant processes to life on earth.
19.2 Explain the role of plants in the food chain.
19.3 Describe photosynthesis and respiration analyzing the role CO₂ and O₂ play.
19.4 Describe how conventional agricultural practices affect the environment.
19.5 Describe new agricultural practices that are environmentally friendly.
19.6 Compare and contrast the advantages and disadvantages of conventional versus organic farming.
19.7 Explain the importance of compost in the production of plants.
19.8 Describe how composting works and the procedures for creating a compost pile.
19.9 Describe uses for plant by-products and the environmental benefits to using them.
19.10 Define methods of erosion prevention and prescribe erosion control measures for a specific site in the community.