Florida Department of Education
Curriculum Framework

Program Title: **Horticulture Science and Services**
Program Type: **Career Preparatory**
Career Cluster: **Agriculture, Food and Natural Resources**

Program Number	8121600
CIP Number	0101060610
Grade Level	9-12
Program Length	6 credits
Teacher Certification	Refer to the **Program Structure** section.
CTSO	FFA
SOC Codes (all applicable)	19-1013 -- Soil and Plant Scientist 37-1012 -- First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Purpose

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Agriculture, Food and Natural Resources (AFNR) career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Agriculture, Food and Natural Resources career cluster.

The content includes but is not limited to planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues, and health, safety and environmental issues.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of six courses. Planned and Supervised Agricultural Experiences (SAE) must be provided through one or more of the following: (1) foundational career exploration, (2) directed laboratory experience, (3) project ownership/entrepreneurship, (4) cooperative education/internship, (5) School Based Enterprise, or (6) Service Learning.

This program is a planned sequence of instruction consisting of a core and two completion points.

To teach the course(s) listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the secondary program structure:

Course Number	Course Title	Teacher Certification	Length	SOC Code	Level	Graduation Requirement
8106810	Agriscience Foundations 1	AGRICULTUR 1 @2 AGRICULTUR 7G	1 credit		3	EQ
8121510	Introductory Horticulture 2	AGRICULTUR 1 @2 AGRICULTUR 7G	1 credit	37-1012	3	CT
8121520	Horticulture Science 3	AGRICULTUR 1 @2 AGRICULTUR 7G	1 credit	37-1012	3	CT
8121610	Horticulture Science and Services 4	AGRICULTUR 1 @2 AGRICULTUR 7G HORTICULT #7	1 credit	19-1013	2	CT
8121620	Horticulture Science and Services 5	AGRICULTUR 1 @2 AGRICULTUR 7G HORTICULT #7	1 credit	19-1013	2	CT
8121630	Horticulture Science and Services 6	AGRICULTUR 1 @2 AGRICULTUR 7G HORTICULT #7	1 credit	19-1013	2	CT

(Graduation Requirement Codes: CT= Career & Technical Education, EQ= Equally Rigorous Science, EC= Economics, MA= Mathematics, PL= Personal Financial Literacy)

National Standards (NS): Council for Agricultural Education

Some or all of the courses in this program have been aligned with National Standards AFNR Standards from the Council for Agricultural Education. If so, the standards have been identified and cross walked with the corresponding CTE standard and/or benchmark. National Standards can be found by accessing the following link: https://ffa.app.box.com/v/Library/folder/52815452676.

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.

2. Apply appropriate academic and technical skills.

3. Attend to personal health and financial well-being.

4. Communicate clearly, effectively and with reason.

5. Consider the environmental, social and economic impacts of decisions.

6. Demonstrate creativity and innovation.

7. Employ valid and reliable research strategies.

8. Utilize critical thinking to make sense of problems and persevere in solving them.

9. Model integrity, ethical leadership and effective management.

10. Plan education and career path aligned to personal goals.

11. Use technology to enhance productivity.

12. Work productively in teams while using cultural/global competence.

Standards

After successfully completing this program, the student will be able to perform the following:

Agriscience Foundations 1

1.0 Examine the history of AFNR production at the local, national, and global level.
2.0 Employ scientific reasoning to make informed decisions in AFNR systems.
3.0 Apply scientific skills and principles in natural resources.
4.0 Apply scientific skills and principles in plant science.
5.0 Apply scientific skills and principles in animal science.
6.0 Apply scientific skills and principles in food science.
7.0 Apply scientific skills and principles in power, structure, and technical systems.
8.0 Explore AFNR professional development organizations.

Introductory Horticulture 2

9.0 Describe the horticulture industry.
10.0 Identify safety procedures in the workplace.
11.0 Identify and classify plants.
12.0 Demonstrate plant propagation techniques.
13.0 Identify growing media and fertilizers.
14.0 Explain irrigation techniques for plants and turf.
15.0 Describe Integrated Pest Management approaches.
16.0 Describe the principles and requirements of plant growth.
17.0 Apply best management practices in the horticulture industry.
18.0 Identify principles of landscape design.
19.0 Describe varieties and care of indoor plants.

Horticulture Science 3

20.0 Apply safety procedures in the workplace.
21.0 Classify plants based on scientific principles.
22.0 Demonstrate proper use of growing media and fertilizers.
23.0 Demonstrate Integrated Pest Management approaches.
24.0 Identify the principles and requirements of plant growth.
25.0 Apply best management practices in landscape design.
26.0 Demonstrate customer service skills that are essential in dealing with clients.
27.0 Apply principles of landscape design and maintenance.
28.0 Harvest, transport, and install plant materials.
29.0 Identify procedures to operate, repair, and maintain tools and equipment.
30.0 Identify emerging technologies in the horticulture industry.

31.0 Demonstrate leadership, employability, communications and human relations skills.
32.0 Describe personal traits, attitudes, customer approaches, and activities that help successful selling.

Horticulture Science and Services 4

33.0 Propagate plants.
34.0 Safely operate, repair, and maintain tools and equipment.
35.0 Prepare growing media.
36.0 Irrigate plants.
37.0 Maintain and analyze records (using spread sheet, word processing, and presentation software).
38.0 Apply proper fertilizer application components.

Horticulture Science and Services 5

39.0 Classify plants.
40.0 Irrigate plants using an irrigation system.
41.0 Maintain and analyze records (using spread sheet, word processing, and presentation software).
42.0 Fertilize plant material.
43.0 Control Pests using Integrated Pest Management Practices.

Horticulture Science and Services 6

44.0 Safely operate tools and equipment.
45.0 Maintain irrigation systems.
46.0 Maintain and analyze production records.
47.0 Manage and use fertilization schedules using spread sheet software.
48.0 Use a pest control system.

Florida Department of Education
Student Performance Standards

Course Title: **Agriscience Foundations 1**
Course Number: **8106810**
Course Credit: **1**

Course Description:

This course is designed to develop competencies in the areas of agricultural history and the global impact of agriculture; career opportunities; scientific and research concepts; biological and physical science principles; environmental principles; agriscience safety; principles of leadership; and agribusiness, employability, and human relations skills in agriscience. Laboratory-based activities are an integral part of this course. These include the safe use and application of appropriate technology, scientific testing and observation equipment.

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental quality, and safety procedures will be an integral part of this course. Students will interact with materials and primary sources of data or with secondary sources of data to observe and understand the natural world. Students will develop an understanding of measurement error, and develop the skills to aggregate, interpret, and present the data and resulting conclusions. Equipment and supplies will be provided to enhance these hands-on experiences for students. A minimum of 20% of classroom time will be dedicated to laboratory experiences.

Agriscience Foundations 1 (8106810) is part of several programs across the Agriculture, Food & Natural Resources career cluster. To ensure consistency, the standards and benchmarks for this course (01.0 – 8.0) have been placed in a separate document. To access this document, visit: https://www.fldoe.org/core/fileparse.php/20706/urlt/Agsci-Fnds1-Core-2425.rtf

Florida Department of Education
Student Performance Standards

Course Title: **Introductory Horticulture 2**
Course Number: **8121510**
Course Credit: **1**

Course Description:

This course is designed to develop competencies in the areas of career opportunities; global importance of agriculture; plant classification; propagation; growing media; nutritional needs; fertilization; irrigation; pest identification; pest control, pruning; plant installation; transplanting; safe hand-tool use; and employability skills.

CTE Standards and Benchmarks			National Standards
1.0	Describe the horticulture industry. The student will be able to:		
	1.1	Describe the importance of horticulture to the American and global economies.	
	1.2	Identify career opportunities in horticulture and educational requirements and continuing education opportunities for horticulture careers.	
	1.3	Describe Florida laws and regulation as they apply to the horticulture industry.	
	1.4	Describe the importance of horticulture to the environment, including sustainability practices	
2.0	Identify safety procedures in the workplace. The student will be able to:		
	2.1	Identify the common causes of accidents in the horticulture industry.	
	2.2	Demonstrate proper safety precautions and use of personal protective equipment specific to the horticulture industry.	
	2.3	Explain, identify and utilize pertinent information from a container label and/or Material Safety Data Sheet (MSDS) according to Environmental Protection Agency (EPA), Worker Protection Standard and Occupational Safety and Health Agency (OHSA) Regulations.	
3.0	Identify and classify plants. The student will be able to:		
	3.1	Identify plants by botanical and common names.	PS.02.01.02.b
	3.2	Classify plants botanically.	PS.02.01.02.c
	3.3	Write botanical names for plants.	
4.0	Demonstrate plant propagation techniques. The student will be able to:		
	4.1	Identify propagating and growing facilities and structures.	
	4.2	Prepare propagation media.	PS.01.02.01.a
	4.3	Select and collect propagation materials.	PS.01.02.01.c
	4.4	Demonstrate propagation by sexual and asexual methods.	PS.03.01.01.b PS.03.01.03.b
	4.5	Demonstrate environmental controls for propagation materials.	

4.6	Identify and select proper rooting hormones based on plant characteristics.	
5.0	Identify growing media and fertilizers. The student will be able to:	
5.1	Identify soil and media materials and appropriate containers.	
5.2	Identify nutritional needs of plants.	PS.01.03.01.a
5.3	Identify symptoms of nutritional deficiencies and toxicities of plants.	PS.01.03.02.c
5.4	Identify types and kinds of fertilizers.	PS.01.03.04.a
5.5	Identify methods of distributing fertilizers.	PS.01.03.04.c
5.6	Interpret information on a label of fertilizer used in Florida.	
6.0	Explain irrigation techniques for plants and turf. The student will be able to:	
6.1	Identify water needs of plants.	PS.01.01.03.a
6.2	Irrigate plants at recommended rates.	
6.3	Identify the symptoms of excessive water and water stress in plants.	
6.4	Describe the basic irrigation systems and principles used in the landscape and nursery.	
7.0	Describe Integrated Pest Management approaches. The student will be able to:	
7.1	Identify common pests and pathogens of plants.	PS.03.03.01.a
7.2	Describe life cycles of common pests and pathogens of plants.	PS.03.03.02.a
7.3	Recognize signs of damage from pests and pathogens.	PS.03.03.02
8.0	Describe the principles and requirements of plant growth. The student will be able to:	
8.1	Explain how the energy of sunlight is converted to chemical energy through the process of photosynthesis and respiration.	PS.02.03.01.a
8.2	Explain how photosynthesis in plants is directly affected by various environmental factors such as light and temperature.	PS.02.03.01.b
8.3	Explain the process of respiration and transpiration and describe the flow of energy in plants.	PS.02.03.02.b
8.4	Describe the influence of light and temperature on plant growth including phototropism.	
9.0	Apply best management practices in the horticulture industry. The student will be able to:	
9.1	Identify and apply Best Management Practices to reduce pollution and conserve water.	
9.2	Identify and apply Best Management Practices on fertilizer recommendations for Florida plants including turf.	
9.3	Explain the concept of nonpoint source pollution, and the watershed environment.	
10.0	Identify principles of landscape design. The student will be able to:	
10.1	Conduct a customer interview to determine needs and personal tastes of client.	PS.04.02.01.a
10.2	Compare and contrast the use of line, form, texture and color in designing landscapes.	
10.3	Identify the principles of design (unity, repetition, balance, emphasis and scale) as they apply to landscapes.	PS.04.02.02.b
10.4	Identify points of emphasis and major design areas in the residential landscape.	
10.5	Identify plant selection for a residential landscape using Florida Friendly Landscape Principles.	
10.6	Read and interpret a landscape plan.	
10.7	Develop skills for drawing and identifying symbols.	
10.8	Draw and design a landscape plan for a small garden.	

10.9	Explore types of landscape design software.	PS.04.02.02.c
11.0	Describe varieties and care of indoor plants. The students will be able to:	
11.1	Identify common indoor plants	
11.2	Describe the lighting and environmental needs of indoor plants.	
11.3	Describe water, cleaning, and fertilizations needs for plants used indoors.	
11.4	Describe the most common problems with indoor foliage including pathogens, pests, and cultural damage.	
11.5	Analyze the air quality benefits of indoor plants.	
11.6	Explain proper chemical use and application of plants indoors in accordance with governmental and public safety regulations.	

Florida Department of Education
Student Performance Standards

Course Title: **Horticulture Science 3**
Course Number: **8121520**
Course Credit: **1**

Course Description:

This course is designed to develop competencies in the areas of industry regulations; plant classification; plant transportation; soil sampling and analysis; fertilizer calculations; recording keeping; irrigation components, water quality; drainage; integrated pest management; pesticide safety and regulations; equipment calibration; chemical growth regulators; xeriscaping; integrated landscape management; safe use of power equipment; record keeping; and employability skills.

CTE Standards and Benchmarks		National Standards
12.0	Apply safety procedures in the workplace. The student will be able to:	
12.1	Describe emergency procedures in the horticulture workplace.	CS.03.03.02.b
12.2	Create preventive measures to avoid hazardous situations.	CS.03.03.01.a
12.3	Identify appropriate PPE (Personal Protective Equipment) for all activities.	CS.03.04.01.b
12.4	Use MSDS for all materials used.	CS.03.01.01.a
12.5	Identify specific hazards with industry specific equipment, and conduct equipment care and maintenance.	CS.03.04.02.a
12.6	Apply problem solving skills to correct a hazardous situation.	CS.03.01.02.c
13.0	Classify plants based on scientific principles. The student will be able to:	
13.1	Describe principles of plant biology and growth.	PS.01.01.01.a
13.2	Explain the role of plants in the ecosystem.	
13.3	Describe the major classifications of plants based on life cycle.	PS.02.01.01.c
13.4	Demonstrate the use of botanical and common names of plants including genus and specific epithet and cultivar.	PS.02.01.02.c
13.5	Demonstrate proper use of botanical names.	PS.02.01.01.a
14.0	Demonstrate proper use of growing media and fertilizers. The student will be able to:	
14.1	Apply information on a label of fertilizer, including updated BMP rules, used in Florida.	PS.01.03.04.b
14.2	Apply fertilizer and soil amendments.	
14.3	Identify materials that are needed to alter pH and calculate the amount to apply to change the pH.	PS.01.03.02.a
14.4	Demonstrate the procedure for calibrating a fertilizer spreader or injector using appropriate mathematical concepts.	PS.01.03.04.c
14.5	Identify essential elements and nutrients in plant growth including macronutrients and micronutrients.	PS.01.03.01.a
14.6	Using references make fertilizer recommendations for ornamental plants, turf grass, and palms.	PS.01.03.03.c
15.0	Demonstrate Integrated Pest Management approaches. The student will be able to:	

15.1	Classify insects according to feeding habits.	PS.03.03.01.a
15.2	Describe IMP (Integrated Pest Management) methods of controlling plant pests.	PS.03.03.03.a
15.3	Diagnose and outline a plan for controlling pests on a horticultural crop.	PS.03.03.03.c
15.4	Describe methods of controlling nematode pests on ornamental plants, and use BMPs to prevent infestation..	
15.5	Develop a pest control program for a horticultural crop using Integrated Pest Management.	
15.6	Identify specific cultural, mechanical, chemical, and biological methods of weed management.	
15.7	Identify evasive and poisonous plants in Florida.	
15.8	Identify types of weeds common to Florida.	
16.0	Identify the principles and requirements of plant growth. The student will be able to:	
16.1	Demonstrate methods of pruning plants.	
16.2	Identify appropriate time to prune plants.	
16.3	Identify and select pruning tools.	
16.4	Demonstrate proper use of pruning tools and care.	
16.5	Demonstrate sanitation of tools to prevent the spread of disease.	
16.6	Identify Plant Growth Regulators and their use on horticulture and landscape plants.	
16.7	Provide a summary of results for the application on the specific crop.	
16.8	Identify appropriate pruning techniques to achieve plant size, form, and shape.	
17.0	Apply best management practices in landscape design. The student will be able to:	
17.1	Identify and apply Best Management Practices for the design and installation of landscapes.	PS.04.01.01.a
17.2	Identify and apply Best Management Practices on the management and handling of pesticides.	
18.0	Demonstrate customer service skills that are essential in dealing with clients. The student will be able to:	
18.1	Demonstrate ability to communicate clearly with the client.	
18.2	Conduct a walk through and interview with client to assure clear vision.	
18.3	Identify future expectations of the client relationship.	
19.0	Apply principles of landscape design and maintenance. The student will be able to:	
19.1	Demonstrate the use of line, form, texture and color in designing landscapes.	PS.04.01.01.c
19.2	Demonstrate the principles of design (unity, repetition, balance, emphasis and scale) as they apply to landscapes.	PS.04.02.01.a
19.3	Apply points of emphasis and major design areas in the commercial landscape.	
19.4	Identify plant selection for a commercial and residential landscape using Florida Friendly Landscape Principles.	
19.5	Create a landscape plan for a residential or commercial property.	
19.6	Create a complete estimate and proposal for a project.	
19.7	Identify factors in selecting turf for landscape installation.	
19.8	Identify parts of an estimate and proposal for a project.	
20.0	Harvest, transport, and install plant materials. The student will be able to:	
20.1	Determine requirements for preserving plant viability.	

	20.2 Demonstrate proper landscape plant establishment techniques.	
	20.3 Select and prepare plants for transporting and transplanting.	
	20.4 Select horticultural products according to Florida grades and standards.	
21.0	Identify procedures to operate, repair, and maintain tools and equipment. The student will be able to:	
	21.1 Perform equipment pre-operational check.	
	21.2 Identify, maintain, and operate hand tools and power tools.	
22.0	Identify emerging technologies in the horticulture industry. The student will be able to:	
	22.1 Research DNA and genetic applications in horticulture including the theory of probability.	
	22.2 Research advances in biotechnology that impact horticulture. (e.g., transgenic crops, biological controls, micro propagation etc.).	
	22.3 Research ways that GIS, Remote sensing, and precision agriculture, and UAV (Unmanned Altererian Vehicles) are used in the Horticulture industry.	
23.0	Demonstrate leadership, employability, communications, and human relations skills. The student will be able to:	
	23.1 Identify appropriate work habits and personal characteristics.	
	23.2 Identify proper employee hygiene habits.	
	23.3 Identify or demonstrate appropriate responses to criticism from employer,	
	23.4 Describe the importance of employee industry certifications.	
	23.5 Discuss education opportunities available in the area of Horticulture.	
24.0	Describe personal traits, attitudes, customer approaches, and activities that help successful selling. The student will be able to:	
	24.1 Demonstrate proper customer communication techniques.	
	24.2 Determine your products pricing structure.	
	24.3 Discuss components of customer satisfaction.	

Florida Department of Education
Student Performance Standards

Course Title: **Horticulture Science and Services 4**
Course Number: **8121610**
Course Credit: **1**

Course Description:

This course is designed to further develop competencies in the areas of plant identification and classification; growing media; irrigation system set up; and maintaining and analyzing records including production costs.

CTE Standards and Benchmarks	
25.0	Propagate plants. The student will be able to:
25.1	Prepare propagation materials (seeds, cuttings, etc.) for planting.
25.2	Discuss cultural requirements for propagations including temperature, light, and moisture.
25.3	Demonstrate sanitation and safety practices when propagating.
26.0	Safely operate, repair, and maintain tools and equipment. The student will be able to:
26.1	Identify, operate, and maintain tractor and power equipment.
27.0	Prepare growing media. The student will be able to:
27.1	Sterilize rooting, potting, and growing media.
27.2	Adjust pH and nutritional levels of media.
27.3	Fill and level benches and pots with media.
27.4	Demonstrate sanitation practices when handling and storing plant media materials.
28.0	Irrigate plants. The student will be able to:
28.1	Identify the components of irrigation systems.
28.2	Explain why different types of irrigation systems are needed.
28.3	List problems associated with improper design, installation, and maintenance.
28.4	Explain and apply Best Management Practices as they apply to irrigation.
28.5	Apply general knowledge of appropriate state laws to irrigation practices.
29.0	Maintain and analyze records (using spread sheet, word processing, and presentation software). The student will be able to:
29.1	Create a plant and inventory supply list.
29.2	Maintain current plant and supply inventory.
29.3	Maintain job records, daily log sheets, and inventory.
29.4	Calculate labor costs involved with product pricing.
30.0	Apply proper fertilizer application components. The student will be able to:
30.1	Determine proper application based on characteristics of plant species.
30.2	Examine how fertilizer application affects the water bodies in Florida.

Florida Department of Education
Student Performance Standards

Course Title: **Horticulture Science and Services 5**
Course Number: **8121620**
Course Credit: **1**

Course Description:

This course is designed to further develop competencies in the areas of identifying and evaluating IPM practices; maintaining and repairing irrigation systems; analyzing and evaluating fertilizer usage.

CTE Standards and Benchmarks	
31.0	Classify plants. The student will be able to:
31.1	Identify plants appropriate to a region.
31.2	Classify plants according to growth habit.
31.3	Supply growth stimulants to propagation materials
31.4	Prepare flats and seedbeds and plant seeds.
32.0	Irrigate plants using an irrigation system. The student will be able to:
32.1	Use various types of irrigation systems (low volume, ebb and flow, drip, mat, re-circulating, etc.).
33.0	Maintain and analyze records (using spread sheet, word processing, and presentation software). The student will be able to:
33.1	Prepare and maintain financial records.
34.0	Fertilize plant materials. The student will be able to:
34.1	Collect soil and leaf tissue samples for analysis.
34.2	Demonstrate proper handling and storage of fertilizers, observing safety precautions.
34.3	Evaluate, operate, and maintain fertilizer distribution equipment.
34.4	Create fertilizer schedule and/ or record of applications.
35.0	Control pests using Integrated Pest Management Practices. The student will be able to:
35.1	Conduct a scouting in a nursery or landscape setting.
35.2	Report insect and disease damage.
35.3	Describe the differences between common and exotic pests.
35.4	Identify chemical spray damage.

Florida Department of Education
Student Performance Standards

Course Title: **Horticulture Science and Services 6**
Course Number: **8121630**
Course Credit: **1**

Course Description:

This course is designed to further develop competencies in the areas of irrigation; growing media; planting beds and sites; propagation; marketing; repair and maintenance of nursery equipment and facilities.

CTE Standards and Benchmarks	
36.0	Safely operate tools and equipment. The student will be able to:
36.1	Load, secure, and transport equipment.
37.0	Maintain irrigation systems. The student will be able to:
37.1	Maintain and repair an irrigation system.
37.2	Assemble a drip/mist irrigation system for an ornamental crop.
38.0	Maintain and analyze production records. The student will be able to:
38.1	Analyze and maintain production and sales records.
38.2	Determine plant production costs.
38.3	Prepare a budget.
39.0	Manage and use fertilization schedules using spread sheet software. The student will be able to:
39.1	Interpret and evaluate the results of soil and leaf tissue analysis and determine corrective actions.
39.2	Develop a fertilization schedule for various plant species.
39.3	Calculate rates of fertilizer application for turf, ornamental plants, and palms.
40.0	Use a pest control system. The student will be able to:
40.1	Select proper IPM practices (biological, chemical, and physical) for control of insects, diseases, vertebrates and weeds.
40.2	Evaluate the efficacy and phytotoxicity of a chemical prior to inclusion in a growing program.

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Florida Standards for English Language Development (ELD)
English language learners communicate for social and instructional purposes within the school setting. ELD.K12.ELL.SI.1

English Language Development (ELD) Standards Special Notes:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at SALA@fldoe.org

Extended Student Supervision

Because of the production and marketing cycle of the agriculture industry, this program requires individual instruction and supervision of students for the entire period beyond the 180-day school year.

Career and Technical Student Organization (CTSO)

Florida FFA is the co-curricular career and technical student organization for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

In addition to accommodations, some secondary students with disabilities (students with an IEP served in Exceptional Student Education (ESE)) will need modifications to meet their needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note: postsecondary curriculum and regulated secondary programs cannot be modified.

Some secondary students with disabilities (ESE) may need additional time (i.e., longer than the regular school year), to master the student performance standards associated with a regular course or a modified course. If needed, a student may enroll in the same career and technical course more than once. Documentation should be included in the IEP that clearly indicates that it is anticipated that the student may need an additional year to complete a Career and Technical Education (CTE) course. The student should work on different competencies and new applications of competencies each year toward completion of the CTE course. After achieving the competencies identified for the year, the student

earns credit for the course. It is important to ensure that credits earned by students are reported accurately. The district's information system must be designed to accept multiple credits for the same course number for eligible students with disabilities.