



## **TEKS CORRELATIONS & SUGGESTED PACING GUIDE**

### Greenhouse Operation & Production



**iCEV Agricultural Science Site**

***Meets 95.7% of TEKS***

**207 days of teaching material**

Scope & Sequence	Lesson Title	TEKS	Days of Teaching
1	Scientific Classification & Nomenclature of Plants	3.A	9
2	Anatomy of Plants	3.B	5
3	Techniques in Plant ID	3.B	4
4	Horticulture Plant ID: Floral	3.C; 8.F	3
5	Horticulture Plant ID: Foliage	3.C; 8.F	2
6	Landscape Plant ID: Shrubs & Ground Covers	3.C; 8.F	3
7	Landscape Plant ID: Trees	3.C; 8.F	3
8	Greenhouse Design & Construction	4.A; 4.B; 4.C; 4.D; 4.E	5
9	Greenhouse & Nursery Safety: Safety Program	4.F	2
10	Introduction to Greenhouse Management	5.A; 5.B; 5.C; 5.D; 5.E; 6.A; 6.B; 6.C; 8.D; 8.F; 8.G	5
11	Field Trip: Greenhouse	5.A; 5.B; 5.C; 5.D; 5.E; 6.A; 6.B; 6.C	2
12	Field Trip: Landmark Nurseries	5.A; 5.B; 5.C; 5.D; 5.E; 6.A; 6.B; 6.C; 8.D	2
13	Hydroponics	5.E	5
14	Plant Propagation I	7.A	2
15	Plant Propagation II	7.A	2
16	Plant Tissue Culture I	7.A	2
17	Plant Tissue Culture II	7.A	4
18	Container Grown Plants	7.B; 7.C; 8.A; 8.B; 8.C; 8.E	4
19	Field Grown Plants	7.B; 7.C; 8.A; 8.B; 8.C; 8.E	5
20	Foliage Plant Production	7.B; 7.C; 8.A; 8.B; 8.C; 8.E	4
21	Potted Plant Production	7.B; 7.C; 8.A; 8.B; 8.C; 8.E	4
22	Bedding Plant Production	7.B; 7.C; 8.A; 8.B; 8.C; 8.E	5
23	Plant Pests: Bacterial Diseases	9.A	7
24	Plant Pests: Fungal Diseases	9.A	7
25	Plant Pests: Viruses	9.A	1
26	Plant Pests: Sucking Insects	9.A	6
27	Plant Pests: Chewing Insects	9.A	7
28	Plant Pests: Weeds	9.A	9
29	Pesticides & Herbicides: An Introduction	9.B; 9.C.9.D; 9.E	5
30	Pesticide Safety: Minimal Risk to the Applicator	9.B; 9.C.9.D; 9.E	3
31	Pesticide Safety: Minimal Risk to the Environment	9.B; 9.C.9.D; 9.E	3
32	Marketing Greenhouse Crops	10.A; 10.B; 10.D	2
33	Inventory & Storing Plants	10.B	4
34	The World of Agriculture	1.B	12
35	Exploring Careers: Agriculture, Food & Natural Resources	1.A	12
36	Plant Systems	1.A; 1.B; 1.C	2
37	Employability Skills	1.B; 1.E	5
38	Workplace Issues	1.D	4
39	Safe Working Environment	1.D	3
40	Citizenship Basics	1.F	9
41	Blue & Gold Basics: SAE Programs	2.A	5
42	Introduction to Record Keeping	2.B	3

Scope & Sequence	Lesson Title	TEKS	Days of Teaching
43	Blue & Gold Basics: What is FFA?	2.C; 2.D	6
44	Blue & Gold Basics: FFA Officers & Meetings	2.C	8
45	Blue & Gold Basics: Career Development Events	2.C	2

*Correlations to the Texas Essential Knowledge and Skills (TEKS): Student/Teacher Material*

<b>Subject</b>	<b>Chapter 130. Texas Essential Knowledge and Skills for Career &amp; Technical Education</b>
<b>Subchapter</b>	<b>Subchapter A. Agriculture, Food, and Natural Resources</b>
<b>Course</b>	<b>§130.24 Greenhouse Operation and Production</b>
<b>Publisher</b>	<b>CEV Multimedia, Ltd.</b>
<b>Program Title</b>	<b>iCEV Agricultural Science</b>
<b>Program ISBN</b>	<b>9781614592082</b>
<b>TEKS Coverage (%)</b>	<b>95.70%</b>

**(a) General requirements.** General requirements. This course is recommended for students in Grades 10-12. Students shall be awarded one credit for successful completion of this course.

**(b) Introduction.**

- (1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
- (2) The Agriculture, Food, and Natural Resources Career Cluster focuses on the production, processing, marketing, distribution, financing, and development of agricultural commodities and resources, including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.
- (3) Greenhouse Operation and Production is designed to develop an understanding of greenhouse production techniques and practices. To prepare for careers in horticultural systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to horticultural systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills and technologies in a variety of settings.
- (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
- (5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

**(c) Knowledge and Skills.**

<b>Knowledge and Skills Statement</b>	<b>Student Expectation</b>	<b>Specific Location</b>
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities in the field of greenhouse operations and production;	Exploring Careers: Agriculture, Food & Natural Resources Plant Systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) apply competencies related to resources, information, interpersonal skills, problem solving, and critical thinking in greenhouse operations and production;	Plant Systems The World of Agriculture Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) examine licensing, certification, and legal requirements to maintain compliance with industry requirements;	Plant Systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) demonstrate knowledge of personal and occupational health and safety practices in the industry;	Safe Working Environment Workplace Issues
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) identify employers' expectations and appropriate work habits; and	Employability Skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate characteristics of good citizenship such as advocacy, stewardship, and community leadership.	Citizenship Basics
(2) The student develops a supervised agriculture experience program. The student is expected to:	(A) plan, propose, conduct, document, and evaluate a supervised agriculture experience program as an experiential learning activity;	Blue & Gold Basics: SAE Programs

Knowledge and Skills Statement	Student Expectation	Specific Location
(2) The student develops a supervised agriculture experience program. The student is expected to:	(B) apply proper record-keeping skills as they relate to the supervised agriculture experience;	Introduction to Record Keeping
(2) The student develops a supervised agriculture experience program. The student is expected to:	(C) participate in youth leadership opportunities to create a well-rounded experience program; and	Blue & Gold Basics: What is FFA? Blue & Gold Basics: FFA Officers & Meetings Blue & Gold Basics: Career Development Events
(2) The student develops a supervised agriculture experience program. The student is expected to:	(D) produce and participate in a local program of activities using a strategic planning process.	Blue & Gold Basics: What is FFA?
(3) The student identifies and classifies plants used in greenhouse production. The student is expected to:	(A) classify greenhouse plants according to taxonomy systems;	Scientific Classification & Nomenclature of Plants
(3) The student identifies and classifies plants used in greenhouse production. The student is expected to:	(B) develop knowledge of plant anatomy structures and functions for plant identification; and	Anatomy of Plants Techniques in Plant ID
(3) The student identifies and classifies plants used in greenhouse production. The student is expected to:	(C) develop plant classifications based on cropping schedules and market demand for greenhouse crops.	Horticulture Plant ID: Floral Horticulture Plant ID: Foliage Landscape Plant ID: Shrubs & Ground Covers Landscape Plant ID: Trees
(4) The student identifies and investigates different greenhouse structures and construction factors. The student is expected to:	(A) select greenhouse coverings;	Greenhouse Design & Construction
(4) The student identifies and investigates different greenhouse structures and construction factors. The student is expected to:	(B) compare greenhouse styles and construction materials;	Greenhouse Design & Construction
(4) The student identifies and investigates different greenhouse structures and construction factors. The student is expected to:	(C) analyze the costs associated with greenhouse construction;	Greenhouse Design & Construction
(4) The student identifies and investigates different greenhouse structures and construction factors. The student is expected to:	(D) evaluate greenhouse site orientation and construction concerns;	Greenhouse Design & Construction
(4) The student identifies and investigates different greenhouse structures and construction factors. The student is expected to:	(E) integrate other growing structures such as cold frames, hotbeds, lath houses, and potting sheds; and	Greenhouse Design & Construction
(4) The student identifies and investigates different greenhouse structures and construction factors. The student is expected to:	(F) investigate local, state, and national regulations affecting greenhouse operations.	Greenhouse & Nursery Safety: Safety Program
(5) The student identifies and assesses environmental conditions within the greenhouse. The student is expected to:	(A) investigate environmental factors controlled in the greenhouse;	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries
(5) The student identifies and assesses environmental conditions within the greenhouse. The student is expected to:	(B) determine and calculate factors used in heating and cooling a greenhouse;	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries
(5) The student identifies and assesses environmental conditions within the greenhouse. The student is expected to:	(C) investigate the effects of greenhouse climate conditions such as ventilation, carbon dioxide generation, and humidity on plant growth in the greenhouse;	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries
(5) The student identifies and assesses environmental conditions within the greenhouse. The student is expected to:	(D) explore the importance of light quality, quantity, and duration on the production of greenhouse crops; and	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries

Knowledge and Skills Statement	Student Expectation	Specific Location
(5) The student identifies and assesses environmental conditions within the greenhouse. The student is expected to:	(E) compare open and closed environmental systems in the greenhouse such as misting beds or hydroponics.	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries Hydroponics
(6) The student identifies, operates, and maintains greenhouse environmental and mechanical controls. The student is expected to:	(A) explain how to operate and maintain heating, cooling, and ventilation systems in a greenhouse;	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries
(6) The student identifies, operates, and maintains greenhouse environmental and mechanical controls. The student is expected to:	(B) explain how to operate and maintain electrical systems in a greenhouse; and	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries
(6) The student identifies, operates, and maintains greenhouse environmental and mechanical controls. The student is expected to:	(C) explain how to operate and maintain various water systems in a greenhouse.	Introduction to Greenhouse Management Field Trip: Greenhouse Field Trip: Landmark Nurseries
(7) The student propagates greenhouse crops. The student is expected to:	(A) analyze different methods of propagating greenhouse crops using sexual and asexual propagation methods;	Plant Propagation I Plant Propagation II Plant Tissue Culture I Plant Tissue Culture II
(7) The student propagates greenhouse crops. The student is expected to:	(B) propagate greenhouse crops using various methods such as using seeds, seedlings, plugs, cuttings, and tissue culture; and	Container Grown Plants Field Grown Plants Foliage Plant Production Potted Plant Production Bedding Plant Production
(7) The student propagates greenhouse crops. The student is expected to:	(C) investigate physiological conditions that affect plant propagation such as seed dormancy and root initiation.	Container Grown Plants Field Grown Plants Foliage Plant Production Potted Plant Production Bedding Plant Production
(8) The student identifies and investigates greenhouse crop production factors. The student is expected to:	(A) explain and demonstrate the chemical and physical differences in greenhouse media components;	Container Grown Plants Field Grown Plants Foliage Plant Production Potted Plant Production Bedding Plant Production
(8) The student identifies and investigates greenhouse crop production factors. The student is expected to:	(B) compare greenhouse growing mixes for factors such as drainage and nutrient-holding capacity;	Container Grown Plants Field Grown Plants Foliage Plant Production Potted Plant Production Bedding Plant Production
(8) The student identifies and investigates greenhouse crop production factors. The student is expected to:	(C) compare and contrast different containers, benches, and other production equipment used in greenhouse crop production;	Container Grown Plants Field Grown Plants Foliage Plant Production Potted Plant Production Bedding Plant Production
(8) The student identifies and investigates greenhouse crop production factors. The student is expected to:	(D) evaluate different methods of watering greenhouse crops;	Introduction to Greenhouse Management Field Trip: Landmark Nurseries
(8) The student identifies and investigates greenhouse crop production factors. The student is expected to:	(E) analyze the effect of nutrients on greenhouse plant growth;	Container Grown Plants Field Grown Plants Foliage Plant Production Potted Plant Production Bedding Plant Production

Knowledge and Skills Statement	Student Expectation	Specific Location
(8) The student identifies and investigates greenhouse crop production factors. The student is expected to:	(F) diagnose common nutrient deficiency symptoms found in greenhouse crops; and	Introduction to Greenhouse Management Horticulture Plant ID: Floral Horticulture Plant ID: Foliage Landscape Plant ID: Shrubs & Ground Covers Landscape Plant ID: Trees
(8) The student identifies and investigates greenhouse crop production factors. The student is expected to:	(G) develop fertilization plans that address greenhouse crop needs and environmental impacts.	Introduction to Greenhouse Management
(9) The student investigates pest identification and control methods in the greenhouse environment. The student is expected to:	(A) assess insect, pathogen, and weed infestations in a greenhouse;	Plant Pests: Bacterial Diseases Plant Pests: Fungal Diseases Plant Pests: Viruses Plant Pests: Sucking Insects Plant Pests: Chewing Insects Plant Pests: Weeds
(9) The student investigates pest identification and control methods in the greenhouse environment. The student is expected to:	(B) implement Integrated Pest Management in controlling an insect, pathogen, or weed problem;	Pesticides & Herbicides: An Introduction Pesticide Safety: Minimal Risk to the Applicator Pesticide Safety: Minimal Risk to the Environment
(9) The student investigates pest identification and control methods in the greenhouse environment. The student is expected to:	(C) use appropriate greenhouse pesticide application techniques and equipment;	Pesticides & Herbicides: An Introduction Pesticide Safety: Minimal Risk to the Applicator Pesticide Safety: Minimal Risk to the Environment
(9) The student investigates pest identification and control methods in the greenhouse environment. The student is expected to:	(D) research chemicals used to regulate plant growth in the greenhouse; and	Pesticides & Herbicides: An Introduction Pesticide Safety: Minimal Risk to the Applicator Pesticide Safety: Minimal Risk to the Environment
(9) The student investigates pest identification and control methods in the greenhouse environment. The student is expected to:	(E) examine pesticide labeling and safety data sheets.	Pesticides & Herbicides: An Introduction Pesticide Safety: Minimal Risk to the Applicator Pesticide Safety: Minimal Risk to the Environment
(10) The student performs greenhouse management business procedures. The student is expected to:	(A) market greenhouse crops;	Marketing Greenhouse Crops
(10) The student performs greenhouse management business procedures. The student is expected to:	(B) transport greenhouse crops;	Marketing Greenhouse Crops Inventory & Storing Plants
(10) The student performs greenhouse management business procedures. The student is expected to:	(C) analyze materials, labor, and administrative costs related to greenhouse production;	N/A
(10) The student performs greenhouse management business procedures. The student is expected to:	(D) analyze methods used to maintain crop quality during marketing and transport; and	Marketing Greenhouse Crops
(10) The student performs greenhouse management business procedures. The student is expected to:	(E) prepare a production schedule for a greenhouse crop.	N/A