Texas CTE

Horticultural Science (2024)

Knowledge and skills. D

1 The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to: D.1

- A identify career and entrepreneurship opportunities in the field of plant science and develop a plan for obtaining the education, training, and certifications required; D.1.A
- B model professionalism by continuously exhibiting appropriate work habits, solving problems, taking initiative, communicating effectively, listening actively, and thinking critically; D.1.B
- C model appropriate personal and occupational safety and health practices and explain the importance of established safety and health protocols for the workplace; D.1.C
- D analyze and interpret the rights and responsibilities, including ethical conduct and legal responsibilities, of employers and employees; and D.1.D
- E describe and demonstrate characteristics of good citizenship in the agricultural workplace, including promoting stewardship, community leadership, civic engagement, and agricultural awareness and literacy. D.1.E

2 The student develops a supervised agricultural experience program. The student is expected to: D.2

- A plan, propose, conduct, document, and evaluate a supervised agricultural experience program as an experiential learning activity; and D.2.A
- B use appropriate record-keeping skills in a supervised agricultural experience program. D.2.B

3 The student develops leadership skills through participation in an agricultural youth organization. The student is expected to: D.3

- A participate in youth agricultural leadership opportunities; D.3.A
- B review and participate in a local program of activities; and D.3.B
- C create or update documentation of relevant agricultural experience such as community service, professional, or classroom experiences. D.3.C

4 The student understands the history and progression of the horticulture industry. The student is expected to: D.4

- A trace how relevant historical advancements in the horticulture industry relate to current industry practices; D.4.A

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B identify and describe different disciplines of horticulture such as arboriculture, floriculture, olericulture, pomology, viticulture, turf management, and ornamental horticulture; D.4.B

C identify and research emerging technology in the horticulture industry; D.4.C

D identify current trends in the horticulture industry; and D.4.D

E compare types of horticulture industries in the different regions of Texas. D.4.E

5 The student identifies plant structures and their functions and needs. The student is expected to: D.5

A classify horticultural plants by their common and scientific names; D.5.A

B describe functional differences in plant structures, including roots, stems, flowers, leaves, and fruit; D.5.B

C identify pollination factors affecting plants and trees such as access to pollinators, wind, and hand pollination; D.5.C

D compare monocots and dicots; D.5.D

E analyze environmental needs of plants, including light, water, and nutrients; and D.5.E

F identify the components of a fertilizer label. D.5.F

6 The student develops technical knowledge and skills associated with the production of horticultural plants. The student is expected to: D.6

A classify horticultural plants based on taxonomy; D.6.A

B identify classifications of plants, including annuals, perennials, biennials, and evergreens, based on growing cycles; D.6.B

C identify horticultural plants based on their physical characteristics; D.6.C

D compare the reproduction of flowering and non-flowering horticultural plants; D.6.D

E select appropriate tools and equipment for production of horticultural plants; D.6.E

F demonstrate safe and appropriate use of tools and equipment; and D.6.F

G identify maintenance practices for hand tools, power tools, and equipment. D.6.G

7 The student understands plant propagation techniques and growing methods. The student is expected to: D.7

A identify asexual propagation methods for horticultural plants, including cuttings, grafting, budding, layering, and tissue culture; D.7.A

B propagate horticultural plants using asexual methods such as cuttings, grafting, budding, layering, and tissue culture; D.7.B

C manipulate the germination of seeds using various methods such as mechanical scarification, chemical scarification, and heat and cold treatments; D.7.C

D compare various soil-based growing media; and D.7.D

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E identify soilless growing methods used in the horticulture industry. D.7.E

8 The student manages and controls common pests, diseases, and deficiencies of horticultural plants. The student is expected to: D.8

A identify and manage common horticultural pests, diseases, and deficiencies; D.8.A

B identify and manage common weeds that impact horticultural production; D.8.B

C develop a plan for disease control using integrated pest management; D.8.C

D apply proper sanitation methods to prevent the spread of pests; D.8.D

E demonstrate safe and proper practices in selecting, applying, storing, and disposing of chemicals; and D.8.E

F review and explain the parts of a pesticide label. D.8.F

9 The student understands the concepts of ornamental plants and landscape design. The student is expected to: D.9

A compare landscaping methods that account for environmental variables such as water availability, soil type, light availability, and climate; D.9.A

B identify and select plants, including bedding plants, shrubs, trees, and turf grasses, for landscapes based on United States Department of Agriculture (USDA) hardiness zones; D.9.B

C design a landscape using design elements and principles; and D.9.C

D compare sustainability practices such as planting native plants, water conservation, and irrigation technology used in a landscape. D.9.D

10 The student demonstrates business skills used in the horticulture industry. The student is expected to: D.10

A identify opportunities for entrepreneurship in the horticulture industry; D.10.A

B identify practices to maintain business relationships; D.10.B

C describe and demonstrate correct procedures for handling customer sales transactions; D.10.C

D calculate pricing to maximize profit for wholesale and retail settings; D.10.D

E develop a plan to market horticultural products and services; and D.10.E

F formulate a budget for a horticultural enterprise. D.10.F