Department of Education | College, Career and Technical Education

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Landscaping and Turf Science

Primary Career Cluster:	Agriculture, Food, & Natural Resources
Consultant:	CTE.Standards@tn.gov
Course Code(s):	C18H16
Prerequisite(s):	*Greenhouse Management* (C18H17) or SDC: Introduction to Plant Science (C18H09)
Credit:	1
Grade Level:	12
Elective Focus - Graduation Requirements:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Agriculture, Food, & Natural Resources courses. In addition, this course satisfies the *Fine Arts* requirement for graduation.
POS Concentrator:	This course satisfies one out of two required courses to meet the Perkins V concentrator definition, when taken in sequence in the approved program of study.
Programs of Study and Sequence:	This is the fourth and final course in the *Horticulture Science* program of study.
Aligned Student Organization(s):	FFA: http://www.tnffa.org
Coordinating Work-Based Learning:	All Agriculture students are encouraged to participate in a Supervised Agricultural Experience (SAE) program. In addition, teachers who hold an active WBL certificate may offer placement for credit when the requirements of the state board's WBL Framework and the Department's WBL Policy Guide are met. For information, visit https://www.tn.gov/content/tn/education/career-and-technical-education/work-based-learning.html
Promoted Tennessee Student Industry Credentials:	All Agriculture students are encouraged to participate in a Supervised Agricultural Experience (SAE) program. In addition, teachers who hold an active WBL certificate may offer placement for credit when the requirements of the state board's WBL Framework and the Department's WBL Policy Guide are met. For information, visit https://www.tn.gov/content/tn/education/career-and-technical-education/work-based-learning.html
Teacher Endorsement(s):	048, 150, 448, and 950
Required Teacher Certifications/Training:	None
Teacher Resources:	https://www.tn.gov/education/career-and-technical-education/career-clusters/cte-cluster-agriculture-food-natural-resources.html Best for All Central: https://bestforall.tnedu.gov/

Approved April 10, 2015; Amended April 15, 2016; Revised July 20, 2018; Revised Feb. 8, 2019; Revised Nov. 2021

Course-At-A-Glance

CTE courses provide students with an opportunity to develop specific academic, technical, and 21st century skills necessary to be successful in career and in life. In pursuit of ensuring every student in Tennessee achieves this level of success, we begin with rigorous course standards which feed into intentionally designed programs of study.

Students engage in industry relevant content through general education integration and experiences such as career & technical student organizations (CTSO) and work-based learning (WBL). Through these experiences, students are immersed with industry standard content and technology, solve industry-based problems, meaningfully interact with industry professionals and use/produce industry specific, informational texts.

Using a Career and Technical Student Organization (CTSO) in Your Classroom

CTSOs are a great resource to put classroom learning into real-life experiences for your students through classroom, regional, state, and national competitions, and leadership opportunities. Below are CTSO connections for this course. This is not an exhaustive list.

- Participate in CTSO Fall Leadership Conference to engage with peers by demonstrating logical thought processes and developing industry specific skills that involve teamwork and project management.
- Participate in FFA career and leadership events (CDE/LDE) that align with this course including Agriscience Fair, Agricultural Communications, Agricultural Issues, Agricultural Sales, Extemporaneous Speaking, Floriculture, Nursery Landscaping, and Prepared Public Speaking.

For more ideas and information, view https://tnffa.org/.

Using Work-based Learning (WBL) in Your Classroom

Sustained and coordinated activities that relate to the course content are the key to successful work-based learning. Possible activities for this course include the following. This is not an exhaustive list.

- **Standards 1.1-1.2** | During a visit to a local industry site have the manager talk about safety in the workplace.
- **Standards 3.1-4.3 |** Have the students work with a landscaper on a real project.
- **Standards 5.1-5.2** | Have the students work with an interior landscaper in the field.
- **Standards 6.1-6.2** | Contact a nursery manager or landscaper to talk with the class about pest management and include their role as manager.
- **Standards7.1-8.3** | Work on-site with a nursery or turfgrass technician.
- **Standards 9.1-9.3** | Have the students do a modified internship or a project with a landscaper.

Course Description

Landscaping and Turf Science is an applied course designed to provide challenging academic standards and relevant technical knowledge and skills needed for further education and careers in landscape design, maintenance, and turf management. Content includes site analysis and planning, principles of design, and plant selection and care techniques. Upon completion of this course, proficient students will be prepared to pursue advanced study of landscaping and turf science at a postsecondary institution.

Course Standards

1. Introduction to Landscaping and Turf Management

1.1 Career Awareness: Gather and analyze **labor data** from sources such as the United States Bureau of Labor Statistics and the Tennessee Department of Labor to predict the employment outlook in landscaping and turf management careers. Summarize the **interpersonal, business, and technical skills** needed for a career in landscaping or turf management. Develop a resume for a selected occupation that includes documented development of **industry-related skills** (i.e., work experience, SAE records, and proficiency applications).

1.2 Occupational Safety: Explain **general occupational and horticulture industry safety standards**. Identify commonly used machinery and equipment and develop a checklist of associated safety and maintenance procedures. Assess and explain the concepts of the **worker protection standards**, complete required safety tests with 100 percent accuracy.

2. Tree and Shrub Selection and Maintenance

2.1 Nursery Plant Identification and Use: Identify the **basic parts of trees and shrubs**. Demonstrate the ability to visually identify and distinguish between **common tree and shrub species used for landscaping** and describe research-based practices in harvesting, transportation, transplanting, and care.

2.2 Nursery Plant Care and Maintenance: Summarize methods for **general care and maintenance of trees and shrubs**, including planting, pruning, mulching, irrigation, and fertilizing techniques. Justify the importance of **site evaluation, preparation, and consideration of hardiness zones** in the selection of trees and shrubs.

3. Landscaping Plant Selection and Maintenance

3.1 Selection of Ground Cover, Vines, and Plants: Visually **identify and distinguish** among **common ground cover, vines, and plants** used for landscaping. Evaluate the **function, form, and growth requirements** for common **perennials, annuals, and biennials.**

3.2 Care and Maintenance of Ground Cover, Vines, and Plants: Assess methods for **general care and maintenance of ground cover, vines, and plants**, including planting, pruning, mulching, and fertilizing techniques. Recommend **specific vines and ground covers to solve special landscaping issues**, and justify recommendations with technical evidence.

4. Turf Grass Selection and Maintenance

4.1 Turfgrass Species Selection: Compare and contrast the functions and components of common **turfgrass species**. Demonstrate the ability to visually identify and distinguish between turfgrass species and cultivars. Explain the **applications for specific uses for the different turfgrass species**.

4.2 Establishment and Maintenance: Describe **methods for the establishment and maintenance of turf grasses**, including soil preparation, installation, water, nutrient and pH needs, and fertilization techniques. Analyze **fertilizer requirements** and calculate appropriate **fertilizer ratios**. Draw conclusions about the **importance of site selection, site preparation, and consideration of hardiness zones** in the selection of turfgrass species and cultivars.

4.3 Special Turfgrass Management Practices: Evaluate and compare **special management needs of residential, commercial, and sports turf**. Identify management practices and **associated equipment** requirements for mowing, irrigation and weed, disease, and fungus control for common turfgrass species.

5. Commercial Interior Plantscaping

5.1 Interior Ornamental and Floral Plants: Identify and classify **basic ornamental and floral plants** (i.e. potted, cut) used for the commercial interior plantscapes, and summarize their **propagation, installation techniques, and maintenance requirements.** Construct interior displays using a variety of plant materials, including but not limited to foliage, flowering plants (both cut and potted), live, and permanent/silk plants.

5.2 Managing Interior Plantscapes: Identify and recommend effective **management practices for the interior environment,** including light, humidity, growing media, irrigation, disease, and pest control. Compare and contrast **decorative accessory items** (containers, planters, water features, permanent/silk plants, live plants) in the interior plantscape.

6. Pest Management

6.1 Pest and Pesticide Use: Identify and compare the **common landscape and turfgrass pests** and their respective **prevention and control methods**. Categorize the **basic types of pesticides** and describe their application methods, including but not limited to rate, environmental conditions, and reentry times. Calculate **proper formulations of pesticides** based upon label directions for common landscape and turfgrass pests.

6.2 Pesticide Safety: Demonstrate the ability to **properly mix and apply pesticides precisely**, attending to **important safety standards,** selection, handling, application, storage, and disposal.

7. Water Management

7.1 Principles of Xeriscaping: Describe the **seven principles of xeriscaping** and explain the **advantages and use of these principles** in landscapes.

7.2 Water Garden and Pool Management: Examine the various types of **water gardens and pools** and their **applications for landscape enhancement**. Develop a customer information packet outlining best **management practices to maintain a healthy water garden and pool**, addressing at minimum the following considerations: pH, nitrate, dissolved oxygen, algae, pollutants, filter requirements, and feed schedules.

7.3 Irrigation Systems: Compare and contrast different **irrigation systems** and summarize their **advantages and disadvantages**. Identify irrigation tools and system components and their function or application. Applying **basic plumbing principles**, calculate the water supply flow rate, head pressure requirements, and pipe and pump size considerations for a water garden, pool, or irrigation system. Identify and demonstrate the **plumbing skills required to install irrigation and water features** in a landscape or turf setting.

7.4 Designing and Bidding Irrigation Systems: Design an **irrigation system for a residential landscape** and develop a **bid presentation** that identifies the project timeline, required permits, costs of installation, and selected materials.

8. Landscape Design

8.1 Site Analysis: Interpret topographical and soil maps to **evaluate site suitability for selected landscape plants**. Create a **site analysis checklist** to evaluate a proposed landscape site.

8.2 Drafting Landscaping Designs: Develop a list of tools and skills necessary for **drafting landscape designs**, including computer-assisted methods. Demonstrate the **use of drafting tools, design equipment, and software** to create a basic landscape design.

8.3 Principles of Landscape Design: Explore **landscape design principles** to outline the **components of a comprehensive landscape design plan**. Prepare comprehensive landscape plans using prospective residential and commercial plots and develop a **landscape bid package and presentation** for each plan.

9. Business Principles of Landscaping and Turf Management

9.1 Developing A Successful Small Business: Compare and contrast different **small business models**. Illustrate the **use, advantages, and disadvantages of each model.** Research successful local landscaping and turfgrass management businesses and use evidence from research to evaluate the **skills and resources utilized for successful small business implementation.**

9.2 Interpreting Landscape Drawings: Demonstrate the ability to **interpret and read landscape drawings** by measuring and calculating materials needed to execute the plan. Evaluate **factors that affect profitability**.

9.3 Developing Estimates and Bid Packages: Explain the process for preparing a **price estimate for landscape designs and bid packages**. Using self-created or other templates, create a **price estimate and presentation to secure a bid on a landscape project**.

Standards Alignment Notes

References to other standards include:

- SAE: Supervised Agricultural Experience: All Agriculture students are encouraged to participate in a Supervised Agricultural Experience program to practice and demonstrate the knowledge and skills learned in their agriculture courses.
- AFNR: National Agriculture, Food, & Natural Resources (AFNR) Career Cluster Content Standards: Students engaged in activities outlined above should be able to demonstrate fluency in Standards PS and CS at the conclusion of the course.
- P21: Partnership for 21st Century Skills Framework for 21st Century Learning
    - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.