

Landscaping I

8036 36 weeks

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Acknowledgments

The components of this instructional framework were developed by the following curriculum development panelists:

- Elizabeth Borst, Instructor, Sherando High School, Frederick County Public Schools
- John Borst, Instructor, Millbrook High School, Frederick County Public Schools
- Wes Bray, Owner, Lawns and Gardens Plus, Virginia Beach
- David Love, Director of Landscaping and Grounds, Longwood University, Farmville
- Jennifer Mazza, Instructor, Advanced Career and Education Center at Hermitage, Henrico County Public Schools
- Dr. Cindy Smith, Owner, MowCow Lawn and Landscape, Fairfax Station
- Dr. Tom Tracy, Executive Director, Virginia Turfgrass Council, Virginia Beach
- Jimmy Viars, Grounds Manager, Gloucester County Public Schools
- Aaron Williams, President, Williams Landscape and Design Inc., Williamsburg
- Chapman Williams, Vice President, Williams Brothers Tree and Lawn Service, Staunton

Correlations to the Virginia Standards of Learning were reviewed and updated by:

- Leslie R. Bowers, English Teacher (ret.), Newport News Public Schools
- Vickie L. Inge, Mathematics Committee Member, Virginia Mathematics and Science Coalition
- Anne F. Markwith, New Teacher Mentor (Science), Gloucester County Public Schools
- Michael Nagy, Social Studies Department Chair, Rustburg High School, Campbell County Public Schools

The framework was edited and produced by the CTE Resource Center:

Leanne F. Tipton, Writer/Editor
Kevin P. Reilly, Administrative Coordinator

Virginia Department of Education Staff

LaVeta Nutter, Specialist, Agricultural Education and Related Clusters
Dr. Tricia S. Jacobs, CTE Coordinator of Curriculum and Instruction
Dr. David S. Eshelman, Director, Workforce Development and Initiatives
George R. Willcox, Director, Operations and Accountability

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Course Description

Suggested Grade Level: 11 or 12

Prerequisites: 8034

Landscaping offers skilled workers satisfying career opportunities in varying working environments. The expanding and ever-evolving green industry requires skilled workers for high-demand occupations offering educational and leadership opportunities. This course focuses on preparing students for entry-level employment, postsecondary opportunities, and advancement in the landscape design, construction, and maintenance industries.

As noted in [Superintendent's Memo #058-17 \(2-28-2017\)](#), this Career and Technical Education (CTE) course must maintain a maximum pupil-to-teacher ratio of 20 students to one teacher, due to safety regulations. The 2016-2018 biennial budget waiver of the teacher-to-pupil ratio staffing requirement does not apply.

Task Essentials Table

8036	Tasks/Competencies
+	Identify the role of supervised agricultural experiences (SAEs) in agricultural education.
+	Participate in an SAE.
+	Identify the benefits and responsibilities of FFA membership.
+	Describe leadership characteristics and opportunities as they relate to agriculture and FFA.
○	Apply for an FFA degree and/or an agricultural proficiency award.

<input checked="" type="radio"/>	Describe the importance of the landscaping and green industry to the Virginia and U.S. economies.
<input checked="" type="radio"/>	Research career opportunities related to landscaping.
<input checked="" type="radio"/>	Identify opportunities in continuing education, training, licensure, and certification.
<input checked="" type="radio"/>	Analyze trends in the landscape industry.
<input checked="" type="radio"/>	Identify professional organizations for the landscaping industry.
<input type="radio"/>	Research the historical development of landscape design.
<input checked="" type="radio"/>	Describe the landscape design process.
<input checked="" type="radio"/>	Relate the principles of art to landscape design.
<input checked="" type="radio"/>	Establish a client's landscaping requirements, using a residential inventory survey.
<input checked="" type="radio"/>	Analyze the landscape site.
<input checked="" type="radio"/>	Create a landscape plan for a residential or commercial property based on industry standards and recommended practices.
<input checked="" type="radio"/>	Design the site for function and aesthetics.
<input checked="" type="radio"/>	Interpret the landscape plan.
<input checked="" type="radio"/>	Explain the benefits of a landscape irrigation system.
<input checked="" type="radio"/>	Explain the benefits of a landscape lighting system.
<input type="radio"/>	Draw a landscape design, using industry graphics and standards.
<input checked="" type="radio"/>	Present the landscape plan.
<input type="radio"/>	Develop a landscaping portfolio.
<input checked="" type="radio"/>	Analyze a soil sample.
<input checked="" type="radio"/>	Examine best management practices for improving soil health.
<input checked="" type="radio"/>	Develop soil amendment recommendations for nursery and landscape plants.
<input checked="" type="radio"/>	Identify nursery and landscape plants.
<input checked="" type="radio"/>	Select plants for the landscape.
<input checked="" type="radio"/>	Demonstrate the use of landscape tools and related equipment.
<input checked="" type="radio"/>	Describe the guidelines for personal protective equipment (PPE) in the landscaping industry.

<input checked="" type="radio"/>	Identify common injuries in the landscaping industry.
<input checked="" type="radio"/>	Explain pertinent information from a container label and/or safety data sheet (SDS) according to the Environmental Protection Agency (EPA), Worker Protection Standard (WPS), and Occupational Safety and Health Administration (OSHA) regulations.
<input checked="" type="radio"/>	Describe emergency procedures in the landscaping workplace.
<input checked="" type="radio"/>	Identify landscaping tools and equipment.
<input checked="" type="radio"/>	Manage equipment and machinery to minimize energy consumption, maximize function, and protect water and other natural resources.
<input checked="" type="radio"/>	Adhere to safe operation procedures for hand tools, power tools, and landscaping or horticultural equipment and machinery.
<input checked="" type="radio"/>	Demonstrate the safe operation and use of landscape tools and related equipment.
<input checked="" type="radio"/>	Amend the soil based on a soil analysis and recommendations for the types of plants (i.e., annuals, biennials, perennials, bulbs, evergreens, coniferous, deciduous, vines, groundcovers, aquatics, shrubs, grasses, rushes, sedges, cacti, succulents, and tropicals).
<input checked="" type="radio"/>	Prepare the site for planting.
<input type="radio"/>	Purchase plants.
<input checked="" type="radio"/>	Install plant materials.
<input checked="" type="radio"/>	Identify cultural practices used in the landscaping industry.
<input checked="" type="radio"/>	Water landscapes.
<input checked="" type="radio"/>	Fertilize landscape plantings.
<input checked="" type="radio"/>	Describe mulching of landscape plantings.
<input checked="" type="radio"/>	Edge plant beds.
<input checked="" type="radio"/>	Prune landscape plants.
<input checked="" type="radio"/>	Maintain lawns.
<input checked="" type="radio"/>	Identify symptoms of nutritional deficiencies and toxicities of plants.
<input checked="" type="radio"/>	Manage pests, using Integrated Pest Management (IPM) strategies.
<input checked="" type="radio"/>	Apply best management practices in the landscape industry.
<input checked="" type="radio"/>	Explain how to store, handle, transport, and dispose of pesticides in a manner consistent with labeling, regulation and compliance, and adhering to all user safety guidelines.

<input checked="" type="radio"/>	Demonstrate procedures for calibrating a fertilizer spreader or injector using mathematical concepts.
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Legend: Essential Non-essential Omitted

Note: Competencies 39-43 have been added to ensure compliance with federal legislation: National FFA Organization's Federal Charter Amendments Act (Public Law 116-7, <https://www.congress.gov/116/plaws/publ7/PLAW-116publ7.pdf>). All inquiries may be sent to cte@doe.virginia.gov. Students are provided opportunities for leadership, personal growth, and career success. Instruction is delivered through three major components: classroom and laboratory instruction, supervised agricultural experience (SAE) program, and student leadership (FFA).

Curriculum Framework

Task Number 39

Identify the role of supervised agricultural experiences (SAEs) in agricultural education.

Definition

Identification should include

- defining an SAE program as *an opportunity for students to consider multiple careers and occupations in the agriculture, food, and natural resources (AFNR) industries, learn expected workplace behavior, develop specific skills within an industry, and apply academic and occupational skills in the workplace or a simulated workplace environment*
- researching the Foundational SAE
 - career exploration and planning
 - personal financial planning and management
 - workplace safety
 - employability skills for college and career readiness
 - agricultural literacy
- researching the Immersion SAE
 - entrepreneurship/ownership
 - placement/internships
 - research (experimental, analytical, invention)
 - school business enterprises
 - service learning
- developing a plan to participate in an SAE, based on personal and career goals
- researching available awards and degrees, based on SAE participation.

Teacher resource: [SAE Resources](#), National Council for Agricultural Education

Process/Skill Questions

- What are examples of SAEs related to this course and in the AFNR industries?
- Where can a copy of the Virginia SAE Record Book be found?
- What is an Immersion SAE?
- How does a placement/internship SAE differ from an ownership/entrepreneurship SAE?
- How does an SAE provide relevant work experience and contribute to the development of critical thinking skills?
- How is the SAE an extended individualized instructional component of a student's Career Plan of Study?
- How can an SAE be used to provide evidence of student growth and participation in authentic, work-related tasks?
- What are the four types of SAEs?
- What are the advantages of participating in work-based learning experiences and projects?
- How does one choose an appropriate SAE in which to participate?

Task Number 40

Participate in an SAE.

Definition

Participation should include

- developing, completing, or continuing a plan to participate in an SAE as a work-based learning experience, based on personal and career goals
- documenting experience, connections, positions held, and competencies attained, using the *Virginia SAE Record Book*
- researching available awards and degrees, based on SAE participation.

Teacher resources:

[FFA SAE](#)

[The Agricultural Experience Tracker](#)

Process/Skill Questions

- What are the advantages of participating in work-based learning experiences and projects?
- How do SAEs help prepare students for the workforce?
- What are some examples of SAEs in AFNR?

Exploring Leadership Opportunities through FFA

Task Number 41

Identify the benefits and responsibilities of FFA membership.

Definition

Identification should include

- benefits
 - listing opportunities to participate in community improvement projects and career development events (CDEs) and leadership development events (LDEs)
 - exploring leadership development opportunities
- responsibilities
 - researching the responsibilities of FFA officers, committees, and members
 - locating resources that guide participation in FFA activities
 - explaining the FFA Creed, Motto, Salute, and mission statement
 - explaining the meaning of the FFA emblem, colors, and symbols
 - explaining significant events and the history of the organization.

Process/Skill Questions

- How does one become an FFA member?
- What is the FFA's mission and how does it accomplish its mission?
- What are the benefits and responsibilities of FFA membership?
- What five FFA activities are available through the local chapter?
- What are some significant events in FFA history? How have these events shaped membership over time?
- What is the FFA program of activities (POA), and how is it used?

Task Number 42

Describe leadership characteristics and opportunities as they relate to agriculture and FFA.

Definition

Description should include

- examples of successful leaders
- types of leadership
 - autocratic
 - participative
 - laissez-faire
 - servant
 - followership
- positive leadership qualities and traits of successful leaders
- opportunities for participating in leadership activities in FFA
- demonstrating methods for conducting an effective meeting.

Process/Skill Questions

- Who are some successful leaders in the agriculture industry?
- What qualities make a successful leader?
- What are leadership traits?
- What is the difference between positive and negative leadership?

Task Number 43

Apply for an FFA degree and/or an agricultural proficiency award.

Definition

Application should include

- identifying types of FFA degrees
 - Greenhand
 - Chapter
 - State
 - American
- identifying proficiency award areas
 - entrepreneurship
 - placement
 - combined
 - agriscience research
- exploring CDEs and LDEs related to this course
- identifying all SAE criteria to be eligible for the award
- identifying the type of award
- applying for an FFA award.

Teacher resource: [FFA Agricultural Proficiency Awards](#)

Process/Skill Questions

- Where are the awards and their application criteria located?
- What are the benefits of winning an FFA award?
- What are the benefits and requirements of an FFA degree?
- What FFA awards are available?
- How does the FFA degree program reward FFA members in all phases of leadership, skills, and occupational development?
- What is the highest degree that can be conferred upon an FFA member at the national level?
- What are the requirements for a Greenhand FFA degree?

Gaining an Overview of the Landscaping Industry

Task Number 44

Describe the importance of the landscaping and green industry to the Virginia and U.S. economies.

Definition

Description should include

- explaining annual state and national revenues for landscaping services and how this relates to the state and national economies
- explaining industry employment statistics, both state and national, and how many jobs the landscaping industry provides.

Process/Skill Questions

- Why is the landscaping industry important to consumers and the economy?
- What services does the landscaping industry provide to consumers?

Task Number 45

Research career opportunities related to landscaping.

Definition

Research should include

- listing possible landscaping careers related to this course
- describing each career
- outlining the education and experience required for entry into related landscape industries
- exploring job opportunities, salaries, and benefits
- differentiating among careers as a(n)
 - landscape designer
 - landscape architect
 - landscape installer and manager
 - turf manager
 - arborists or tree care provider
 - irrigation specialist
- identifying local opportunities in the landscaping field and related educational requirements.

Many websites offer career exploration resources, including [Virginia Education Wizard](#), the Virginia Department of Education's Career Planning Guide, and the [FFA's Ag Explorer](#).

Process/Skill Questions

- What are the entry-level requirements for employment in the landscaping industry?
- How are landscape architects different from landscape designers?

- What experiences are necessary for a career in landscaping?

Task Number 46

Identify opportunities in continuing education, training, licensure, and certification.

Definition

Identification could include

- listing industry certification options and describing their importance
- exploring postsecondary education programs
- exploring employer training and professional growth options
- exploring Virginia cooperative extension services or workshops
- exploring professional landscaping organizations
- investigating professional conferences
- researching park and garden classes
- researching industry field days.

Process/Skill Questions

- How can certifications advance career plans?
- Where in Virginia can one receive an associate or bachelor's degree in horticulture?
- What opportunities are available through the local cooperative extension service?

Task Number 47

Analyze trends in the landscape industry.

Definition

Analysis should include

- investigating local and regional trends in the landscape industry
- researching professional landscape organizations
- identifying emerging technologies in the landscaping industry.

Process/Skill Questions

- What are current and past landscaping trends?
- What are the sources of information on developments in the landscape industry?
- How does one stay current with the latest developments in the landscape industry?

Task Number 48

Identify professional organizations for the landscaping industry.

Definition

Identification should include describing the benefits of belonging to a professional organization to include

- National Association of Landscape Professionals (NALP)
- American Horticultural Society
- American Society of Landscape Architects
- Virginia Nursery and Landscape Association
- Association of Professional Landscape Designers.

Process/Skill Questions

- What are the benefits of being a member of a professional organization?
- How have professional organizations improved working conditions for members of the landscape industry?

Designing the Landscape

Task Number 49

Research the historical development of landscape design.

Definition

Research should include

- analyzing the importance of studying landscapes from the past to understand modern landscapes
- identifying sources of information regarding historical landscapes
- identifying individuals who have played key roles in the development of the landscape design process, to include a selection of the following:
 - Andre Le Notre
 - Lancelot "Capability" Brown
 - Gertrude Jekyll
 - Lawrence Johnston
 - Vita Sackville-West
 - Frederick Law Olmsted
 - Beatrix Farrand
 - Ellen Biddle Shipman
 - Fletcher Steele
 - Thomas Church
 - John Brooks
 - Michael Dirr

- researching the factors guiding development, basic elements of design, and signature plants of historical landscape trends, such as
 - pleasure/medieval gardens
 - fantasy/Italian gardens
 - parterre gardens
 - geometric gardens
 - theatrical gardens
 - landscape gardens
 - English flower gardens
 - villa gardens
 - walled gardens
 - ornamental gardens
 - rosaries
 - rock and quarry gardens
 - wild and woodland gardens
 - sheltered gardens
 - exotic conservatories.

Process/Skill Questions

- Why is it important to study the contributions of individuals who played key roles in landscape design?
- Why is it important to study historical landscape trends?
- What are some of the pivotal gardens of landscape history?
- What are some examples of historical gardens that reflect the political climate of their era?

Task Number 50

Describe the landscape design process.

Definition

Description could include

- identifying the principles of landscape design
- performing a site analysis
- conducting a residential survey
- sketching or drawing a landscape design
- selecting landscape resources (e.g., plants and hardscapes)
- presenting the final design to a client.

Process/Skill Questions

- What are the crucial elements of a site analysis?
- What are the crucial elements of conducting a residential survey?
- What are the principle elements of design?

Task Number 51

Relate the principles of art to landscape design.

Definition

Relationship should include

- illustrating how the elements of design influence a landscaping plan
- using the principles of design while selecting plants for the plan
- analyzing landscapes for artistic qualities.

Process/Skill Questions

- How do the elements of design relate to landscape planning?
 - How are focal points established in a landscape design?
 - How can balance affect choices in a landscape design?
-

Task Number 52

Establish a client's landscaping requirements, using a residential inventory survey.

Definition

Establishment should include

- investigating the client's landscaping desires and needs by asking relevant questions
- communicating effectively with the prospective client
- developing a residential inventory survey suited to a typical residential property
- determining the local, state, and federal guidelines for the property.

Process/Skill Questions

- How are the landscaping needs of a client determined?
- What types of questions should the client be asked?
- What landscape-use areas need to be considered for development?

Task Number 53

Analyze the landscape site.

Definition

Analysis should include

- explaining the purpose of a site analysis
- sketching a base plan
- locating and recording utilities
- identifying and recording orientation
- observing plot topography
- determining soil characteristics (e.g., texture, drainage, depth, soil pH, nutrient analysis)
- identifying and recording existing vegetation
- identifying pest history and current or potential problems
- identifying areas of environmental sensitivity
- making linear measurements by pacing
- interpreting United States Department of Agriculture (USDA) hardiness zone maps for heat and cold
- identifying microclimates
- identifying and recording pleasant views and unpleasant views from the site.

Teacher resource: [Google Earth Pro](#)

Process/Skill Questions

- Which existing features of a landscape site have to be considered when planning a landscape?
- How do soil characteristics affect plant selection?
- How do microclimates affect a landscape?
- Why is it important to determine and record site conditions, including areas of environmental sensitivity?
- What sustainability practices need to be considered when analyzing the site and developing the landscape plan?

Task Number 54

Create a landscape plan for a residential or commercial property based on industry standards and recommended practices.

Definition

Creation of the plan could include

- adhering to the client survey
- establishing bed patterns
- designing patios and decks
- identifying construction materials
- investigating safety and construction-method requirements
- locating walks and paths
- locating trees
- maximizing winter sun energy and minimizing summer heat
- designing windbreaks
- framing a view
- designing visual screens.

Process/Skill Questions

- What types of materials are available for use in building hardscapes?
- How is the selection and placement of plant material critical in energy conservation, environmental benefits, and sustainability?
- How can the designer's choice of bed patterns affect the overall function of the design?

Task Number 55

Design the site for function and aesthetics.

Definition

Design could include

- demonstrating the use of line, form, texture, and color
- demonstrating the principles of design (e.g., unity, repetition, balance, emphasis, scale)
- developing bubble plans to identify specific landscape use areas, laying out a public area by
- designing walkways
- designing driveways and parking areas
- investigating turning radius and parking area, laying out patterns and dimensions
- identifying paving materials
- framing the house with trees
- designing shrub, laying out patterns
- styling open lawn area
- fashioning an outdoor living area by
- identifying design elements (e.g., enclosures, surfaced areas, plantings, garden accessories)
- planning a hedge
- designing high-interest plantings
- designing fences
- designing stone and brick walls
- designing water features and gardens
- developing a service area
- incorporating elements of sustainability into the landscape design
- using the principles of art to make the functional landscape aesthetically pleasing.

Teacher resource: MyCaert

Process/Skill Questions

- How can specific outdoor areas be developed to enhance residential properties?
- How can function and aesthetics dovetail in an architectural design?
- What are the techniques for making a functional landscape aesthetically pleasing?
- What principles and techniques are used in landscape design?

Task Number 56

Interpret the landscape plan.

Definition

Interpretation should include

- differentiating between estimates and bids
- executing a cost analysis of a landscape plan
- calculating quantities of materials needed for a landscape job
- estimating labor requirements
- adjusting prices to allow for overhead cost of materials and profit.

Teacher resource: [FFA Nursery/Landscape 2017-2021](#)

Process/Skill Questions

- What is the difference between an estimate and a bid?
- How does overhead differ from the cost of merchandise?
- How is profit determined?
- Why is profit important?
- What is the importance of estimating the cost of a construction project?

Task Number 57

Explain the benefits of a landscape irrigation system.

Definition

Explanation should include

- analyzing the need for irrigation in ornamental landscapes
- identifying the physical components of landscape irrigation systems
- comparing the applications of spray and drip irrigation
- examining the effect of water quality on the operation of irrigation systems
- designing irrigation system layouts
- practicing water pressure calculations
- outlining seasonal maintenance procedures
- describing the importance of a backflow preventer.

Process/Skill Questions

- Which irrigation systems are the most environmentally friendly?
- What type of spray patterns can be obtained with sprinkler heads?
- How are irrigation systems prepared for winter?
- What time of day should sprinkler systems be activated?
- Does water pressure change throughout an irrigation system?
- Why is a backflow preventer important? What are the maintenance requirements for it?

Task Number 58

Explain the benefits of a landscape lighting system.

Definition

Explanation should include

- identifying the voltage involved in landscape lighting
- analyzing the purpose of landscape lighting
- identifying the physical components of a landscape lighting system
- demonstrating the different effects achieved by landscape lighting, such as
 - shadow lighting
 - up lighting
 - down lighting
 - silhouette lighting
 - walkway lighting
 - security lighting.

Process/Skill Questions

- Where can supplies for landscape lighting be purchased?
- What level of electrician should install landscape lighting?
- What is the difference between shadow and silhouette lighting?
- Why would a client want landscape lighting controlled by a timer?

Task Number 59

Draw a landscape design, using industry graphics and standards.

Definition

Drawing should include

- identifying and using common drafting tools
- sketching plans on graph paper
- drawing plant symbols
- drawing construction material symbols
- using an engineer's scale to draw a landscape plan to scale
- using an architect's scale to draw a landscape plan to scale
- labeling plants and materials on the plan
- designing a suitable title block
- (optionally) using a computer-aided drawing (CAD) program.

Process/Skill Questions

- Why is it important to use standard industry graphics?

- Why is it important to know the basics of manually (i.e., hand) drawing before learning CAD?
- What is a title block? Why is it an essential piece of the drawing?
- Why is it important to draw a plan to scale?
- What are the common symbols used to represent plants on a landscape drawing?
- What are the landscaping principles and practices used in the residential, commercial, and recreational sectors?

Task Number 60

Present the landscape plan.

Definition

Presentation should include

- choosing a presentation medium
- drafting and practicing the presentation
- using sales and service skills, such as
 - product knowledge
 - client engagement or building a rapport with the client
 - active listening
 - concise communication
 - time management
 - conflict management and resolution
 - contract negotiation
 - closing skills
- presenting the main design elements of the proposed landscape according to the client's requirements (e.g., reflecting the client survey)
- demonstrating effective communication skills.

Process/Skill Questions

- What are the key elements of effective communication skills?
- What is considered appropriate dress for a professional presentation?
- What are the methods for delivering a presentation?
- What is the importance of oral and written skills when presenting the landscape plan?
- Why is an understanding of marketing principles and a fundamental knowledge of business management key to experiencing success as an entrepreneur in the landscaping industry?

Task Number 61

Develop a landscaping portfolio.

Definition

Developing a portfolio should include

- assembling a collection of landscape drawings, such as
 - plan views
 - elevation views
 - perspective views
 - axonometric views
- documenting the landscape installations digitally
- providing examples of computer-aided landscape designs and 3D imaging
- incorporating a summary of landscape maintenance projects
- supplying recommendations from clients
- publishing the portfolio in digital and hard-copy formats
- distributing the portfolio to potential clients.

Process/Skill Questions

- When is it appropriate to include digitally created landscape plans in a portfolio?
- How should a landscape portfolio be packaged?
- How can plant material knowledge be showcased in a portfolio?
- How important is the use of color-rendered drawings?

Gaining an Overview of the Importance of Soil and Plant Science in the Landscaping Industry

Task Number 62

Analyze a soil sample.

Definition

Analysis should include

- the collection and care of the sample
- the use of appropriate tools and equipment
- a sample free from contaminants and organic debris
- cores taken in a random pattern that are uniform across the area being sampled
- the removal of sample cores to an appropriate depth
- a thorough mixing of the sample
- a study of the soil for macronutrients, micronutrients, pH, composition of sand, silt, clay, and organic matter.

Process/Skill Questions

- What is the purpose of conducting a soil test prior to planting?
- How can the pH of soil be adjusted to increase or decrease acidity and/or alkalinity?

- What effect does pH have on nutrient availability?
- What plant species typically grow in acidic conditions? What plant species typically grow in alkaline conditions?

Task Number 63

Examine best management practices for improving soil health.

Definition

Examination should include

- the current state of the soil (e.g., organic matter, macronutrient, micronutrient availability)
- the planned use of the soil
- soil management practices (e.g., no-till farming, conservation tillage, crop rotation, cover cropping, mulching, grassed waterways, buffer strips).

Teacher resource: [Agriculture: Programs, Best Management Practices, and Topics of Interest](#), EPA

Process/Skill Questions

- What is organic matter?
- What effect does organic matter have on the physical and chemical properties of soil?
- What soil conservation practices can producers use to prevent soil degradation and build organic matter?
- What are the environmental costs for not using best management practices on a given area?
- What soil management practices are used in the landscaping industry?
- What is the importance of soil drainage and water-holding capacity as it relates to plant growth and development?
- How can soil drainage and water-holding capacity be improved?

Task Number 64

Develop soil amendment recommendations for nursery and landscape plants.

Definition

Development of soil amendment recommendations should be based on

- soil analysis results (i.e., physical, chemical, and biological properties of the soil)
- consideration of plant type(s)
- plant nutrient requirements
- improving structure, drainage, and moisture retention
- reducing compaction
- improving aeration.

Process/Skill Questions

- What information is given in a soil analysis?
- How many pounds of fertilizer will one need to apply to one's lawn at a rate of 1 pound of nitrogen per 1,000 square feet of a 50-pound bag of 26-5-10?
- How much phosphate and potash is one applying to a lawn when one applies 3.8 pounds of 26-5-10 fertilizer per 1,000 square feet?
- How much area can be covered with a 50-pound bag of 26-5-10 fertilizer at the rate of 1 pound of nitrogen per 1,000 square feet?
- How many 50-pound bags of 26-5-10 will one need to fertilize a 30,000-square-foot lawn at 1 pound of nitrogen per 1,000 square feet?
- What are the differences among chemical, physical, and biological properties of the soil?
- Why is knowledge of a plant species important when making nutrient recommendations?

Task Number 65

Identify nursery and landscape plants.

Definition

Identification should include

- using common and botanical names
- using a dichotomous key to identify plants according to their botanical characteristics
- classifying plants and turfgrass as annuals, biennials, and perennials
- using identification techniques to determine the species of an herbaceous plant, woody plant, or tree
- explaining the benefits of, or developing, a school arboretum/learning garden
- visiting gardens and nurseries.

Teacher resource: [FFA Nursery/Landscape CDE](#)

Process/Skill Questions

- Why is it important to know both botanical and common names of plants?
- Why is it important to visit a variety of gardens and nurseries?
- What do botanical names describe?
- Why is plant classification and biology important to understand as a landscaper?

Task Number 66

Select plants for the landscape.

Definition

Selection should include

- explaining how landscape plants are categorized

- listing plants suited for the following purposes, such as
 - groundcover
 - hedges
 - screens
 - foundation plantings
 - specimens
 - shade
 - ornamental trees
 - topiary
 - espalier
- identifying qualities to consider in selecting trees for the landscape
- describing plant nomenclature and its importance, such as
 - a description of the importance of plant taxonomy
 - the differentiation between a variety and a cultivar
 - a distinction among deciduous trees, broad-leaf evergreen trees, and needle-leaf evergreen trees
- describing how best to use flowers in the landscape.

Process/Skill Questions

- How are plants categorized and classified?
- What are the types of plants used in landscapes?
- What are the differences between a variety and a cultivar?
- What are the steps for selecting plants for a design?

Constructing the Landscape

Task Number 67

Demonstrate the use of landscape tools and related equipment.

Definition

Demonstration should include

- identifying construction tools and other equipment
- reading and following manufacturer recommendations
- performing daily or periodic maintenance procedures, such as replacing trimmer lines, cleaning tools, and sharpening blades
- verifying the condition of the tool or equipment before each use and repairing as necessary
- selecting the proper tool or machine for each job.

Process/Skill Questions

- Why is proper tool selection and tool maintenance important?

- Where can information be found on tool and equipment repairs?
- What should happen to a tool that is badly damaged and beyond repair?

Task Number 68

Describe the guidelines for personal protective equipment (PPE) in the landscaping industry.

Definition

Description should include

- identifying types, components, and usage requirements of PPE
- identifying situations that require PPE
- demonstrating safety procedures when using chemicals, equipment, and other supplies
- completing department safety certification.

Process/Skill Questions

- What PPE is required for personal safety in the landscaping industry?
- How does PPE keep workers in the landscaping industry safe?
- Why are there laws regarding safety procedures in the landscaping industry?

Task Number 69

Identify common injuries in the landscaping industry.

Definition

Identification should include the following injuries:

- Cuts and amputations
- Electrical
- Ergonomic
- Heat and cold stress
- Lifting and awkward postures
- Motor vehicle
- Noise
- Exposure
- Pesticide
- Chemical
- Slips, trips, and falls

Process/Skill Questions

- What are the most common injuries in the landscaping industry?
- What should one do if one has an accident while working?

- What types of ergonomic injuries can occur during landscape construction and maintenance?

Task Number 70

Explain pertinent information from a container label and/or safety data sheet (SDS) according to the Environmental Protection Agency (EPA), Worker Protection Standard (WPS), and Occupational Safety and Health Administration (OSHA) regulations.

Definition

Explanation should include how to identify and use pertinent information.

Process/Skill Questions

- What information is contained on an SDS?
- What is WPS and OSHA?

Task Number 71

Describe emergency procedures in the landscaping workplace.

Definition

Description should include risks associated with potential hazards, including exposure to

- chemicals
- noise
- machinery
- lifting
- construction hazards
- weather-related hazards

and the procedures to mitigate those hazards.

Process/Skill Questions

- What are some methods for preventing accidents and hazardous situations?
- What are some common health hazards in the landscaping industry?
- What emergency procedures should be in place in the event of an accident?

Task Number 72

Identify landscaping tools and equipment.

Definition

Identification should include

- hand tools
 - shovels, spades, and scoops
 - hoes
 - forks
 - rakes
 - pruners
 - shears
 - knives
 - saws
 - spreaders
 - sprayers
 - specialty tools
- power tools
 - electric
 - gas
- power equipment
 - cutting
 - soil digging
 - soil moving
 - tillage
 - tractors
 - transport
- explaining the safe use and operation of landscape tools and equipment
- storage and maintenance requirements.

Process/Skill Questions

- What are some examples of two-cycle engine equipment used in the landscaping industry?
- What is the difference between direct and pulley-drive electric motor powered tools?
- What are some essential requirements for maintaining and storing hand tools?
- What types of equipment use four-cycle engines?

Task Number 73

Manage equipment and machinery to minimize energy consumption, maximize function, and protect water and other natural resources.

Definition

Management should include

- selecting and maintaining equipment
- ensuring access to product/equipment owner's manuals
- developing a calibration schedule for spreading and spraying equipment.

Process/Skill Questions

- Why are calibration schedules important for spreaders and spraying equipment?
- How does ensuring proper calibration of equipment assist with the protection of water and other natural resources?

Task Number 74

Adhere to safe operation procedures for hand tools, power tools, and landscaping or horticultural equipment and machinery.

Definition

Adherence should include

- following classroom and school safety policies and guidelines
- following manufacturer safety recommendations and guidelines
- following OSHA standards
- inspecting equipment prior to use
- checking the area for hazards
- reviewing steps for starting, using, and stopping
- warning others in the area of work
- wearing PPE
- being aware of electrical, chemical, and fire hazards
- applying first aid
- using eye wash stations
- reporting personal injuries to supervisors
- reporting tool and equipment defects.

Process/Skill Questions

- How can the choice of clothing affect the safe use of landscaping tools and equipment?
- How do classroom and school safety policies prevent accidents?
- Where can information on safety operation procedures for operating hand or power tools be located?
- Why are earbuds not considered safety equipment?

Task Number 75

Demonstrate the safe operation and use of landscape tools and related equipment.

Definition

Demonstration should include

- identifying construction tools and other equipment

- reading and following manufacturer recommendations and guidelines
- performing daily or periodic maintenance procedures (i.e., replacing trimmer lines, cleaning tools, and sharpening blades)
- verifying the condition of the tool or equipment before each use and having it repaired, as necessary
- performing equipment pre-operational check
- selecting the proper tool or machine for each job
- cleaning and maintaining equipment after each use
- storing tools and equipment as required.

Process/Skill Questions

- Why is proper tool selection and tool maintenance important?
- Where can information be found on tool and equipment repairs?
- What should one do if a tool is badly damaged and beyond repair capabilities?

Task Number 76

Amend the soil based on a soil analysis and recommendations for the types of plants (i.e., annuals, biennials, perennials, bulbs, evergreens, coniferous, deciduous, vines, groundcovers, aquatics, shrubs, grasses, rushes, sedges, cacti, succulents, and tropicals).

Definition

Amendments of the soil should be based on the

- type of plant
- plant nutrient requirement
- soil analysis results (i.e., chemical, physical, and biological properties).

Process/Skill Questions

- What information does a soil analysis provide?
- How many pounds of fertilizer will one need to apply to one's lawn at a rate of 1 pound of nitrogen per 1,000 square feet of a 50-pound bag of 26-5-10?
- How much phosphate and potash is one applying to a lawn when one applies 3.8 pounds of 26-5-10 fertilizer per 1,000 square feet?
- How much area can be covered with a 50-pound bag of 26-5-10 fertilizer at the rate of 1 pound of nitrogen per 1,000 square feet?
- How many 50-pound bags of 26-5-10 will one need to fertilize a 30,000-square-foot lawn at 1 pound of nitrogen per 1,000 square feet?
- What are the differences between chemical, physical, and biological properties of the soil?
- Why is knowledge of a plant species important when making nutrient recommendations?

Task Number 77

Prepare the site for planting.

Definition

Preparation should include

- interpreting the specifications of a planting plan
- measuring and calculating the slope of a hillside
- conducting soil testing
- describing staking out or marking bed lines in the landscape site
- describing proper landscape bed preparation
- describing the elements necessary for good plant growth.

Process/Skill Questions

- What methods can be used to determine the slope of a hill?
- Why are soil amendments used when preparing a landscape site for planting?
- What is the correct procedure for collecting soil samples?

Task Number 78

Purchase plants.

Definition

Purchasing should include

- identifying desirable branching structures and trunk quality
- inspecting the roots of containerized plants
- distinguishing among balled-and-burlapped, containerized, and bare-root harvest methods
- inspecting plants for pests
- studying industry catalogs for size selections and prices
- determining the requirements for preserving plant viability
- preparing plants for transport and transplant.

Process/Skill Questions

- What are the differences among balled-and-burlapped, containerized, and bare-root plants?
- What are the root-growth characteristics of a well-grown containerized plant?
- How should the root-ball size relate to the plant size?

Task Number 79

Install plant materials.

Definition

Installation should include

- applying best management practices for the installation of landscapes
- describing the steps involved in planting practices
- demonstrating the handling, transportation, and installation of plant material, according to industry standards and guidelines
- planting balled-and-burlapped trees
- planting containerized trees and shrubs
- staking and tying newly planted trees
- planting herbaceous perennials
- spacing and installing groundcover plantings
- planting annual flowers
- planting bulbs
- demonstrating watering or irrigation methods for newly planted stock.

Process/Skill Questions

- What are the recommended steps to take when planting landscape plants?
- Why should newly planted trees be staked?
- How is the quantity of groundcover plants calculated from a plan?
- What are the planting procedures for nursery stock?
- Why is it important to till a planting bed to a depth of 8-12 inches?
- Why is it recommended to plant woody ornamentals and herbaceous perennials in the fall and winter?
- How do soil amendments contribute to an overall healthier plant environment?
- Why should one avoid placing granular fertilizer in the planting hole?
- How does applying 3-5 inches of mulch on the soil surface after planting help to conserve moisture and maintain a uniform soil temperature?
- When is the best time to irrigate? Why?
- Why is infrequent and thorough watering the best formula for a healthy landscape?
- How long should plants be watered? Why?
- What are some advantages of raised beds?

Maintaining the Landscape

Task Number 80

Identify cultural practices used in the landscaping industry.

Definition

Identification could include

- turf
 - mowing
 - fertility
 - seeding or overseeding
 - aeration
 - irrigation
 - cultivation
 - drainage
 - pest management
 - pest action levels
 - scouting
 - monitoring
 - cultural
 - biological
 - mechanical
 - chemical
- plant selection
 - pest-resistant varieties
 - native plants
 - fertilization
 - mulching
 - pruning
 - weed control.

Process/Skill Questions

- How can improper cultivation lead to poor turf health?
- What factors need to be taken into consideration when designing an irrigation system?
- What factors need to be considered when deciding the amount of nitrogen to apply to turf?
- How can improperly cut grass cause a decrease in turf quality?

Task Number 81

Water landscapes.

Definition

Watering should include

- identifying the water needs of the plants in the landscape
- using recommended irrigation rates
- identifying the symptoms of excessive watering and water stress in plants
- demonstrating the use of surface irrigation methods, such as hand-watering, portable sprinklers, and soaker hoses
- setting and operating automatic irrigation devices
- winterizing automatic irrigation systems
- repairing damaged irrigation heads and pipes
- designing an automatic watering system for a containerized garden

- collecting, measuring, and recording the quantity of water from rain and overhead irrigation
- explaining the specific plant water requirements.

Process/Skill Questions

- What are the advantages of the various irrigation methods available to landscapers?
- How does water quality affect plant health?
- Why should one record the quantity of water from rainfall and overhead irrigation?
- What are the signs of moisture stress?
- What effect does water stress have on the health of plants?
- How do correct planting procedures affect water efficiency in a landscape planting?
- What are some techniques to encourage healthy root growth and development?

Task Number 82

Fertilize landscape plantings.

Definition

Fertilization should include

- identifying types of fertilizers
- interpreting information on a fertilizer label
- describing methods of fertilizing landscape plantings
- determining when plants should be fertilized
- developing a fertilization schedule
- fertilizing plants with granular fertilizer, measuring plants (i.e., caliper or spread), and calculating the quantity of fertilizer needed
- broadcasting fertilizer on the surface.

Process/Skill Questions

- What are the methods of fertilizing landscape plantings?
- What calculations need to be considered when calibrating rotary and drop spreaders?
- What are the advantages of the rotary and drop spreader?
- Why is it important to select the appropriate fertilizer for a plant?
- What are the benefits of using slow-release fertilizers?
- Why should over-fertilization be avoided?

Task Number 83

Describe mulching of landscape plantings.

Definition

Description should include

- listing the advantages of mulching landscape plantings
- listing mulching materials
- differentiating between organic and inorganic mulches
- identifying the advantages of landscape fabrics
- determining the quantity of mulch needed for a given area
- applying organic mulches.

Process/Skill Questions

- Why is mulch used in landscaping?
- What are the typical organic mulches that are used in landscaping?
- What are the typical inorganic mulches that are used in landscaping?
- How should mulch be applied to landscape plants?
- How is the mulch quantity calculated?
- How are trees mulched?

Task Number 84

Edge plant beds.

Definition

Edging should include

- edging beds naturally, using a nursery spade
- edging beds that have recessed brick or other paving materials around them
- measuring the perimeter of a bed and calculating quantity of edging material required
- installing aluminum, steel, or vinyl bed edging.

Process/Skill Questions

- What materials might be used to edge beds?
- What are the advantages of using construction materials to edge beds?
- How can one measure the perimeter of a free-form shaped bed?
- Why is it important to not edge around trees?
- What are the acceptable ways for edging a landscape bed?

Task Number 85

Prune landscape plants.

Definition

Pruning could include

- identifying and selecting common pruning tools
- safely using, cleaning, sharpening, and storing pruning tools and other equipment
- determining the best season to prune types of plants
- explaining how woody landscape plants heal their wounds
- pruning shade trees to improve their health and safety
- pruning deciduous flowering shrubs
- pruning evergreen shrubs
- shearing a hedge or topiary
- espaliering a plant
- pruning and deadheading herbaceous perennials
- renovating an old shrub by pruning
- shearing ornamental grasses.

Process/Skill Questions

- What tools are used for pruning woody landscape plants?
 - When is the best time to prune deciduous trees?
 - When is the best time to prune flowering shrubs?
 - Why are woody plants pruned?
 - How are herbaceous perennials and ornamental grasses pruned?
-

Task Number 86

Maintain lawns.

Definition

Maintenance should include

- determining the best time of year to fertilize turf
- differentiating between the cultural requirements of cool-season and warm-season grasses
- interpreting a soil sample analysis to determine the best fertilization practices
- determining how much fertilizer is needed to give the right amount of nitrogen to a specified area
- adjusting the pH of turf soils
- spreading fertilizer, using a drop spreader or a rotary spreader
- executing good mowing practices
- determining the best mowing height for a species of turf grass
- operating a rotary mower
- removing excessive clippings, when necessary
- removing thatch by hand or by thatching machine
- aerating turf-grass soil
- overseeding turf
- repairing worn areas in turf.

Process/Skill Questions

- What are the typical cool-season turf grasses?
- What are the typical warm-season turf grasses?
- What is the transition zone?
- What criteria determines the best type of turf grass to plant in a given area?
- What does a soil test reveal and how is this information beneficial to a landscaper?

Task Number 87

Identify symptoms of nutritional deficiencies and toxicities of plants.

Definition

Identification should include distinguishing the cause of poor plant health by observing

- the appearance of the plant (i.e., plant color, stunting, wilt, etc.)
- plant symptoms (i.e., chlorosis, flecking, damping-off, etc.)
- signs of the causal agent (i.e., tracks, bite marks, chemical residue, frass, etc.)
 - biotic
 - insects
 - mites
 - fungi
 - bacteria
 - nematodes
 - viruses
 - parasitic plants
 - protozoa
 - animals
 - abiotic
 - nutrient imbalances
 - drought
 - excess soil moisture
 - limited light
 - reduced oxygen availability
 - air pollution
 - soil pH extremes
 - pesticide toxicity
 - compaction
 - cultural practices
 - mechanical damage
 - temperature extremes.

Process/Skill Questions

- What is damping-off, and what are the possible causes?
- What is stunting, and what are the causes?
- What causes honeydew on plants, and what are possible treatments?

Task Number 88

Manage pests, using Integrated Pest Management (IPM) strategies.

Definition

Management should include

- identifying the major categories of pests
- explaining the life cycles of common plant pests
- recognizing signs of pest damage
- identifying the major categories of weeds
- identifying beneficial insects
- explaining the difference between selective and nonselective herbicides
- following safety precautions when handling and using pesticides
- discussing the importance of IPM
- recording pest problems in a school landscape
- developing pest control schedules for ornamental plantings and turf grass
- describing how to control weeds with preemergence herbicide
- describing how to control weeds with postemergence herbicide
- identifying and controlling insects and related pests on trees and shrubs
- identifying and controlling foliar diseases
- maintaining pesticide application records.

Process/Skill Questions

- What is IPM?
- How are herbicides selected?
- What are important safety practices to follow when using pesticides?
- How might one diagnose plant diseases based on symptoms exhibited by the plant(s)?
- How might one diagnose insect damage, infestation, and the need to report information to authorities?

Task Number 89

Apply best management practices in the landscape industry.

Definition

Application should include

- reducing pollution
- conserving water
- following a fertilizer application schedule
- developing pesticide applications.

Process/Skill Questions

- What are some best management practices that will ensure water conservation?
- What are some best management practices used in the landscaping industry to reduce pollution?

Task Number 90

Explain how to store, handle, transport, and dispose of pesticides in a manner consistent with labeling, regulation and compliance, and adhering to all user safety guidelines.

Definition

Explanation should include

- describing personal safety considerations and precautions when working with pesticides
- describing an emergency response plan
- describing how improperly mixed and stored pesticides and pesticide spills and/or leakages can contaminate ground and surface water
- describing how accidental spills and leakages can have serious health and environmental consequences.

Process/Skill Questions

- What are some personal safety precautions one should take when working with pesticides?
- How can accidental spills and leakages have detrimental effects on health and the environment?

Task Number 91

Demonstrate procedures for calibrating a fertilizer spreader or injector using mathematical concepts.

Definition

Demonstration should include selecting the calibration method for the type of spreader being used (e.g., rotary, drop).

Teacher resource: [Spreader Calibration](#), Lawn Care Academy

Process/Skill Questions

- What is the weight of the fertilizer that must be applied in the calibration run to have the spreader deliver 1.6 pounds fertilizer per 1,000 square feet, assuming the swath width of the spreader is 3 feet and the test strip is 100 feet long?
- How much fertilizer will be needed to apply 0.5 pound nitrogen (N) per 1,000 square feet to the turf, when applying a 30-0-10 fertilizer at a rate of 1 pound of N per 1,000 square feet, making two coverage passes perpendicular to each other, with each pass delivering half the desired rate (0.5 pound N per 1,000 square feet)?

SOL Correlation by Task

39	Identify the role of supervised agricultural experiences (SAEs) in agricultural education.	English: 11.3, 11.5, 12.3, 12.5
40	Participate in an SAE.	English: 11.5, 11.8, 12.5, 12.8
41	Identify the benefits and responsibilities of FFA membership.	English: 11.5, 11.6, 11.7, 11.8, 12.5, 12.6, 12.7, 12.8
42	Describe leadership characteristics and opportunities as they relate to agriculture and FFA.	English: 11.5, 12.5 History and Social Science: VUS.8, VUS.9, VUS.10, VUS.11, WHII.8, WHII.10, WHII.11
43	Apply for an FFA degree and/or an agricultural proficiency award.	English: 11.5, 12.5
44	Describe the importance of the landscaping and green industry to the Virginia and U.S. economies.	English: 11.5, 12.5
45	Research career opportunities related to landscaping.	English: 11.5, 11.8, 12.5, 12.8 History and Social Science: GOVT.16
46	Identify opportunities in continuing education, training, licensure, and certification.	English: 11.5, 11.8, 12.5, 12.8 History and Social Science: GOVT.16
47	Analyze trends in the landscape industry.	English: 11.5, 11.8, 12.5, 12.8
48	Identify professional organizations for the landscaping industry.	English: 11.5, 11.8, 12.8
49	Research the historical development of landscape design.	English: 11.5, 11.8, 12.5, 12.8
50	Describe the landscape design process.	English: 11.5, 11.8, 12.5, 12.8
51	Relate the principles of art to landscape design.	English: 11.5, 12.5
52	Establish a client's landscaping requirements, using a residential inventory survey.	English: 11.1, 11.5, 11.6, 11.7, 11.8, 12.1, 12.5, 12.6, 12.7, 12.8
53	Analyze the landscape site.	English: 11.5, 11.6, 11.7, 11.8, 12.5, 12.6, 12.7, 12.8 Science: ES.8
54	Create a landscape plan for a residential or commercial property based on industry standards and recommended practices.	English: 11.1, 12.1
55	Design the site for function and aesthetics.	English: 11.5, 12.5 Mathematics: G.3, G.4, G.11
56	Interpret the landscape plan.	English: 11.5, 12.5
57	Explain the benefits of a landscape irrigation system.	English: 11.5, 12.5
58	Explain the benefits of a landscape lighting system.	English: 11.5, 12.5
59	Draw a landscape design, using industry graphics and standards.	Mathematics: G.3, G.4
60	Present the landscape plan.	English: 11.1, 11.6, 11.7, 12.1, 12.6, 12.7

61	Develop a landscaping portfolio.	English: 11.1, 11.2, 11.5, 11.6, 11.7, 12.1, 12.2, 12.5, 12.6, 12.7
62	Analyze a soil sample.	English: 11.5, 12.5 Science: ES.8
63	Examine best management practices for improving soil health.	English: 11.8, 12.8
64	Develop soil amendment recommendations for nursery and landscape plants.	English: 11.5, 12.5, 12.8
65	Identify nursery and landscape plants.	English: 11.5, 12.5 Science: BIO.4
66	Select plants for the landscape.	English: 11.5, 11.6, 11.7, 12.5, 12.6, 12.7
67	Demonstrate the use of landscape tools and related equipment.	English: 11.5, 11.8, 12.5, 12.8
68	Describe the guidelines for personal protective equipment (PPE) in the landscaping industry.	English: 11.5, 11.8, 12.5, 12.8
69	Identify common injuries in the landscaping industry.	English: 11.5, 12.5
70	Explain pertinent information from a container label and/or safety data sheet (SDS) according to the Environmental Protection Agency (EPA), Worker Protection Standard (WPS), and Occupational Safety and Health Administration (OHSA) regulations.	English: 11.5, 12.5 Science: CH.1
71	Describe emergency procedures in the landscaping workplace.	English: 11.5, 12.5
72	Identify landscaping tools and equipment.	English: 11.5, 12.5
73	Manage equipment and machinery to minimize energy consumption, maximize function, and protect water and other natural resources.	English: 11.6, 11.7, 12.6, 12.7
74	Adhere to safe operation procedures for hand tools, power tools, and landscaping or horticultural equipment and machinery.	English: 11.5, 11.8, 12.5, 12.8
75	Demonstrate the safe operation and use of landscape tools and related equipment.	English: 11.5, 12.5
76	Amend the soil based on a soil analysis and recommendations for the types of plants (i.e., annuals, biennials, perennials, bulbs, evergreens, coniferous, deciduous, vines, groundcovers, aquatics, shrubs, grasses, rushes, sedges, cacti, succulents, and tropicals).	
77	Prepare the site for planting.	English: 11.5, 12.5
78	Purchase plants.	English: 11.5, 12.5
79	Install plant materials.	English: 11.5, 12.5
80	Identify cultural practices used in the landscaping industry.	English: 11.5, 12.5
81	Water landscapes.	English: 11.5, 12.5
82	Fertilize landscape plantings.	English: 11.5 Science: BIO.4
83	Describe mulching of landscape plantings.	English: 11.5, 11.6, 11.7, 12.5, 12.6, 12.7 Mathematics: G.3
84	Edge plant beds.	English: 11.5, 12.5
85	Prune landscape plants.	English: 11.5, 12.5
86	Maintain lawns.	English: 12.5

87	Identify symptoms of nutritional deficiencies and toxicities of plants.	English: 12.5 Science: BIO.8
88	Manage pests, using Integrated Pest Management (IPM) strategies.	English: 12.5 Science: BIO.4
89	Apply best management practices in the landscape industry.	
90	Explain how to store, handle, transport, and dispose of pesticides in a manner consistent with labeling, regulation and compliance, and adhering to all user safety guidelines.	English: 11.5, 12.5
91	Demonstrate procedures for calibrating a fertilizer spreader or injector using mathematical concepts.	

FFA Information

The National FFA is an organization dedicated to preparing members for leadership and careers in the science, business, and technology of agriculture. Local, state, and national activities and award programs provide opportunities to apply knowledge and skills acquired through agriculture education.

For additional information about the student organization, see the [National FFA website](#) and the [Virginia FFA Association website](#).

Entrepreneurship Infusion Units

Entrepreneurship Infusion Units may be used to help students achieve additional, focused competencies and enhance the validated tasks/competencies related to identifying and starting a new business venture. Because the unit is a complement to certain designated courses and is not mandatory, all tasks/competencies are marked “optional.”

Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- Certified Grounds Technician Test
- Certified Turfgrass Professional Examination
- Chesapeake Bay Landscape Professional, Associate (CBLP-A) Examination
- College and Work Readiness Assessment (CWRA+)
- Customer Service Examination
- Customer Service Specialist (CSS) Examination
- Horticulture-Landscaping Assessment
- Landscape Management Certification Examination
- National Career Readiness Certificate Assessment
- Urban Forestry Certification Test
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: *A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.*

- Agricultural Business Fundamentals I (8022/36 weeks)
- Agricultural Business Management III (8026/36 weeks)
- Agricultural Business Operations II (8024/36 weeks)
- Applied Agricultural Concepts (8072/18 weeks)
- Applied Agricultural Concepts (8073/36 weeks)
- Floriculture (8038/36 weeks)
- Greenhouse Plant Production and Management (8035/36 weeks)
- Horticulture Sciences (8034/36 weeks)
- Introduction to Plant Systems (8007/36 weeks)
- Landscaping II (8039/36 weeks)
- Turfgrass Management (8051/36 weeks)
- Turfgrass Management, Advanced (8054/36 weeks)

Career Cluster: Agriculture, Food and Natural Resources	
Pathway	Occupations
Agribusiness Systems	Agricultural Products Sales Representative Farm Products Purchasing Agent and Buyer Sales Manager
Environmental Service Systems	Environmental Compliance Inspector Environmental Sampling and Analysis Technician Toxicologist Turf Farmer
Plant Systems	Agricultural Products Sales Representative Botanist Certified Crop Advisor Crop Grower Golf Course Superintendent Nursery and Greenhouse Manager

Career Cluster: Agriculture, Food and Natural Resources	
Pathway	Occupations
	Ornamental Horticulturist Plant Breeder/ Geneticist Secondary School Teacher Soil and Plant Scientist Tree Surgeon Turf Farmer