# Landscape Design Ag 330

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### Nursery/Landscape Careers

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</table>
| 1. Students will research one historical figure in the history of landscape design.  
2. Students will explore a career in nursery or landscape design, determine the specifications of the career and present to the class. | 0 | Landscape Design Historical Profile Assignment Sheet  
Nursery & Landscape Design Career Assignment Sheet | Nursery & Landscape Design Career Assignment Grading Sheet  
Two quiz questions from students about careers |

### Landscape Design Drafting

1. Students will be able to use drafting equipment.  
2. Students will be able to measure and reproduce lines drawn to scale.  
3. Students will be able to practice landscape lettering.  
4. Students will be able to render symbols used in landscape designing.  
5. Students will be able to redraw a house plan footprint in a different scale.  
6. Students will be able to reproduce different symbols used in landscape design.  
7. Students will be able to reproduce a landscape design plan label.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Power Points</th>
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</tr>
</thead>
</table>
| Landscape Design Drafting Equipment | House plan footprint Student Handout  
Scale Student Sheet  
Circle and Angle Student Sheet  
Landscape Symbol House Plan Student Sheet  
Plan Label Student Sheet  
Plan Label Guide Student Sheet  
Lettering Student Sheet  
Lettering Student Handout  
Blank Lettering Student Sheet  
Low & High Gravity Lettering Student Sheet  
General & Branched Trees Student Sheet  
Broadleaf Trees Student Sheet  
Mulch & Ground Cover Student Sheet  
Needle, Grasses, & Weeping Trees | Landscape Design Drafting Quiz  
Landscape Design Drafting Quiz Master |
### Elements & Principles of Landscape Design

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<th>Student Handouts</th>
<th>Evaluations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to identify and demonstrate the Elements of Landscape Design.</td>
<td>Elements and Principles of Landscape Design Color Landscape Examples</td>
<td>Elements &amp; Principles of Design Student Sheet Elements &amp; Principles Flashcards Color Wheel Student Sheet Mandala Student Sheet</td>
<td>Elements &amp; Principles Quiz Elements &amp; Principles Quiz Master</td>
</tr>
<tr>
<td>2. Students will be able to identify and demonstrate the Principles of Landscape Design.</td>
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<tr>
<td>3. Students will be able to identify the colors on a color wheel.</td>
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<tr>
<td>4. Students will be able to identify color values: tints, tones, &amp; shades.</td>
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<tr>
<td>5. Students will be able to identify different color harmonies.</td>
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</table>

### Planning Landscape Designs

<table>
<thead>
<tr>
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<th>Power Points</th>
<th>Student Handouts</th>
<th>Evaluations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to conduct a client evaluation to determine wants and needs of a potential landscape design client.</td>
<td>The Landscape Design Process Coloring Techniques</td>
<td>Client Evaluation Site Analysis Plan Check List Bubble Diagram Plan Check List Landscape Design Standard Measurements Student Information Sheet Flower Bed Design Student Sheet Low-Maintenance Landscape Design Planning Student Handout Coloring Techniques Student Handout</td>
<td>Site Analysis Grading Sheet Bubble Diagram Grading Sheet Final Plan Grading Sheet Planning Landscape Design Quiz Planning Landscape Design Quiz Master</td>
</tr>
<tr>
<td>2. Students will be able to create a base map for a landscape design.</td>
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<tr>
<td>3. Students will be able to conduct a site analysis for a landscape design.</td>
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<tr>
<td>4. Students will be able to draw a bubble diagram based on information gathered from the site analysis.</td>
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<tr>
<td>5. Students will be able to create a final design based on the bubble diagram.</td>
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<td>6. Students will be able to create a legend or key for their final design.</td>
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<tr>
<td>7. Students will be able to add color to the final design.</td>
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</tbody>
</table>
8. Students will be able to create a planting plan based on their final plan.
9. Students will be able to present their final design to the client.
10. Students will learn the proper and improper way to design a foundation planting.
11. Students will be able to plan a flower bed design.
12. Students will be able to identify key elements in the Outdoor Room Concept
13. Students will be able to identify the Design areas: private, public, play and utility.
14. Students will be able to select plants and place them in a landscape setting.
15. Students will be able to plan landscapes to meet Low maintenance criteria.

<table>
<thead>
<tr>
<th>Maintaining Landscapes</th>
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</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
</tr>
<tr>
<td>1. Students will be able to identify design strategies for a low maintenance landscape.</td>
</tr>
<tr>
<td>2. Students will be able to list the benefits of trees.</td>
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<tr>
<td>3. Students will be able to identify proper pruning cuts.</td>
</tr>
<tr>
<td>4. Students will be able to list the benefits of mulch.</td>
</tr>
<tr>
<td>5. Students will be able to list the key elements in watering a landscape</td>
</tr>
</tbody>
</table>
## Installing Landscape Designs

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Power Points</th>
<th>Student Handouts</th>
<th>Evaluations</th>
</tr>
</thead>
</table>
| 1. Students will be able to determine the benefits of sod vs. seeding a lawn.  
2. Students will be able to learn how to install a hardscape.  
3. Students will be able to prepare a bill of materials for a landscape design.  
4. Students will be able to describe how to plant several different kinds of trees.  
5. Students will be able to complete a design model to scale of their landscape plan.                                                                                                                   | Installation of Landscape Designs                                                                                                                                                                           | Tree Planting Student Sheet Bill of materials       | Tree Planting Sheet Master Model Grading Sheet                                                     |

## Nursery/Landscape Plant Identification

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Power Points</th>
<th>Student Handouts</th>
<th>Evaluations</th>
</tr>
</thead>
</table>
| 1. Students will learn why scientific classification of plants is important.  
2. Students will be able to properly write a scientific name.  
3. Students will be able to identify nursery and landscape plants used in the industry.  
4. Students will be able to determine which climate zone they live in.  
5. Students will be able to classify plants according to climate zone, growth habits, and growing requirements.  
6. Students will be able to identify trees according to a dichotomous key.                                                                                                                                     | The Classification of Plant Materials  
Nursery/Landscape Plant ID A-E  
Nursery/Landscape Plant ID F-L  
Nursery/Landscape Plant ID M-P  
Nursery/Landscape Plant ID Q-Z                                                                                                                                                                                                 | Nursery/Landscape Plant Identification Student Sheet  
Climate Zone Student Sheet  
What Tree Is That? Student Sheet                                                                                                                                     | Nursery/Landscape Plant ID A-E Quiz  
Nursery/Landscape Plant ID F-L Quiz  
Nursery/Landscape Plant ID M-P Quiz  
Nursery/Landscape Plant ID Q-Z Quiz  
What Tree Is That? Master |

### Nursery/Landscape Equipment Identification

<table>
<thead>
<tr>
<th><strong>Objectives</strong></th>
<th><strong>Power Points</strong></th>
<th><strong>Student Handouts</strong></th>
<th><strong>Evaluations</strong></th>
</tr>
</thead>
</table>
| 1. Students will be able to properly identify nursery equipment and supplies.  
2. Students will be able to identify appropriate uses for nursery equipment and supplies.  
3. Students will compare nursery equipment and supplies to find the similarities and differences.  
4. Students will be able to determine if nursery equipment and supplies are readily available in their area. | Nursery Equipment & Supplies Identification | Nursery Equipment & Supplies Identification Student Sheet  
Nursery Equipment & Supplies Identification Observation Sheet | Nursery Equipment & Supplies Identification Quiz ppt. |

### Nursery Pests & Disorders Identification

<table>
<thead>
<tr>
<th><strong>Objectives</strong></th>
<th><strong>Power Points</strong></th>
<th><strong>Student Handouts</strong></th>
<th><strong>Evaluations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students will be able to identify and classify nursery pests and disorders.</td>
<td>Nursery Pests &amp; Disorders Identification</td>
<td>Nursery Pests &amp; Disorders Identification Student Sheet</td>
<td>Nursery Pests &amp; Disorders Identification Quiz</td>
</tr>
</tbody>
</table>
Agricultural Science and Technology
Landscape Design-Ag 330
Landscape & Nursery Career Exploration

Unit Objectives
1. Students will be able to research one historical figure in the history of landscape design.
2. Students will explore a career in nursery or landscape design, determine the specifications of the career and present to the class.

Student Handout
Landscape Design Historical Profile Assignment Sheet
Nursery & Landscape Design Career Assignment Sheet

Evaluation
Nursery & Landscape Design Career Assignment Grading Sheet
Evaluation will be a compilation of the two quiz questions written by the students about their careers

Interest Approach
Begin by asking the students what they did this morning on their way to school. What determined their choice of breakfast, clothes, how they fixed their hair, how they got to school, etc. Share with them that the reason why we do certain things is determined by a variety of choices that we make. Share with them why you chose to be a teacher. Help them choose a career they would like to study that is related to nursery or landscape design. Encourage them to research different career opportunities. The history profile sheet may help them determine what kind of career they would like to choose.

Teaching Content
Some historical figures in landscape architecture could include, but are not limited to:
Andrew Jackson Downing  Gilbert Laing Meason
Beatrix Farrand  H.W.S. Cleveland
Calvert Vaux  Humphry Repton
Ellen Biddle Shipman  Joseph Addison
Florence Yoch  Lancelot Brown
Fredrick Law Olmstead  Thomas Church
Gertrude Jekyll  William Shenstone

Some careers related to nursery or landscape design could include, but are not limited to:
Botany  Garden Designer  Landscape maintenance
Chemical applicator  Grounds keeper  Nursery grower
Entomologist  Landscape  Plant research & development
Forestry  Landscape architect
Garden center owner, manager, employee  Landscape designer  Teacher

**Student Activities**

1. **Landscape Design Historical Profile**
   Students will research one historical figure in landscape designing history. This may be an introduction into what career they would like to choose for research.
   
   **Equipment:**
   Landscape Design Historical Profile Assignment Sheet

2. **Nursery & Landscape Design Career Presentation Assignment**
   Students will research a career related to the nursery or landscape industry. Students will prepare and present a presentation of their research.

   **Equipment:**
   Nursery & Landscape Design Career Assignment Sheet
   Nursery & Landscape Design Career Assignment Grading Sheet

**Reference**
Laprofession.org
<table>
<thead>
<tr>
<th>Name of Historical Figure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time period:</td>
</tr>
<tr>
<td>Associations affiliated with or founded:</td>
</tr>
<tr>
<td>Contributions to Landscape Design:</td>
</tr>
</tbody>
</table>
Nursery & Landscape Design
Career Presentation Assignment Sheet

Due Date: 
Value: 150 points

**REQUIREMENTS:** The Nursery & Landscape Design Career Assignment must include:
1. Education Needed
2. Benefits & Salary
3. Job Description
4. Special Training
5. Employment Location(s)
6. Visuals of Career to be included in PPT or Poster
7. Prepare a presentation (power point or poster)
8. Present Landscape Design Career to the class
9. References
10. Two quiz questions about your career choice

**COMMENTS:** The class will be discussing possible careers related to landscape design. This assignment requires students to research possible choices of careers in the landscape industry. Learning about landscape careers helps students gain knowledge about what job opportunities are available and a chance to decide if this is an avenue they would pursue as a possible career choice.
**NURSERY & LANDSCAPE DESIGN**  
**CAREER PRESENTATION ASSIGNMENT**  
**GRADING SHEET**

**ASSIGNMENT:** CAREER PRESENTATION

**DUE DATE:**

**POINTS:** 150 Points

**REQUIREMENTS:** STUDENTS WILL study one career choice in nursery or landscape design and prepare a power point presentation or poster for the class.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Possible</th>
<th>Earned</th>
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</thead>
<tbody>
<tr>
<td>Education Needed</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Benefits &amp; Salary</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Job Description</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Special Training</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Employment Location(s)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Visuals of Career</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Power Point or Poster</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Presentation to class</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>References used</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Two quiz questions</td>
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<tr>
<td>Overall</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

**Sub-Total**.......................... 150

**Late deductions (10%/day)**.......................... 0

**Total**........................................ 150
COURSE DESCRIPTION: A course that prepares students to design, construct, and maintain planted areas and devices for the beautification of home grounds and other areas of human habitation and recreation.

<table>
<thead>
<tr>
<th>UNITS OF INSTRUCTION</th>
<th>MINUTES OF INSTRUCTION</th>
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<tbody>
<tr>
<td>Introduction to Landscaping</td>
<td>705</td>
</tr>
<tr>
<td>Landscape Design</td>
<td>705</td>
</tr>
<tr>
<td>Climate and Zonation</td>
<td>235</td>
</tr>
<tr>
<td>Soil Conservation</td>
<td>235</td>
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<tr>
<td>Ornamental Plant Identification</td>
<td>470</td>
</tr>
<tr>
<td>Horticulture Tools, Equipment and Machinery</td>
<td>235</td>
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<tr>
<td>Electrical Controls and Sensing Devices</td>
<td>235</td>
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<tr>
<td>Leveling and Land Measurement</td>
<td>235</td>
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<tr>
<td>Lawnsite Quality and Preparation</td>
<td>235</td>
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<tr>
<td>Maintaining Lawns</td>
<td>235</td>
</tr>
<tr>
<td>Identification and Control of Turf Grass Pests</td>
<td>235</td>
</tr>
<tr>
<td>Gardening</td>
<td>235</td>
</tr>
<tr>
<td>Salesmanship</td>
<td>235</td>
</tr>
<tr>
<td>TOTAL MINUTES</td>
<td>4,230</td>
</tr>
</tbody>
</table>

A. Introduction to Landscaping

1. Match terms and definition associated with landscaping
2. List the duties and responsibilities of a landscape architect
3. List the duties and responsibilities of a landscape horticulturist
4. Name the objectives of developing a landscape plan
5. List the guiding principles of landscape design
6. Identify as true or false statements relating to the elements of a good landscape design
7. Name the main areas to develop in a landscape design
8. Identify the tools associated with landscape design
9. Select statements that pertain to corner plantings
10. Identify factors as they relate to entrance and foundation plantings
11. List three different occupations related to landscaping
B. **Landscape Design**

1. Match terms and definitions associated with landscape design
2. List the elements of landscape design
3. List the principles of symmetry in landscape design
4. Choose between formal and informal design factors
5. Draw and explain the symbols used in landscape design
6. List the sequence of planning a landscape design
7. List the ways to attain contrast in a landscape design
8. Identify as true or false statements about repetition and rhythm in landscape design
9. Discuss proportion or scale as it relates to landscape design
10. Identify plants that are commonly used in landscaping
11. List the common mistakes made in foundation plantings
12. List the maintenance considerations in a landscape design
13. List the factors used in developing a private area in landscaping
14. Complete a scale exercise landscape plan
15. Develop a home landscape plan

C. **Climate and Zonation**

1. Match terms and definitions associated with climate and plant zones
2. List the factors which influence weather
3. Explain plant hardiness and the importance of it in choosing plants for landscaping
4. Select appropriate plants for various landscaping conditions and considering climate
5. Demonstrate the ability to determine climate zone and develop a landscape plan for a given area

D. **Soil Conservation**

1. List types of erosion
2. List factors that influence soil erosion
3. Describe the four categories of water erosion
4. List conservation practices for reducing erosion
5. List mechanical and cropping practices used to reduce water erosion
6. List factors that determine cropping systems
7. List three organizations involved with soil conservation
E. Ornamental Plant Identification

1. Discuss the system of plant classification
2. Identify the parts of simple and compound leaves
3. Name the types of leaf arrangement, venation and margins
4. Identify the types of leaf arrangement to the stem
5. Identify the parts of a stem
6. Match stem modification to their descriptions
7. Identify the types of inflorescences
8. Identify 100 common ornamental indoor plants
9. Identify 100 common ornamental outdoor plants

F. Horticulture Tools, Equipment, and Machinery

1. Match terms and definitions associated with horticulture tools
2. List the general rules for choosing garden tools
3. List the kinds of shovels
4. Name the kinds of hoes
5. Identify as true or false statements about hoes
6. List the kinds of shears
7. Name the kinds of spading forks and two uses of each
8. List some special tools used in horticulture
9. Select preventive maintenance techniques for horticulture tools
10. List the kinds of equipment used in horticulture and landscaping
11. Name the tractor implements used in horticulture applications

G. Electrical Controls and Sensing Devices

1. Identify types of controls by nomenclature and use, including thermostats, humidostats, photoelectric cells, magnetic relays, timers, pressure switches, and time delay equipment
2. Set controls, such as timers and switches, for the desired performance
3. Use low voltage electrical control equipment
4. Interpret wiring diagrams
5. Select controls for electric motors from supply catalogs
6. Connect, start, and stop magnetic motor controllers
7. Install a timer circuit
8. Install a thermal delay relay control
9. Install a low voltage motor control system
10. Install switch control for staring 115 & 230 volt motors
11. Install a sensing device such as thermostat, humidostat, photoelectric cell, etc.
H. Leveling and Land Measurement

1. Set up leveling instrument
2. Take rod readings
3. Determine difference in elevation of two or more points
4. Record field notes for differential leveling
5. Measure distance with steel tape
6. Determine percent of slope
7. Determine land area
8. Use the hand level
9. Read legal land descriptions
10. Lay out foundations, footings, and batter boards

I. Lawn Site Quality and Preparation

1. Identify common lawn tools and the safety practices associated with them
2. Demonstrate the ability to prepare a lawnsite for proper drainage
3. Develop an irrigation plan for a lawn site
4. Demonstrate the ability to prepare a proper seedbed
5. Develop an overall plan for a lawn, protecting valuable natural features, to enhance property value

K. Identification and Control of Turf Grass Pests

1. List the common diseases of turf grass
2. Describe the symptoms of various turf diseases
3. List the preventative management practices to avoid turf grass diseases
4. Identify the common insect pests harmful to lawns
5. Identify the common lawn diseases
6. Match the damage to the lawn with the pest responsible
7. Match the pests with the control measures for each
8. List the reasons for controlling weeds in lawns
9. Identify the common turf grasses used in the northwest and their specific area of advantage
10. List the management practice used in controlling lawn weeds

J. Maintaining Lawns

1. Describe how to properly water a lawn
2. Explain what happens when a newly seeded lawn has too much traffic
3. Describe the use of weed killers on a newly seeded lawn
4. Describe the mowing schedule of a newly seeded lawn
5. List the types of equipment for lawn mowing
6. Describe what each type of fertilizer does for a lawn
7. Develop a fertilizer schedule for a lawn
8. Identify common lawn problems
9. Select the qualities of a good and poor lawn
10. Demonstrate the ability to aerate a lawn
11. List the maintenance practices for lawns

L. Gardening

1. Locate a desirable garden site at home
2. Determine the size of garden a family of four would need
3. Plan a garden layout based on suggested planting groups
4. Select vegetable varieties based on family preference, geography, and vegetable seed availability
5. Estimate cost and return of a home garden
6. Determine the proper time to prepare garden soil for crops
7. Demonstrate the ability to prepare garden soil with usual cultural practices
8. Demonstrate the ability to properly plant a garden
9. Demonstrate the ability to transplant vegetables from flats and hot beds
10. List proper garden irrigation methods
11. List the common garden fertilization methods

M. Salesmanship

1. Match terms and definitions associated with salesmanship
2. Describe how to be a service to the customer
3. Explain how to use persuasion in closing a sale
4. Discuss the necessity to educate the customer before proceeding in the sales process
5. Discuss how vital sales are in the American system of economy
6. List the steps in making a sale
Name ________________________________

Landscape Design 330
Blank Lettering Student Sheet
Unit Objectives
1. Students will be able to use drafting equipment.
2. Students will be able to measure and reproduce lines drawn to scale.
3. Students will be able to practice landscape lettering.
4. Students will be able to render symbols used in landscape designing.
5. Students will be able to redraw a house plan footprint in a different scale.
6. Students will be able to reproduce different symbols used in landscape design.
7. Students will be able to reproduce a landscape design plan label.

Power Point
Landscape Design Drafting Equipment

Student Handouts
Circle and Angle Student Sheet  Landscape Symbols Student Sheets:
Scale Student Sheet  Broadleaf Trees Student Sheet
House Plan Footprint Student Handout  General & Branched Trees Student Sheet
Landscape Symbol House Plan Student  Hardscape Student Sheet
Sheet  Mulch & Ground Cover Student Sheet
Plan Label Student Sheet  Needle, Grasses, & Weeping Trees Student
Plan Label Guide Student Sheet  Sheet
Lettering Student Sheets:
Low & High Gravity Lettering Student Sheet  Wood, Water, Turf & Rocks Student Sheet
Lettering Student Sheet
Lettering Student Handout
Blank Lettering Student Sheet

Evaluation
Landscape Design Drafting Quiz

Interest Approach
Display several different drafting tools to the students. Have students guess what the tool is used for. Correct misconceptions as you explain what each drafting tool is used for.

Teaching Content
Drafting Equipment:
Drawing surface—smooth surface without bumps or grooves in the table top. Drawing surface must have a straight edge allowing for horizontal and vertical lines to be drawn with the T-square. May be a board placed on the student desk if drafting tables are not available. Portable drafting tables are also available for purchase.
Tracing paper—thin and translucent paper used to sketch ideas and designs. Usually available in a roll.

Drafting tape or dots—used to secure the paper to the drawing surface. All four corners should be secured after lining up with a T-square to make sure the paper is square on the drawing surface.

T-square—used to draw consistent vertical and horizontal lines on the paper.

45/45 degree triangle—used to draw 45 or 90 degree lines.

30/60 degree triangle—used to draw 30, 60, or 90 degree lines.

Pencils—come in a variety of lead hardness or softness. H designates the degree of hardness and is used to make light/thin lines. B designates the degree of softness of the lead and is used to draw dark/thick lines. HB is used for general drawing or to draw shadows.

Pencil Sharpener—a high quality pencil sharpener must be available to keep pencils sharp and lines consistent.

Eraser—most generally white, use with caution to avoid smudging lines with soft lead. Can be washed or cut to sharpen edges. Pink may be used but harden over time.

Eraser shield—not essential but useful to erase lines close to other lines.

Flexi-curve—used to draw curving lines. May be picked up and the line repeated.

Circle template—used to draw circles quickly and to scale.

Compass—used to draw large circles.

Scale—a scale is a ruler that has units that represent feet in a landscape plan. Available as engineer or architect depending on preference and project.

Protractor—used to measure and draw angles.

Note: As you have students begin to draw plans, have them draw the plans on the outside of the roll of their paper instead of the inside. This way, when they roll out their plans, the rolled edges will be facing down instead of up on their desk. This will help keep their plans from rolling.
Student Activities

Equipment for Student Activities:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>30/60 degree triangle</td>
<td>Compass</td>
</tr>
<tr>
<td>45/45 degree triangle</td>
<td>Drafting tape or dots</td>
</tr>
<tr>
<td>Circle template</td>
<td>Eraser shield</td>
</tr>
<tr>
<td></td>
<td>Flexi-curve</td>
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<td></td>
<td>Pencil Sharpener</td>
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<td>Circle and Angle Student Sheet</td>
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<td>Scale</td>
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<tr>
<td></td>
<td>Tracing paper</td>
</tr>
<tr>
<td></td>
<td>T-square</td>
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<tr>
<td></td>
<td>Eraser</td>
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<td></td>
<td>Protractor</td>
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</tbody>
</table>

1. **Drafting Equipment**
   Allow students to experiment with different drafting tools and make a 8 ½ x 11 composition using the drafting tools.

2. **Scale, angle, and circle assignments**
   Students will measure and reproduce lines drawn to scale. Students will measure and reproduce angles. Students will measure and reproduce circles.

   **Student Sheets needed:**
   - Scale Student Sheet
   - Circle and Angle Student Sheet

3. **House plan footprint**
   Have students redraw lines of a house using a different scale. This plan may be kept and used in the next unit: Planning the Landscape Design, students will add further detail there.

   **Student Sheet needed:**
   - House plan Footprint Student Sheet

4. **Measuring and drawing to scale**
   Have students measure a hallway, your classroom, or small outside building. Have students reproduce their measurements to scale on a sheet of tracing paper. Remind students to include features like windows, doors, heaters, etc. in their drawing.

5. **Lettering**
   Have students practice lettering the alphabet.

   **Student Sheets needed:**
   - Lettering Student Handout
   - Lettering Student Sheet
   - Blank Lettering Student Sheet
   - Low & High Gravity Lettering Student Sheet
6. **Symbol Rendering**  
Students will reproduce different symbols used in a landscape design. Once they are finished with these sheets, have them put them all together on the *Landscape Symbol House Plan Student Sheet* to practice what symbols they have learned.

**Student Sheets needed:**  
- Landscape Symbol House Plan Student Sheet  
- Broadleaf Trees Student Sheet  
- General & Branched Trees Student Sheet  
- Hardscape Student Sheet  
- Mulch & Ground Cover Student Sheet  
- Needle, Grasses, & Weeping Trees Student Sheet  
- Wood, Water, Turf & Rocks Student Sheet

7. **Landscape Design Plan Label**  
Have students practice drawing different kinds of plan labels.

**Student Sheets needed:**  
- Plan Label Student Sheet  
- Plan Label Guide Student Sheet

**Reference**  
Match the following drafting equipment with the correct definition.

1. _____ d
2. _____ j
3. _____ h
4. _____ k
5. _____ m
6. _____ g
7. _____ i
8. _____ l
9. _____ b
10. _____ n
11. _____ a
12. _____ e
13. _____ f
14. _____ c
15. _____ o

16. Measure the following line with an engineer scale. Use the 10 scale and the 30 scale.

_____________________________

10 scale____________________ 30 scale____________________

Answers will vary. Please refer to student sheets:

17. Draw an example of a deciduous tree. Include a shadow.
18. Draw an example of an evergreen tree. Include a shadow.
19. Draw an example of a grouping of trees. Include shadows.
20. Draw an example of low gravity lettering.
21. Draw an example of mulch.
22. Draw an example of a wall with a window.
23. Draw an example of water.
24. Draw an example of wood.
25. Draw a 50 degree angle.
Landscape Design Ag 330
Landscape Drafting Quiz

Match the following drafting equipment with the correct definition.

1. ______ Drawing surface
2. ______ Tracing paper
3. ______ Drafting tape or dots
4. ______ T-square
5. ______ 45/45 degree triangle
6. ______ 30/60 degree triangle
7. ______ Pencils
8. ______ Pencil Sharpener
9. ______ Eraser
10. ______ Eraser shield
11. ______ Flexi-curve
12. ______ Circle template
13. ______ Compass
14. ______ Scale
15. ______ Protractor

a. used to draw curving lines
b. used to erase pencil mistakes
c. a ruler that has units that represent feet in a landscape plan
d. smooth surface without bumps or grooves in the table top
e. used to draw circles quickly and to scale
f. used to draw large circles
g. used to draw 30, 60, or 90 degree lines
h. used to secure the paper to the drawing surface
i. come in a variety of lead hardness or softness
j. thin and translucent paper used to sketch ideas and designs
k. used to draw consistent vertical and horizontal lines on the paper
l. keep pencils sharp and lines consistent
m. used to draw 45 or 90 degree lines
n. useful to erase lines close to other lines
o. used to measure and draw angles

16. Measure the following line with an engineer scale. Use the 10 scale and the 30 scale.

10 scale_____________ 30 scale_____________
17. Draw an example of a deciduous tree. Include a shadow.

18. Draw an example of a evergreen tree. Include a shadow.

19. Draw an example of a grouping of trees. Include shadows.

20. Draw an example of low gravity lettering.

21. Draw an example of mulch.

22. Draw an example of a wall with a window.

23. Draw an example of water.

24. Draw an example of wood.

25. Draw a 50 degree angle.
The vertical central axis is an imaginary line that runs down the left side of a letter. When the axis is designated as vertical, the line on the left side of the letter should be straight up and down, perpendicular to the line it is written on. When the center of gravity is in the middle, the middle line the letters are written on is in the middle of the lines. If the letter has a low center of gravity, the parallel line in the middle is lowered. If the letter has a high center of gravity, the parallel guide line is higher.

Practice drawing the following capital letters using a vertical central axis and center gravity. Draw each letter until it becomes natural.

```
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
```

```
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
```

```
1 2 3 4 5 6 7 8 9 0
```
Practice drawing the letters using a vertical axis and low or high gravity center.

Low Gravity Letters

ABCDEFGHIJKLMNOPQRSTUVWXYZ

High Gravity Letters

ABCDEFGHIJKLMNOPQRSTUVWXYZ

Plan Label Guide

This Plan Label Guide may be placed under a sheet of tracing paper to fill in the label. The horizontal lines will act as a guide for the lettering height. The vertical line is a guide for centering words.
Plan Label
Each plan you draw must be labeled. The plan label always goes in the bottom right corner of the landscape design. The plan label is approximately 6” x 4”. The first label on this sheet shows what is included on a plan label and the font sizes for each line. The second plan label is an example.

Plan Name (34)
Scale: 1” = 5’ (18)
North Arrow (18)

Client Name (24)
Client City, ST (20)

Your Name (16)
Your Business Name or School Name (16)
Your City, ST (12)

Site Analysis Plan
Scale: 1” = 5’

Jones Residence
Joy Valley, ID

Jill Smiles
Love Your Landscape Design Firm
Joy Valley, ID
1. Draw the following plan in 1" = 10' scale
2. Draw the inside walls as 1' thick
3. Fill in windows, doors, and garage door
4. Add in the extended property lines
1. Measure the radius and diameter of the following circle using 10’ scale.

Radius__________
Diameter__________

Duplicate the circle using 20’ scale.

2. Measure the following angle using a protractor.

Duplicate the previous angle.

3. Draw a 35 degree angle.

4. Draw a 70 degree angle
Fill in the following plan with symbols practiced. Draw in mulch, turf, ground cover, patio materials, etc.
1. Measure the following lines using an Architect & Engineer Scale.

A.

B.

C.

<table>
<thead>
<tr>
<th>Engineer Scale</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
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<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
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<td>B.</td>
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<tr>
<td>C.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Architect Scale</th>
<th>3/16”</th>
<th>3/32”</th>
<th>1/4”</th>
<th>1/8”</th>
<th>1/2”</th>
<th>3/4”</th>
<th>3/8”</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
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<td>B.</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>C.</td>
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</tbody>
</table>

2. Measure the following line using an Engineer scale in 10 scale and duplicate the line using 40 scale.

3. Measure the same line using an Architect scale in 1/4” scale and duplicate in 1/8” scale.
On a separate piece of paper, practice drawing broadleaf trees. Use a circle template to draw the original circle, then add detail as shown. Choose 10 different broadleaf symbols to draw.
Landscape Design 330
General and Branched Trees Student Sheet

On a separate piece of paper, practice drawing general and branched trees. Use a circle template to draw the original circle, then add detail as shown. Choose 3 general and 4 branched symbols to draw. General trees are drawn when specific detail is not necessary. Branched trees are drawn when special attention is given to one specific or specimen tree.

GENERAL TREE SYMBOLS

BRANCHED TREE SYMBOLS

On a separate piece of paper, practice drawing these hardscape symbols. Use a T-square and triangle to make the lines square.

On a separate piece of paper, practice drawing mulch and groundcover. Use a T-square and triangle to make the outlines square.

**MULCH SYMBOLS**

- Hatching
- Cross-hatching
- Patchwork
- Chicken scratch
- Stars
- Lightning

**GROUNDCOVER SYMBOLS**

- Static
- Mounding
- Shingles
- Curling
- Clumps

On a separate piece of paper, practice drawing needle trees, grasses and weeping trees. Use a circle template to draw the original circle, then add detail as shown. Choose 4 needle, two grasses, and two weeping forms to draw.

**NEEDLE TREE SYMBOLS**

**GRASSES AND WEEPING TREE SYMBOLS**

On a separate piece of paper, practice drawing wood, turf, rocks, and water. Use a T-square and triangle to make the lines square.

WOOD SYMBOL

TURF SYMBOLS

COBBLESTONE SYMBOL

WATER SYMBOL

Unit Objectives
1. Students will be able to conduct a client evaluation to determine wants and needs of a potential landscape design client.
2. Students will be able to create a base map for a landscape design.
3. Students will be able to conduct a site analysis for a landscape design.
4. Students will be able to draw a bubble diagram based on information gathered from the site analysis.
5. Students will be able to create a final design based on the bubble diagram.
6. Students will be able to create a legend or key for their final design.
7. Students will be able to add color to the final design.
8. Students will be able to create a planting plan based on their final plan.
9. Students will be able to present their final design to the client.
10. Students will learn the proper and improper way to design a foundation planting.
11. Students will be able to plan a flower bed design.
12. Students will be able to identify key elements in the Outdoor Room Concept
13. Students will be able to identify the Design areas: private, public, play and utility.
14. Students will be able to select plants and place them in a landscape setting.
15. Students will be able to plan landscapes to meet Low maintenance criteria.

Power Point
Design Process
Coloring Techniques

Student Handout
Client Evaluation
Site Analysis Plan Check List
Bubble Diagram Plan Check List
Landscape Design Standard Measurements Student Information Sheet
Low-Maintenance Landscape Design Planning Student Handout

Evaluation
Site Analysis Evaluation
Bubble Diagram Evaluation
Final Plan Evaluation
Planning Landscape Design Quiz
Planning Landscape Design Quiz Master

Interest Approach
Show students a photo of a newly built home that has not had a landscape planned. Have students discuss what types of things would need to happen to start the landscape. List these on the board, and then have students number them according to what should happen first. This should lead into a client evaluation.
Teaching Content

The Landscape Design Process

Landscape plans are drawn from a bird’s eye view. Aerial photo and plans drawn for the landscape.

Steps In Design

- Assemble the Base Plan
- Conduct a Site Analysis
- Client Evaluation
- Assess family needs and desires
- Develop a Bubble Diagram
- Locate private, public, service, and utility areas
- Design Landscape Plan
- Pencil drawing, then color
- Plant selection and placement

Assembling the Base Plan

- Obtain architect drawings
- Plan view drawings (house plans) floor plans
- Sections—side view or cut away slice
- Perspectives or elevations
- Contour map or topographic
- Site or deed map—dimensions with proper angles
- These plans maybe secured from the builder, developer or county or city property records.

The base plan should consist of:

- accurate house placement on the lot
- accurate lot and house dimensions with window & door placement
- existing driveways &/or walks (hardscape)

Conducting A Site Analysis

- Features that will stay
  - Existing vegetation
  - Tree and shrub condition and placement
  - Trees on adjoining property that affect shade patterns
  - Protect existing vegetation during construction
- Hardscape
- Permanent features
- Views to preserve or block
  - Panoramic views--Takes in a wide area, distance from viewer
    - Distant mountain range, valley below, adjoining golf course
  - Concentrated or focused view--particular point
    - Sculpture, unique tree, bed of showy flowers
  - Blocked view--undesirable, needs screened
    - High plant materials, walls, fences
- Poor Drainage
- slope or land elevation changes
- determines surface water drainage patterns
- Traffic
  - provide proper access
- City/County Ordinances
- Noise Levels
  - Identify distractions
  - question neighbors or the property owner
  - Record noise sources like roads, factories, saw mills, etc
  - time of day for peak noise levels
  - Plot the direction and distance of the source
  - Record other distractions--glare or odors
- Utility Placement
  - on poles or underground
  - locate the electrical meter, the air-conditioner unit &water outlets
  - television and telephone cables, water lines and sewage lines, or a septic tank and field line
- Easements/setback lines
- Primary architectural features of the house
  - Shape of windows, style, and items that can be repeated in the landscape
- House orientation
  - affects the exposure of various portions of the house to the sun
  - provide shade
    - southeastern exposure- most comfortable spot year-round
    - western slope- hot in summer and cold in winter
- Soil conditions
  - determines selection and placement of plants
  - Consider soil pH, nutrient and water holding capacity and drainage
- Seasonal wind pattern—prevailing winds
  - differ with the area of the state, the season and the time of day
  - existing wind breaks
  - plants and structures on the property or on adjacent property
- Microclimate
  - conditions in a isolated spot may differ considerably from the conditions in another area of the landscape
- Other:
  - Snow removal, pile-up

Client evaluation
- Establish the wants and needs of the client

Landscape Design Areas: Bubble Diagram
- Establish--Public area, Private area, Utility area, Play area
- Slow down and think broadly or generally
- More creative design
- Think of alternatives
- Go beyond preconceived notions or ideas
Public Area
(Entrance area or front yard)
- Puts the house into an attractive setting
  - Enhance architecture
  - Focus of viewer’s attention
  - Recognize value of home
- Identify & provide access to the point of entry
- Greatest priority
- Not complicated
- Front walk to front door
- Guest parking easy access
- Includes:
  - Lawn, foundation plants, walks, and drives/parking
- Should not include:
  - Cheap plastic animals, recreation equipment, play equipment, swimming pools

Private Area
(Living Area or backyard)
- Outside extension of the private living area inside the home
- Use of plants and/or fences to make private
- Open space needed for games, etc.
- Include: Deck or patio, area of open lawn, plants that provide an attractive view
- May include swimming pool, athletic facilities, barbecue or picnic facilities, trails, view gardens, reflection pools

Utility Area (service/work area)
- Smallest space possible and still functional
- Screen from private area
- Locate on driveway side of yard for access
- May have two or more locations
- Includes: Clothesline, compost bin, firewood, fuel tanks, garbage containers, garden supplies storage, greenhouse, pet facilities, tool storage, utility buildings, vegetable gardens, workshops

Play Area
- May or may not be part of private area
- Visible from kitchen
- Easy access to rear entry door
- Grass warn under play equipment
- Use mulch, fine gravel, or sand
- Includes: swings, slides, sandbox, shade trees

Final Design plan—Form composition
Form composition—the organization, placement, or relationship of basic shapes so as to produce a naturally and logically connected image
- Detailed plans for planting and construction
- Show sizes, locations, and quantity of plants and materials
- Drawn to scale

Outdoor Room Concept
Outdoor wall
- Defines the limits or size of the outdoor room
- Slow or prevent movement in a certain direction
- Should not be placed in the middle of areas, but sides instead
- Materials include: shrubs, small trees, ground covers, flowers fencing, masonry

Outdoor floor
- Provides the surface
- Materials grass, ground covers, sand, gravel, or water, brick, concrete, patio blocks, tile.

Outdoor ceiling
- Defines the upper limits of the outdoor room
- May offer physical protection—awning or aluminum covering
- Shade in summer, drop leaves, warm house in winter

Foundation Plantings: Foundation Mistakes

Overgrown effect
- plants too large for rooflines or windows
- dwarfs home and requires high maintenance to control size

Crowded effect
- large mass of confusion
- plants too close at time of planting
- gives instant fullness but plants lose their identity over time

Clipped effect
- plants get a regular “haircut”
- maintained with very smooth edge
- plants loose unique growth habits

Unbalanced effect
- too many plants or larger plants occur on one side or at the end of the planting
- appears tilted and is out of balance

Toy Soldier effect
- Landscape uses one species of landscape plants, often round which are spaced equally with noticeable gaps between plants
- monotonous, boring and lack creativity

Hedge effect
- plants are trimmed to continuous box shape
- lacks variety and gives foundation no relief from horizontal lines
- hedges are used as borders or living fence

Foundation Plantings:
- Focalize the main entrance with noticeable plants
- Compliment architectural style
- Break long continuous lines of the house
- Avoid competing elements
- Select plants
- Easily be maintained to proper scale with the house
- Height not to exceed two-thirds the wall at house corners
- Use taller plants on corners
• Medium-size shrubs for one-story homes; large shrubs for two story or taller.
• Use dwarf shrubs or ground covers under windows 4’ or less above ground level.
• Balance the planting with equal “foliage mass.”
• Repeat some of the same plants on each end
• Use variety in plants—texture, color, form
• Mass plants
• Mature size allowed to touch adjacent plants

**Designing a Flower Garden:** Steps in Garden designing:

- Choose a configuration, Explosion, Sine curve, C curve, E curve
- Place skeletal flowers on the ground in a triangular shape with three unequal sides along the curved line
- Draw line in soil with shovel or use a hose for the line
- One side of that triangle is then used to form the base of the next triangle of a different size
- Continue pattern throughout the design until if forms the configuration you have chosen
- Configurations that don’t work
  - Straight lines, concentric circles, checkerboards, zipper patterns

**Skeleton**

- Dominance main design principle
- Shown by plant form, texture, color or position
- Qualify a plant as skeletal:
  - Strong, tall, vertical (for dominant form)
  - Broad and dramatic (for dominant form)
  - Coarse texture (for dominant texture)
  - Vivid bright blossoms or leaves (for dominant color)
- 10 to 20 % of flowers used in design

**Tendon**

- Positioned after the skeleton plants have been placed
- Chosen to connect and blend the skeletal flowers, helping to hold together the form of the skeleton
- Complement skeleton flowers according to principle you choose
  - form might be shorter or less dominant
  - texture might be softer or smaller
  - color might contrast or complement
- Tendon maintains the configuration line
- Triangles interlock with the skeleton plant triangles along the configuration line
- 10 to 20 % of flowers in the design

**Flesh**

- More subordinate flowers
- Scattered in and among the other flowers to complete and fill out the design
- Place in clusters that form asymmetrical shapes with fractured edges
- Group together to form clusters around the skeletal and tendon flowers
- creates a shifting mosaic with the groupings of plants
- 60-80% of the number of plants
Sparkle
- Final touch
- Few special or highly contrasting flowers
- Odd-numbered groups of three, five or seven
- Placed randomly

Plant Selection: Choosing plants
- Massing
  - Group alike plants together
  - placed close enough to look like a mass without overcrowding
- Variety
  - Makes design interesting
  - Vary time of bloom or leaf color, and mature height, spring blooming, fall color
- Texture
  - Most often associated with leaf size
  - don’t use all coarse or fine textured plants
- Repetition
  - Repeat same plants throughout the design
  - Same plant used on one side should be repeated on the other
- Symmetrical all same number
- Asymmetrical not necessary to use same number of plants

Low-Maintenance Landscape Planning
- Even the perfectly designed and installed landscape will fail if maintenance fails
- Many maintenance problems are designed into landscapes
- Complex designs usually require more maintenance

Design
- Keep outlines of grass, decks, sidewalks simple
- Use curing lines in the borders—more natural
- Keep lawn out of small wedges and acute angles
- Avoid acute angles—obtuse is allowable
- If it can be mowed with a riding lawnmower without a lot of trimming, it is a low maintenance design
- When lines and forms intersect a square, connect them at right angles--90 degrees
- Landscape the borders of the property—especially the rear garden

Trees and Shrubs
- Avoid improper plant selection, spacing and installation
- Own planting bed
- Less edging and trimming if not planted in grass
- Next to building Placement
- Genetically small w/ slow rate of growth

Selection
- Little pruning
- Pest resistance
- Avoid messy fruit drop

Lawn
- Keep plant materials separate from grass
• Leave open areas of lawn
• Learn to use weed barrier fabrics, mulches, groundcovers and chemicals to reduce weeds
• Only plant grass where it is actually needed
• Use edging materials that are impregnable
• Bender board, metal or concrete edging
• Distinct mowing edge, clean lawn boundary

**Flowers**
• Use annuals sparingly
  o Plant every year
  o Labor and money intensive
• Rely more heavily on perennial flowers, ground covers, flowering shrubs & vines

**Coloring Techniques**: Coloring the Final Plan Using: Prisma Color Dual Tip Markers
1. Color in basic shapes. One layer of marker.
2. Color in hardscape
3. Color in ground plane
4. Color over shapes to add dimension—use more than one color to layer trees.
5. Draw in lines of trees, beds, and hardscape.
6. Draw in shadows.
7. Add in more detail as needed.

**Marker Coloring Tips**:
  o Marker bleeds through most paper—but not tracing paper.
  o Place tracing paper over final design and color in detail on the tracing paper.
  o Don’t use the black outlining pen until all of the color is finished. The color markers make the sharpie bleed.
  o Base color all the shapes in a light color. Add layers of darker colors on top.
  o Have a piece of scratch paper to test colors and combinations on before adding to color design.
  o Use a blending marker to blend harsh lines.
  o To keep the color from pooling, lift quickly and blend out pools of marker with blending marker.
  o Keep a list of markers used to lessen confusion if you have to go back and color a spot again.
  o Don’t be afraid to use different colors on trees—they don’t have to be all green. Purple, blue, or yellow stippling added gives depth.

**Student Activities**
1. **Client Evaluation**
   Find a member of your community who has just finished building a home and needs the landscape started. Invite this client into your classroom and go through the Client Evaluation with them. Have them bring as many house plans and plot plans as they have. Have them also bring measurements of their site or invite the students to take there measurements if this is feasible. Photographs of their site will help the students
visualize the design. Many students can work on the same design and present different plans to the client. You may have more than one client. If this is not feasible, you will need to come up with a landscape for the students to design. I would not suggest having the students make up their own plan out of their heads, but you may invite them to bring their own dimensions from home and landscape their own residence. Encourage students to think of where we live when planning a landscape and not design too many swimming pools for an Idaho climate. This is why the client evaluation has been added. They will need to really consider the needs of the client and not just unrealistic ideas.

**Equipment:**

**Client Evaluation**

**Equipment for all of the following student activities:**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Pencils</th>
<th>Protractor</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>30/60 degree triangle</td>
<td>Drafting tape or dots</td>
<td>Drawing surface</td>
<td>Eraser shield</td>
</tr>
<tr>
<td>45/45 degree triangle</td>
<td>Drafting Paper</td>
<td>Compass</td>
<td>Eraser</td>
</tr>
<tr>
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<td>Pencil Sharpener</td>
<td>Tracing paper</td>
<td>T-square</td>
</tr>
<tr>
<td>Compass</td>
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<tr>
<td>Drafting Paper</td>
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</table>

2. **Base Map Plan**

Give the students a piece of drafting paper. It should be at least 2’ x 2’. Have them square the paper to their desk and affix with drafting tape. Hand out all necessary drafting equipment. If possible, gather as many of the plans for the landscape design as possible. This would include site maps, elevation changes, etc. Have students begin drafting the property borders, house footprint, and any permanent features—such as the hardscape. This is as far as you want them to go up to this point. Instead of having the students redraw everything for the final design, I just have them add to the base map, but they will need to conduct the site analysis and bubble diagram before adding any more to this plan. The plan label will need to be placed in the bottom right hand corner. Remember to have the students roll their plans with the plan on the outside of the sheet. This helps the plan lay flat when it is unrolled.

**Equipment:**

<table>
<thead>
<tr>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architect plans</td>
</tr>
<tr>
<td>Base map from Drafting Unit</td>
</tr>
</tbody>
</table>

3. **Site Analysis Plan**

Place a piece of tracing paper over the base map plan and have students free hand the details in that have been placed on the base map plan. Have the students conduct a site analysis using the *Site Analysis Plan Check List*. This will help them determine where significant design details will be placed. I explain this plan as the problems or special considerations that need faced during the planning for the landscape design. The plan label for this design should be Site Analysis Plan placed in the bottom right hand corner.

**Equipment:**

<table>
<thead>
<tr>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Analysis Plan Check List</td>
</tr>
</tbody>
</table>
4. **Bubble Diagram Plan**  
Have the students place a new piece of tracing paper over their site analysis plan and base map plan. The bubble diagram is a plan which gives the students and opportunity to think generally and brainstorm before being committed to a final design. The site analysis plan should have given all considerations to be faced during planning, the bubble diagram fixes or addresses all those considerations. This is why it is placed over the site analysis. The students will need to free hand the base map information and then free hand circles or bubbles for specific areas in the plan. All areas in the plan will need to be filled in. There should not be spaces between the circles. Please note the *Bubble Diagram Plan Checklist* for details needed in this plan. The plan label for this design should be Bubble Diagram Plan placed in the bottom right hand corner.

**Equipment:**  
Bubble Diagram Plan Check List

5. **Final Design Plan**  
After the bubble diagram plan is completed, the students are ready to begin the final design plan. They will need to refer to their practice sheets for how to render landscape symbols and start adding symbols and detail to their base map plan. The detail in this plan in not generally freehanded, but requires use of all of the drafting equipment. The plan label for this design should be Final Design Plan placed in the bottom right hand corner. Have students make a legend after they are finished with the design. Each symbol will need to be explained in the legend as well as any other detail they have added—see Planting Plan. Have students use the *Low-Maintenance Landscape Design Planning Student Handout* while planning their designs. Remind them of the outdoor room concept as they are planning.

6. **Color Final Design Plan**  
Have the students lay a piece of tracing paper over their Final Design Plan and begin coloring in their details. Color all pieces first with color markers and then add in black detail with a fine tip permanent marker. This detail should be all of the symbols they made in the Final Design Plan. Make sure the tracing paper does not bleed through. Refer to the ppt. for detail on how to color with markers. I suggest markers over colored pencils only because it is faster.

**Equipment:**  
Prisma Color dual tip markers  
Fine tip or ultra fine tip Sharpie markers--black

7. **Planting plan**  
Students will use the information gathered in the *Plant Identification Unit*—climate zone, growth habits, growing requirements, and plant classification to decide what plants will be placed in their final plan. They may make a specific plan for planting or they may include the specific plants needed in a key or legend on their final plan.

8. **Present Design To Client**
Invite clients into the classroom to view the Final Designs. Have the students present their work and answer any questions the clients may have.

9. **Plan a Flower Bed Design**
   Show students the flower bed design ppt. Give them an assignment to plan a flower bed using the skeleton, tendon, flesh, and sparkle technique. They may choose a flower bed they have already added in a landscape design or create a new one. This plan has a lot more specific detail than added to a landscape plan.

**References**


edis.ifas.ufl.edu

**Resources**
# Client Evaluation

## Residential Landscape Design

<table>
<thead>
<tr>
<th>Landscape Plans for</th>
<th>Residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Phone:</td>
<td></td>
</tr>
<tr>
<td>Email:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Names:</th>
<th>Age:</th>
<th>M/F:</th>
<th>Hobbies:</th>
<th>Frequency:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

*Examples of hobbies*—greenhouse, swimming, rebuilding old cars

*Frequency*—everyday/weekends/some weekends/seldom/seasonal

Additional family members expected? (children, grandchildren, aged parents)

Do family members have physical limitations?

### Outdoor Activities enjoyed by family

(please note: ask intended future uses—past uses, patio, deck, pool, open space for games, etc.)

<table>
<thead>
<tr>
<th>Cooking and dining:</th>
<th>Type of cooking--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of entertaining:</th>
<th>Number of people--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Children’s play:</th>
<th>specific requirements--</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| Gardening: | vegetable garden, cut flower production, perennial, annual |
|           |                                                         |</p>
<table>
<thead>
<tr>
<th>Pets</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(please note: indoors, outdoors, confinement)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plants</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(please note: ask what are favorite trees, shrubs, flowers?)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wanted:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid:</td>
<td></td>
</tr>
</tbody>
</table>

| Are family members allergic to specific plants? |                             |

<table>
<thead>
<tr>
<th>Privacy issues:</th>
<th></th>
</tr>
</thead>
</table>

| Satisfied with current privacy or needs changed— |                             |

| What changes?         |                             |

<table>
<thead>
<tr>
<th>Landscape Maintenance</th>
<th>Sprinkling system available</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance job</td>
<td>Willing to do</td>
<td>Hire out</td>
</tr>
<tr>
<td>Mow grass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prune trees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fertilize &amp; water lawn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rake leaves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mix and spray pesticides</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare planting areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deadhead</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service Needs</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Utility Item</th>
<th>Need</th>
<th>Have</th>
</tr>
</thead>
<tbody>
<tr>
<td>clothes line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>compost pile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trash can storage and protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firewood storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enclosed work area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional parking or vehicle storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preferences:</td>
<td>colors, materials, styles, brands, themes</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Views:</td>
<td>important views into the landscape from major rooms within the house</td>
<td></td>
</tr>
<tr>
<td>Interior:</td>
<td>formal or casual types of décor—original art, crafty, themes, etc</td>
<td></td>
</tr>
<tr>
<td>Budget:</td>
<td>range in mind, one step completion, over time, most important first</td>
<td></td>
</tr>
<tr>
<td>Time Frame:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes planned:</td>
<td>additions to the home, etc.</td>
<td></td>
</tr>
<tr>
<td>Other Considerations:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Site Analysis Plan Checklist

Conduct a site analysis by noting on the Site Analysis Plan where each of the following items are located. This will help identify what items will need to be addressed in the Bubble Diagram and continued on into the Final Design Plan. Place a piece of tracing paper over your base plan, hand draw in the house footprint and property lines and begin your site analysis.

- Features that will stay
  - Existing vegetation
    - tree and shrub condition and placement
    - trees on adjoining property that affect shade patterns
    - Protect existing vegetation during construction
  - Hardscape
  - Permanent features

- Views to preserve or block
  - Panoramic views--Takes in a wide area, distance from viewer
  - Concentrated or focused view--particular point
  - Blocked view--undesirable, needs screened

- Poor Drainage
  - slope or land elevation changes
    - determines surface water drainage patterns

- Traffic
  - provide proper access

- City/County Ordinances

- Noise Levels
  - Identify distractions
    - question neighbors or the property owner
  - Record noise sources like roads, factories, saw mills, etc
    - time of day for peak noise levels
  - Plot the direction and distance of the source
    - Record other distractions--glare or odors

- Utility Placement
  - on poles or underground
  - locate the electrical meter, the air-conditioner unit & water outlets
  - television and telephone cables, water lines and sewage lines, or a septic tank and field line

- Easements/setback lines

- Primary architectural features of the house
  - Shape of windows, style, and items that can be repeated in the landscape

- House orientation
o affects the exposure of various portions of the house to the sun
  ▪ provide shade
  ▪ southeastern exposure- most comfortable spot year-round
  ▪ western slope- hot in summer and cold in winter

 Soil conditions
  o determines selection and placement of plants
  o Consider soil pH, nutrient and water holding capacity and drainage

 Seasonal wind pattern—prevailing winds
  o differ with the area of the state, the season and the time of day
  o note existing wind breaks
    ▪ plants and structures on the property or on adjacent property

 Microclimate
  o conditions in an isolated spot may differ considerably from the conditions in
    another area of the landscape

 Other:
  o Snow removal, pile-up
Bubble Diagram Checklist

The bubble diagram gives designers the opportunity to brainstorm ideas before committing to a certain design. It is a time to make a more creative design and go beyond preconceived notions or ideas. Remember to slow down and think broadly or generally. Each area in the bubble diagram should be covered in a bubble or circle with clear distinction on what this area will entail. Place your bubble diagram plan over the site analysis you conducted earlier in order to address the issues discovered there. Include the following areas:

☐ Public area
  - Identify point of entry
  - Provide access to the point of entry
  - Identify guest parking

☐ Private area (may or may not include all of the following)
  - Deck or patio
  - Open area of lawn
  - Swimming pool
  - Athletic facilities
  - Barbecue
  - Picnic facilities
  - Trails
  - View gardens
  - Reflection pools
  - Plants or fences for privacy
  - Other:

☐ Play area
  - Visible from kitchen
  - Easy access to rear entry door
  - May or may not include all of the following:
    - Swings
    - Slides
    - Sandbox
    - Shade trees
  - Other:

☐ Utility area
  - Screen from private area
  - Locate on driveway side of yard for access
  - May have two or more locations
  - Smallest space possible and still functional
  - May or may not include all of the following:
    - Clothesline
    - Compost bin
    - Firewood
    - Fuel tanks
    - Garbage containers
    - Garden supplies storage
    - Greenhouse
    - Pet facilities
    - Tool storage
    - Utility buildings
    - Vegetable gardens
    - Workshops
    - Other:
Landscape Design Ag 330

Landscape Design Standard Measurements

Student Information Sheet

House Measurements:
- Standard windows: 2 ½ to 3 feet
- Bathroom windows: 2 to 2 ½ feet
- Picture or bay windows: 6 to 8 feet
- Doors: 3 to 3 ½ feet

Driveways & Walkways:
- Driveway: minimum of 10 feet for each car (9’ x 18’ single car)
- Entry walk: 4 feet wide
- Secondary walk: 2 feet minimum
- Garden path: 3 feet
- Circle drive: 18 feet inside radius minimum
  32 feet outside radius
  14 feet surface width
- wheelchair ramp: 3 feet width minimum
- 5 percent gradient

Trees & Shrubs:
- Large trees: 20 feet in diameter or greater
- Medium trees: 15 to 20 feet in diameter
- Small trees: 10 to 15 feet in diameter
- Dwarf shrubs: 3 to 4 feet in diameter
- Medium shrubs: 5 to 6 feet in diameter
- Large shrubs: 6 to 9 feet in diameter

Cooking:
- Grill: 2’x 2’
- Countertop: 2’x 4’
- Overall: 20 sq. feet

Eating:
- Two people: 2’ – 6’ x 5’
- Four people: 9’ x 9’
- Six people: 7’ x 8’ (picnic table)
- Eight people: 9’ x 7’ (picnic area)
### Sitting:
<table>
<thead>
<tr>
<th>Item</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patio</td>
<td>12’ x 15’ minimum</td>
</tr>
<tr>
<td>Single aluminum lawn chair</td>
<td>2’ x 2’</td>
</tr>
<tr>
<td>Single wood deck chair with cushions</td>
<td>2’ – 6’ x 2’ – 6’</td>
</tr>
<tr>
<td>Bench</td>
<td>Seat depth 18”</td>
</tr>
<tr>
<td></td>
<td>Seat length 2’ – 6’</td>
</tr>
<tr>
<td>Single aluminum lounge chair</td>
<td>2’ – 6’</td>
</tr>
</tbody>
</table>

### Storage:
<table>
<thead>
<tr>
<th>Item</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garbage can</td>
<td>2’ diameter</td>
</tr>
<tr>
<td>Two garbage cans</td>
<td>2’ x 6’</td>
</tr>
<tr>
<td>Cord of wood</td>
<td>4’ x 4’ x 8’</td>
</tr>
</tbody>
</table>

### Recreation:
<table>
<thead>
<tr>
<th>Activity</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badminton (doubles)</td>
<td>17’ x 39’ (playing surface)</td>
</tr>
<tr>
<td></td>
<td>20’ x 44’ (overall surface)</td>
</tr>
<tr>
<td>Croquet</td>
<td>38’ x 85’ (playing surface)</td>
</tr>
<tr>
<td></td>
<td>50’ x 95’ (overall surface)</td>
</tr>
<tr>
<td>Frisbee, baseball, football throwing</td>
<td>15’ x 40’</td>
</tr>
<tr>
<td>Horseshoe stakes</td>
<td>40’ apart</td>
</tr>
<tr>
<td></td>
<td>10’ x 50’ (overall area)</td>
</tr>
<tr>
<td>Tennis (doubles)</td>
<td>36’ x 78’ (playing surface)</td>
</tr>
<tr>
<td></td>
<td>60’ x 120’ (overall surface)</td>
</tr>
<tr>
<td>Volleyball</td>
<td>30’ x 60’ (playing surface)</td>
</tr>
<tr>
<td></td>
<td>45’ x 80’ (overall surface)</td>
</tr>
<tr>
<td>Backyard basketball</td>
<td>25’ x 25’ minimum</td>
</tr>
<tr>
<td>Half-court basketball</td>
<td>42’ x 40’</td>
</tr>
<tr>
<td>Swimming pool (average)</td>
<td>18’ x 36’</td>
</tr>
<tr>
<td>Lap pool</td>
<td>10’ x 60’</td>
</tr>
<tr>
<td>Spa/Jacuzzi</td>
<td>5’ x 5’</td>
</tr>
<tr>
<td>Sandbox</td>
<td>4’ x 4’</td>
</tr>
<tr>
<td>Swing set</td>
<td>10’ x 15’</td>
</tr>
</tbody>
</table>

Low-Maintenance Landscape Design Planning Student Handout

Design
Keep outlines of grass, decks, sidewalks are simple
Use curing lines in the borders--more natural
Keep lawn out of small wedges and acute angles
Avoid acute angles—obtuse is allowable
If it can be mowed with a riding lawnmower without a lot of trimming, it is a low maintenance design
When lines and forms intersect a square, connect them at right angles--90 degrees
Landscape the borders of the property—especially the rear garden

Trees and Shrubs
Avoid improper plant selection, spacing and installation
Own planting bed
Less edging and trimming if not planted in grass
Next to building Placement—Genetically small w/ slow rate of growth
Selection --Little pruning , Pest resistance, Avoid messy fruit drop

Lawn
Keep plant materials separate from grass
Leave open areas of lawn
Learn to use weed barrier fabrics, mulches, groundcovers and chemicals to reduce weeds
Only plant grass where it is actually needed
Use edging materials that are impregnable--Bender board, metal or concrete edging
Distinct mowing edge, clean lawn boundary

Flowers
Use annuals sparingly--Plant every year, Labor and money intensive
Rely more heavily on perennial flowers, ground covers, flowering shrubs & vines
Coloring the Final Plan

1. Color in basic shapes. One layer of marker.
2. Color in hardscape
3. Color in ground plane
4. Color over shapes to add dimension—use more than one color to layer trees.
5. Draw in lines of trees, beds, and hardscape.
6. Draw in shadows.
7. Add in more detail as needed.

Marker Coloring Tips:
- Marker bleeds through most paper—but not tracing paper.
- Place tracing paper over final design and color in detail on the tracing paper.
- Don’t use the black outlining pen until all of the color is finished. The color markers make the sharpie bleed.
- Base color all the shapes in a light color. Add layers of darker colors on top.
- Have a piece of scratch paper to test colors and combinations on before adding to color design.
- Use a blending marker to blend harsh lines.
- To keep the color from pooling, lift quickly and blend out pools of marker with blending marker.
- Keep a list of markers used to lessen confusion if you have to go back and color a spot again.
- Don’t be afraid to use different colors on trees—they don’t have to be all green. Purple, blue, or yellow stippling added gives depth.
**Flower Bed Design Student Sheet**

**Designing a Flower Garden:** Steps in Garden designing:
- Choose a configuration, Explosion, Sine curve, C curve, E curve
- Place skeletal flowers on the ground in a triangular shape with three unequal sides along the curved line
- Draw line in soil with shovel or use a hose for the line
- One side of that triangle is then used to form the base of the next triangle of a different size
- Continue pattern throughout the design until it forms the configuration you have chosen
- Configurations that don’t work
  - Straight lines, concentric circles, checkerboards, zipper patterns

**Skeleton**
- Dominance main design principle
- Shown by plant form, texture, color or position
- Qualify a plant as skeletal:
  - Strong, tall, vertical (for dominant form)
  - Broad and dramatic (for dominant form)
  - Coarse texture (for dominant texture)
  - Vivid bright blossoms or leaves (for dominant color)
- 10 to 20% of flowers used in design

**Tendon**
- Positioned after the skeleton plants have been placed
- Chosen to connect and blend the skeletal flowers, helping to hold together the form of the skeleton
- Complement skeleton flowers according to principle you choose
- form might be shorter or less dominant
- texture might be softer or smaller
- color might contrast or complement
- Tendon maintains the configuration line
- Triangles interlock with the skeleton plant triangles along the configuration line
- 10 to 20% of flowers in the design

**Flesh**
- More subordinate flowers
- Scattered in and among the other flowers to complete and fill out the design
- Place in clusters that form asymmetrical shapes with fractured edges
- Group together to form clusters around the skeletal and tendon flowers
- creates a shifting mosaic with the groupings of plants
- 60-80% of the number of plants

**Sparkle**
- Final touch
- Few special or highly contrasting flowers
- Odd-numbered groups of three, five or seven
- Placed randomly
Put a (*) in front of the following items that would be found in a client evaluation.
Put a (✓) in front of the following items that would be found in a base plan.
Put a (♥) in front of the following items that would be found in a bubble diagram.
Put a (→) in front of the following items that would be found in a site analysis.
Put a (□) in front of the following items that would be found in a landscape plan—form composition. (2 points each)

1. (*) Accurate house placement on the lot
2. (*) Accurate lot and house dimensions with window & door placement
3. ♥ City/county ordinances
4. ✓ Detailed plans for planting and construction
5. ✓ Easements/setback lines
6. ✓ Establish--public area, private area, utility area, play area
7. ✓ Existing driveways &/or walks (hardscape)
8. ☐ House orientation
9. ☐ Microclimate
10. ☐ Noise levels
11. ☐ Poor drainage
12. ☐ Primary architectural features of the house
13. ☐ Seasonal wind pattern—prevailing winds
14. ☐ Show sizes, locations, and quantity of plants and materials
15. ☐ Slow down and think broadly or generally
16. ☐ Snow removal, pile-up
17. ☐ Soil conditions
18. ☐ Think of alternatives
19. ☐ Traffic
20. ☐ Trees on adjoining property that affect shade patterns
21. ☐ Utility placement
22. ☐ Views to preserve or block
23. ☐ Wants and needs

24. Describe the Public Area (4 points)

25. Describe the Private Area (4 points)

26. Describe the Utility Area (4 points)

27. Describe the Play Area (4 points)
Match the following items: (2 points each)

28. ______ Outdoor wall
29. ______ Outdoor floor
30. ______ Outdoor ceiling
31. ______ Outdoor Room Concept
32. ______ Overgrown effect
33. ______ Crowded effect
34. ______ Clipped effect
35. ______ Unbalanced effect
36. ______ Toy solider effect
37. ______ Hedge effect
38. ______ Skelton
39. ______ Tendon
40. ______ Flesh
41. ______ Sparkle

a. Chosen for plant form, texture, color or position
b. Chosen to connect and blend the skeletal flowers, helping to hold together the form of the skeleton
c. Defines the limits or size of the outdoor room
d. Defines the upper limits of the outdoor room
e. Few special or highly contrasting flowers
f. Landscape uses one species of landscape plants, often round which are spaced equally with noticeable gaps between plants
g. Materials like grass, ground covers, sand, gravel, or water, brick, concrete, patio blocks, tile.
h. Plants are trimmed to continuous box shape
i. Plants get a regular “haircut”
j. Plants too close at time of planting
k. Plants too large for rooflines or windows
l. Scattered in and among the other flowers to complete and fill out the design
m. Too many plants or larger plants occur on one side or at the end of the planting
n. Extending the indoor rooms to outdoor areas

42. What are some tips for correct Foundation Plantings? (10 points)

43. Circle the following items that are considered “Low-Maintenance Landscape Planning” (2 points each)

- Use curving lines in the borders
- Keep lawn out of small wedges and acute angles
- Avoid obtuse angles—acute is allowable
- If it can be mowed with a riding lawnmower—without extra trimming
- When lines and forms intersect a square, connect them at right angles—90 degrees
- Landscape the borders of the property—especially the rear garden
- Encourage improper plant selection, spacing and installation
- Trees in own planting bed
- Choose messy fruit drop
- Keep plants separate from grass
- Leave open areas of lawn
- Learn to use weed barrier fabrics, mulches, groundcovers and chemicals to reduce weeds
- Only plant grass where it is needed
- Distinct mowing edge, clean lawn boundary
- Use perennials sparing
Landscape Planning Quiz Master

Put a (*) in front of the following items that would be found in a client evaluation.
Put a (√) in front of the following items that would be found in a base plan.
Put a (♥) in front of the following items that would be found in a bubble diagram.
Put a (→) in front of the following items that would be found in a site analysis.
Put a (□) in front of the following items that would be found in a landscape plan—form composition. (2 points each)

1. √
2. √
3. →
4. □
5. →
6. ♥
7. →
8. →
9. →
10. →
11. →
12. →
13. →
14. □
15. ♥
16. →
17. →
18. ♥
19. →
20. →
21. →
22. →
23. *

24. Describe the Public Area (4 points)
(Entrance area or front yard)
Puts the house into an attractive setting
Enhance architecture
Focus of viewer’s attention
Recognize value of home
Identify & provide access to the point of entry
Greatest priority
Not complicated
Front walk to front door
guest parking easy access
Includes:
lawn, foundation plants, walks, and drives/parking
Should not include:
cheap plastic animals, recreation equipment, play equipment, swimming pools

25. Describe the Private Area (4 points)
(Living Area or backyard)
Outside extension of the private living area inside the home
Use of plants and/or fences to make private
Open space needed for games, etc.
Include: Deck or patio, area of open lawn, plants that provide an attractive view
may include swimming pool, athletic facilities, barbecue or picnic facilities, trails, view gardens, reflection pools

26. Describe the Utility Area (4 points)
(service/work area)
Smallest space possible and still functional
Screen from private area
Locate on driveway side of yard for access
May have two or more locations
Includes: Clothesline, compost bin, Firewood, fuel tanks, garbage containers, garden supplies storage, Greenhouse, pet facilities, tool storage, utility buildings, vegetable gardens, workshops

27. Describe the Play Area (4 points)
May or may not be part of private area
Visible from kitchen
Easy access to rear entry door
Use mulch, fine gravel, or sand
Includes: swings, slides, sandbox, shade trees
Grass warn under play equipment
Match the following items: (2 points each)

28. c
29. g
30. d
31. n
32. k
33. j
34. i
35. m
36. f
37. h
38. a
39. b
40. l
41. e

42. What are some tips for correct Foundation Plantings? (10 points)

- Focalize the main entrance with noticeable plants
- Compliment architectural style
- Break long continuous lines of the house
- Avoid competing elements
- Easily be maintained to proper scale with the house
- Height not to exceed two-thirds the wall at house corners
- Use taller plants on corners
- Medium-size shrubs for one-story homes; large shrubs for two story or taller.
- Use dwarf shrubs or ground covers under windows 4’ or less above ground level.
- Balance the planting with equal “foliage mass.”
- Repeat some of the same plants on each end
- Use variety in plants—texture, color, form
- Mass plants
- Mature size allowed to touch adjacent plants

43. Circle the following items that are considered “Low-Maintenance Landscape Planning” (2 points each)

- Use curving lines in the borders
- Keep lawn out of small wedges and acute angles
- *Avoid obtuse angles—acute is allowable
- If it can be mowed with a riding lawnmower—without extra trimming
- When lines and forms intersect a square, connect them at right angles—90 degrees
- Landscape the borders of the property—especially the rear garden
- *Encourage improper plant selection, spacing and installation
- Trees in own planting bed
- *Choose messy fruit drop
- Keep plants separate from grass
- Leave open areas of lawn
- Learn to use weed barrier fabrics, mulches, groundcovers and chemicals to reduce weeds
- Only plant grass where it is needed
- Distinct mowing edge, clean lawn boundary
- *Use perennials sparingly
Coloring Techniques Student Handout

Coloring the Final Plan

1. Color in basic shapes. One layer of marker.
2. Color in hardscape
3. Color in ground plane
4. Color over shapes to add dimension—use more than one color to layer trees.
5. Draw in lines of trees, beds, and hardscape.
6. Draw in shadows.
7. Add in more detail as needed.

Marker Coloring Tips:

- Marker bleeds through most paper—but not tracing paper.
- Place tracing paper over final design and color in detail on the tracing paper.
- Don’t use the black outlining pen until all of the color is finished. The color markers make the sharpie bleed.
- Base color all the shapes in a light color. Add layers of darker colors on top.
- Have a piece of scratch paper to test colors and combinations on before adding to color design.
- Use a blending marker to blend harsh lines.
- To keep the color from pooling, lift quickly and blend out pools of marker with blending marker.
- Keep a list of markers used to lessen confusion if you have to go back and color a spot again.
- Don’t be afraid to use different colors on trees—they don’t have to be all green. Purple, blue, or yellow stippling added gives depth.
Flower Bed Design Student Sheet

Designing a Flower Garden: Steps in Garden designing:

- Choose a configuration--Explosion, Sine curve, C curve, E curve
- Place skeletal flowers on the ground in a triangular shape with three unequal sides along the curved line
- Draw line in soil with shovel or use a hose for the line
- One side of that triangle is then used to form the base of the next triangle of a different size
- Continue pattern throughout the design until it forms the configuration you have chosen
- Configurations that don’t work
  - Straight lines, concentric circles, checkerboards, zipper patterns

Skeleton

- Dominance main design principle
- Shown by plant form, texture, color or position
- Qualify a plant as skeletal:
  - Strong, tall, vertical (for dominant form)
  - Broad and dramatic (for dominant form)
  - Coarse texture (for dominant texture)
  - Vivid bright blossoms or leaves (for dominant color)
- 10 to 20 % of flowers used in design

Tendon

- Positioned after the skeleton plants have been placed
- Chosen to connect and blend the skeletal flowers, helping to hold together the form of the skeleton
- Complement skeleton flowers according to principle you choose
  - form might be shorter or less dominant
  - texture might be softer or smaller
  - color might contrast or complement
- Tendon maintains the configuration line
- Triangles interlock with the skeleton plant triangles along the configuration line
- 10 to 20 % of flowers in the design

Flesh

- More subordinate flowers
- Scattered in and among the other flowers to complete and fill out the design
- Place in clusters that form asymmetrical shapes with fractured edges
- Group together to form clusters around the skeletal and tendon flowers
- creates a shifting mosaic with the groupings of plants
- 60-80% of the number of plants

Sparkle

- Final touch
- Few special or highly contrasting flowers
- Odd-numbered groups of three, five or seven
- Placed randomly
# Site Analysis Plan Grading Sheet

Instructors: rate the students on a scale of 1 to 5 for each of the following Site Analysis Items:

- **5**: present, well planned for
- **4**: present, planned for
- **3**: present
- **2**: present, needs improvement
- **1**: not present

NA = not applicable to this design. You will need to fill in the points possible as some items may not be used in all designs.

<table>
<thead>
<tr>
<th>Site Analysis Items</th>
<th>Points Possible</th>
<th>Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing vegetation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree and shrub condition and placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trees on adjoining property</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardscape</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Permanent features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panoramic views</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concentrated or focused view</td>
<td></td>
<td></td>
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<tr>
<td>Blocked view</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor drainage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City/county ordinances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>other distractions—glare or odors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility placement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television cables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>telephone cables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>water lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sewage lines septic tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>field line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easements/setback lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary architectural features of the house</td>
<td></td>
<td></td>
</tr>
<tr>
<td>House orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil conditions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seasonal wind pattern</td>
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</tr>
<tr>
<td>prevailing winds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note existing wind breaks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microclimate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snow removal, pile-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Items to consider on specific Site Analysis:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Site Analysis Subtotal:                   |                 |               |

Late 10%/day:

**SITE ANALYSIS TOTAL:**
<table>
<thead>
<tr>
<th>Landscape Design Item:</th>
<th>Points Possible:</th>
<th>Points Earned:</th>
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<tbody>
<tr>
<td>Drafting Skills:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>House is square</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>House lines are correct length</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Yard lines are correct length</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Items labeled correctly</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>House and borders drawn in</td>
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<td></td>
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<tr>
<td>Legend</td>
<td>20</td>
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<tr>
<td>Title Block</td>
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</tr>
<tr>
<td>Exact scale throughout design</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Lettering complete &amp; neat</td>
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<td></td>
</tr>
<tr>
<td>Lines are dark, smooth, &amp; consistent</td>
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<td></td>
</tr>
<tr>
<td>Overall neatness throughout design</td>
<td>20</td>
<td></td>
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<tr>
<td>Drafting Skills Subtotal:</td>
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</tr>
<tr>
<td>Principles and Elements:</td>
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<td></td>
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<tr>
<td>Variety in plants and textures</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Simplicity evident</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Circulation provides ease in movement</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Focal points in front &amp; rear garden</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Overall design of property balanced</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Foliage mass appears balanced</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Plants appear massed</td>
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<td></td>
</tr>
<tr>
<td>Plants repeated throughout design</td>
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<td></td>
</tr>
<tr>
<td>Principles &amp; Elements Subtotal:</td>
<td>40</td>
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<tr>
<td>Design Areas:</td>
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</tr>
<tr>
<td>Areas well defined and organized</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Entry to residence enhanced</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Guest parking provided &amp; appropriate</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Plantings in borders of yard</td>
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<td></td>
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<tr>
<td>Design Areas Subtotal:</td>
<td>35</td>
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<tr>
<td>Low Maintenance Design:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoid acute angles with lawn</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Lawn areas can be mowed with riding lawn mower</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>grass only where it is needed</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Distinct mowing edge, clean lawn boundary</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Trees--own planting bed</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Plant selection-less pruning, pest resistance, fruit drop</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>90 degree angles when lines or forms intersect at a square</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Use of perennials over annuals</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Low-maintenance Subtotal:</td>
<td>40</td>
<td>+__________</td>
</tr>
<tr>
<td>Colors consistent with landscape designing</td>
<td>15</td>
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<tr>
<td>Coloring clean &amp; neat</td>
<td>70</td>
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<td>Coloring Subtotal:</td>
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<tr>
<td>DESIGN Subtotal:</td>
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<td>Late 10%/day</td>
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<td></td>
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<tr>
<td>DESIGN TOTAL:</td>
<td>300</td>
<td></td>
</tr>
</tbody>
</table>
Instructors: rate the students on a scale of 1 to 5 for each of the following areas:

5 = most appropriate use of space
4 = used space well
3 = used space
2 = space needs improved
1 = lease appropriate use of space
NA = not applicable to this design

You will need to fill in the points possible as some areas may not be used in all designs.

<table>
<thead>
<tr>
<th>Area:</th>
<th>Points earned</th>
<th>Points possible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public area overall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify point of entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to entry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify guest parking</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal:</strong></td>
<td>_____________</td>
<td>_______________</td>
</tr>
<tr>
<td><strong>Private area overall:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deck or patio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open area of lawn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming pool</td>
<td></td>
<td></td>
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<tr>
<td>Athletic facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barbecue</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Picnic facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trails</td>
<td></td>
<td></td>
</tr>
<tr>
<td>View gardens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflection pools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Privacy plants or fences</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal:</strong></td>
<td>_____________</td>
<td>_______________</td>
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<tr>
<td><strong>All space designated:</strong></td>
<td>_____________</td>
<td>_______________</td>
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<tr>
<td><strong>Other specific to this diagram:</strong></td>
<td>_____________</td>
<td>_______________</td>
</tr>
<tr>
<td><strong>Subtotal:</strong></td>
<td>_____________</td>
<td>_______________</td>
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</table>

<table>
<thead>
<tr>
<th>Area:</th>
<th>Points earned</th>
<th>Points possible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Play area overall:</strong></td>
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<td></td>
</tr>
<tr>
<td>Visible from kitchen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy access to rear entry door</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swings</td>
<td></td>
<td></td>
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<tr>
<td>Slides</td>
<td></td>
<td></td>
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<tr>
<td>Sandbox</td>
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<tr>
<td>Shade trees</td>
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<td></td>
</tr>
<tr>
<td><strong>Subtotal:</strong></td>
<td>_____________</td>
<td>_______________</td>
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</table>

<table>
<thead>
<tr>
<th>Area:</th>
<th>Points earned</th>
<th>Points possible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utility area overall:</strong></td>
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<td></td>
</tr>
<tr>
<td>Screen from private area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Located for access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smallest space, still functional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clothesline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compost bin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firewood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel tanks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garbage containers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garden supplies storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greenhouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pet facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool storage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetable gardens</td>
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<td></td>
</tr>
<tr>
<td>Workshops</td>
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<td></td>
</tr>
<tr>
<td><strong>Subtotal:</strong></td>
<td>_____________</td>
<td>_______________</td>
</tr>
</tbody>
</table>

| **Bubble Diagram Subtotal:**        | _____________ | _______________ |
|                                     | _____________ | _______________ |

| **Late work- 10% / day:**           | _____________ | _______________ |
| **Bubble Diagram Total:**           | _____________ | _______________ |
Unit Objectives
1. Students will be able to identify and demonstrate the Elements of Landscape Design.
2. Students will be able to identify and demonstrate the Principles of Landscape Design.
3. Students will be able to identify the colors on a color wheel.
4. Students will be able to identify color values: tints, tones, & shades.
5. Students will be able to identify different color harmonies.

Power Points
Elements and Principles of Landscape Design
Color

Student Handouts
Elements & Principles of Design Student Sheet
Elements & Principles Flashcards
Mandala Student Sheet
Color Sheet

Evaluation
Elements & Principles Quiz
Elements & Principles Quiz Master

Interest Approach
Have the students imagine a day at the beach. They are building a giant sand castle. Let the
students help you think of all the items/tools they will need—i.e. buckets, shovels, sand, water,
and sticks. Now have them describe how they will go about building-- the first layer of sand,
then the towers and mote and whatever else they can think of that goes into building the sand
castle. Now explain to them that the elements of designing are like the tools they needed to build
the sand castle—the sand, water, buckets, and shovels. The principles are how the pieces are put
together—we need a stable foundation before we add a second—then we can add the tower and
the mote. The elements are what items were tangibly used to put the castle together; the
principles are the “rules” of construction. You may use a different building strategy, but the
basis is the same.
Teaching Content

**Elements of Design**

**The elements of design:** the directly observable components, ingredients, and physical characteristics of design.

**Line:** the vital visual path that directs eye movement through a composition.

**Form:** the shape or configuration of an individual component of the composition. The overall, three-dimensional, geometric shape or configuration of a composition.

**Space:** the area in, around, and between the components of the design, defined by the three-dimensional area occupied by the composition.

**Texture:** the surface quality of a material, as perceived by sight or touch.

**Pattern:** a repeated combination of line, form, color, texture, and/or space.

**Size:** the physical dimensions of line, form, or space.

**Color:** the visual response of the eye to reflected rays of light.

**Principles of Design**

**Principles of design**—fundamental guidelines to aesthetic design that govern the organization of the elements and materials in accordance with the laws of nature.

**Balance:** a state of equilibrium, actual or visual; a feeling of three-dimensional stability.

**Proportion:** the relationship of one portion to another, or of one portion to the whole.

**Scale:** the relative ratio of size, or the relationship of the size of a composition to the surrounding area or environment.

**Focal area/ focal point:** the area of greatest visual impact or weight; the center of interest to which the eye is most naturally drawn.

**Opposition:** contrast between elements which are counterpoint in relation to each other.

**Simplicity:** elimination of unnecessary detail

**Variation:** dissimilarity among attributes or characteristics.

**Rhythm:** visual movement through a design, usually achieved through repetition or gradation.

**Repetition:** the recurrence of like elements within a composition.

**Transition:** the ease of visual movement with results from gradual degrees of change among one or more of the elements.

**Unity:** oneness of purpose, thought, style, and spirit.


**Color**

**Color:** the visual response of the eye to reflected rays of light.

**Hue:** the descriptive name of color. Hue defines a specific spot on the color wheel. Hues are pure color without black, white, or gray added to them.

**Value:** the lightness or darkness of a hue, relative to the gray scale, achieved by the addition of black, white, or gray.

**Shade:** a hue which has been darkened by the addition of black. E.g., navy is a shade of blue.

**Tint:** a hue which has been lightened by the addition of white. E.g., pink is a tint of red.
**Tone**: a hue which has been muted by the addition of gray, often resulting in a dull or dusty appearance.

**Color wheel**: twelve hour color system which was developed by Louis Prang, an American Printer in 1876.

**Primary colors**: red, yellow, and blue—are spaced equidistantly apart on the color chart and cannot be created by mixing any other colors together.

**Secondary colors**: orange, green and violet—are created by mixing two primary colors and are placed in between primary colors.

**Tertiary colors**: red-orange, red-violet, blue-violet, blue-green, yellow-green, and yellow-orange are situated between primary and secondary colors and are made from mixing the two. Primary color is always listed first with a hyphen in the center of the word.

**Chromatic colors**: colors derived from the visible spectrum and characterized by the presence of both hue and chroma, all colors other than black, white or gray.

**Achromatic colors**: neutral colors which lack hue: white, black, and any values of gray and they do not appear on the color wheel.

**Neutral color**: an achromatic color to which a small amount of hue has been added.

**Advancing colors** (also known as aggressive or warm)-colors that are predominantly composed of red or yellow and seem to visually move forward toward the viewer.

**Receding colors**: (also known as passive or cool)-colors that are predominantly composed of blues or greens. Receding colors seem to visually pull back from the viewer.

**Color harmonies**: groupings of specific hues and/or different values of a hue, resulting in a pleasing or useful combination. Color harmonies may display different values of the given hue and still be (i.e. pink and mint green) considered complementary color harmony. White, black and gray—being achromatic, can be legitimately included in any color harmony without disrupting it.

**Achromatic color harmony**: a grouping of colors without hue; white, black, and any values of gray.

**Monochromatic color harmony**: a grouping of different values of one hue, and which may include achromatic colors. An example would be a color scheme using pink (red+white), mauve (red+gray), red, burgundy (red+black), and/or black, white or gray.

**Analogous color harmony**: a color harmony featuring adjacent hues on the color wheel, incorporating no more than one primary color. The group of adjacent colors forms an angle of up to 90 degrees on the color wheel. One color usually dominates. The most realistic depiction of colors as they occur in nature as well as interior environments, also one of the most harmonious and pleasing of all. An example of an analogous color scheme would be using green, blue-green, and yellow-green, with green dominating.

**Complementary color harmony**: a pair of hues directly opposite each other on the color wheel. Some examples would be red and green, violet and yellow, or blue and orange. Many schools select their colors from a complementary color harmony.
**Split complementary color harmony**: a trio of hues, consisting of a hue and the two hues on either side of its direct complement. An example would be violet with yellow-orange, and yellow-green. Many restaurants use a split-complementary color scheme.

**Triadic color harmony**: a grouping of three hues which are equidistant on the color wheel. An example would be the primary colors red, blue and yellow. An interesting triadic color harmony used often in baby designing would be pink, baby blue, and soft yellow. Changing the value does not change the color harmony.

**Tetradic color harmony**: a grouping of four hues which are equidistant on the color wheel.

**Polychromatic color harmony**: a multicolored grouping of many hues which may otherwise be unrelated.


**Student Activities**

1. **Elements and Principles School Grounds Observation**
   Take your students on an observation hike around the school campus, or greenhouse. Have them evaluate their surroundings according to the elements and principles around them. Have them also observe color harmonies. They may find these in posters on the wall, school colors, clothing, tiles, etc. Give them a few minutes to find the elements, principles and color harmonies and then meet back together as a class to discuss what they found. If it isn’t possible to leave the classroom, take a moment to have the students identify different elements, principles and color harmonies in class.

2. **Elements and Principles Class Discussion**
   Make flashcards that are provided. Hand out one card to each student. Have students view an art piece or a landscape design from ppt. Go around the classroom and have the students share what they see as pertaining to the element or principle. Switch to a different slide and have the students trade cards with each other and start evaluation again. This will help the students prepare for the next activity.
   
   **Equipment:**
   *Elements & Principles Flashcards*

3. **Elements and Principles Art Evaluation**
   Students will need to gather pictures of 2 landscape designs, one art piece, and one advertisement out of magazines or internet site. Instructors may change the required evaluation criteria. Students will evaluate the piece according to the elements and principles displayed in the picture. Students will write what it is about the picture that displays the element or principle in the corresponding table. Teachers may want to evaluate one piece as a class.
   
   **Equipment:**
   *Elements & Principles Student Sheet*
4. **Color a Mandala**

Mandalas have spiritual significance to Buddhist Monks who developed them. They believe that a realigning of the spirit and body can be achieved by creating a mandala. Mandalas are usually circular with some type of center point signifying deity. The mandala is often divided into twelve equal parts—which makes it perfect for creating a color wheel. Have students fill in each of the twelve parts of the color wheel by coloring a mandala. Additional study may be made by researching mandala history, uses, etc. You may have the students cut out their mandala and laminated it for them. They will then have a color wheel to refer to during the rest of the course. Students may color the mandala with hues, tints, tones, and shades.

**Equipment:**

- Packages of 24 Crayola Crayons—these include all of the tertiary colors
- *Mandala Student Sheet*

**References**


**Resources**

<table>
<thead>
<tr>
<th>LINE</th>
<th>PATTERN</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORM</td>
<td>SIZE</td>
</tr>
<tr>
<td>SPACE</td>
<td>COLOR</td>
</tr>
<tr>
<td>TEXTURE</td>
<td>UNITY</td>
</tr>
<tr>
<td>Balance</td>
<td>Simplicity</td>
</tr>
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<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Proportion</td>
<td>Repetition</td>
</tr>
<tr>
<td>Rhythm</td>
<td>Focal Point</td>
</tr>
<tr>
<td>Transition</td>
<td>Opposition</td>
</tr>
<tr>
<td>Scale</td>
<td>Variation</td>
</tr>
</tbody>
</table>
Landscape Design

Elements and Principles Quiz

<table>
<thead>
<tr>
<th>Match the following terms with their definitions:</th>
<th>(2 points each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Elements of design</td>
<td>11. Proportion</td>
</tr>
<tr>
<td>2. Line</td>
<td>12. Scale</td>
</tr>
<tr>
<td>3. Form</td>
<td>13. Focal area/ focal point</td>
</tr>
<tr>
<td>5. Texture</td>
<td>15. Simplicity</td>
</tr>
<tr>
<td>6. Pattern</td>
<td>16. Variation</td>
</tr>
<tr>
<td>7. Size</td>
<td>17. Rhythm</td>
</tr>
<tr>
<td>8. Color</td>
<td>18. Repetition</td>
</tr>
</tbody>
</table>

| a. | the physical dimensions of line, form, or space. |
| b. | The vital visual path that directs eye movement through a composition |
| c. | the visual response of the eye to reflected rays of light. |
| d. | the shape or configuration of an individual component of the composition. The overall, three-dimensional, geometric shape or configuration of a composition. |
| e. | the surface quality of a material, as perceived by sight or touch. |
| f. | a repeated combination of line, form, color, texture, and/or space. |
| g. | the area in, around, and between the components of the design, defined by the three-dimensional area occupied by the composition. |
| h. | the directly observable components, ingredients, and physical characteristics of design. |
| i. | the recurrence of like elements within a composition. |
| j. | the relative ratio of size, or the relationship of the size of a composition to the surrounding area or environment. |
| k. | oneness of purpose, thought, style, and spirit. |
| l. | contrast between elements which are counterpoint in relation to each other |
| m. | the area of greatest visual impact or weight; the center of interest to which the eye is most naturally drawn. |
| n. | the relationship of one portion to another, or of one portion to the whole. |
| o. | fundamental guidelines to aesthetic design that govern the organization of the elements and materials in accordance with the laws of nature. |
| p. | dissimilarity among attributes or characteristics. |
| q. | visual movement through a design, usually achieved through repetition or gradation. |
| r. | a state of equilibrium, actual or visual; a feeling of three-dimensional stability. |
| s. | the ease of visual movement with results from gradual degrees of change among one or more of the elements. |
| t. | elimination of unnecessary detail |
Matching:
Match the following color terms with their correct definition:
(2 points each)
21. Color _________
22. Hue _________
23. Value _________
24. Shade _________
25. Tint _________
26. Tone _________
27. Color wheel _________
28. Chromatic colors _________
29. Achromatic colors _________
30. Advancing colors _________
31. Louis Prang _________
32. Neutral colors _________
33. Receding colors _________

a. twelve hour color system developed in 1876.
b. all colors other than black, white or gray.
c. known as passive or cool colors

d. white, black, and gray--which do not appear on the color wheel.
e. an achromatic color to which a small amount of hue has been added.
f. known as aggressive or warm colors.
g. an American Printer who developed the color wheel.
h. descriptive name of color which defines a spot on the color wheel.
i. a hue which has been lightened by the addition of white.
j. the visual response of the eye to reflected rays of light.
k. a hue which has been darkened by the addition of black.
l. a hue which has been muted by the addition of gray.
m. the lightness or darkness of a hue.

34. Using the color wheel, give an example of the following color harmonies: (3 points each) Each example should have the colors listed which will be used.

Achromatic color harmony
Monochromatic color harmony
Analogous color harmony
Complementary color harmony
Split complementary color harmony
Triadic color harmony
Tetradic color harmony
Polychromatic color harmony
35. Fill in the following color wheel. Label each hue as P-primary, S-secondary, or T-tertiary. (3 points each)
Principles and Elements of Landscape Design Quiz Master

1. Elements of design
2. Line
3. Form
4. Space
5. Texture
6. Pattern
7. Size
8. Color
9. Principles of design
10. Balance
11. Proportion
12. Scale
13. Focal area
14. Opposition
15. Simplicity
16. Variation
17. Rhythm
18. Repetition
19. Transition
20. Unity
21. Color
22. Hue
23. Value
24. Shade
25. Tint
26. Tone
27. Color wheel
28. Chromatic colors
29. Achromatic colors
30. Advancing colors
31. Louis Prang
32. Neutral colors
33. Receding colors
34. Answers will vary
35. See color wheel to check
Color Sheet
## Landscape Design Ag 330

**Elements and Principles of Design Assignment Sheet**

Evaluate two landscape designs, one art piece, and one advertisement. Write which part of the design conveys the specific element or principle. For example, if the trees in a design show a nice vertical line, write trees in the box.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Landscape Design</th>
<th>Landscape Design</th>
<th>Art Piece</th>
<th>Advertisement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
<td></td>
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<td></td>
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<tr>
<td>Form</td>
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<td>Texture</td>
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<td>Pattern</td>
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<td>Size</td>
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<td>Color</td>
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<tr>
<td>Principles</td>
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<tr>
<td>Balance</td>
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<tr>
<td>Proportion</td>
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<tr>
<td>Focal point</td>
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<td>Scale</td>
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<td>Opposition</td>
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<td>Simplicity</td>
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<td>Variation</td>
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<td>Rhythm</td>
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<td>Repetition</td>
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<td>Transition</td>
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</tr>
<tr>
<td>Unity</td>
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</tr>
</tbody>
</table>
Agricultural Science and Technology
Landscape Design-Ag 330
Nursery/Landscape Equipment & Supplies Identification

Unit Objectives
1. Students will be able to properly identify nursery equipment and supplies.
2. Students will be able to identify appropriate uses for nursery equipment and supplies.
3. Students will compare nursery equipment and supplies to find the similarities and differences.
4. Students will be able to determine if nursery equipment and supplies are readily available in their area.

Power Point
Nursery Equipment & Supplies Identification

Student Handout
Nursery Equipment & Supplies Observation Sheet
Nursery Equipment & Supplies Comparison Student Sheet

Evaluation
Nursery Equipment & Supplies Identification Quiz ppt.

Interest Approach
Assign the students a job using incorrect tools such as eating a yogurt or pudding with a pencil or ruler, knife or fork. Then let the students use the correct tool, in this case a spoon. You may wish to build a peanut butter and jelly sandwich instead. Timing the event would make it more interesting—first using inappropriate tools, then appropriate ones. Use this demonstration to lead into nursery equipments and supplies identification and appropriate uses for each.

Student Activities
1. Nursery Equipment & Supplies Identification
   Where possible have a class set of each nursery equipment and supplies. Share appropriate uses with the students. Allow students to experiment using tools. Observe safely regulations.
   **Equipment:**
   Nursery Equipment & Supplies available at your school

2. Nursery Equipment & Supplies Comparison
   Students will compare different nursery equipment & supplies to learn the similarities and differences between them.
   **Equipment:**
   Equipment & Supplies Comparison Student Sheet
3. **Garden Supply Store**
   Send students to a garden supply store. Have them observe which equipment and supplies are readily available. Have students fill in the Nursery Equipment & Supplies Observation Sheet.

**Equipment:**

*Nursery Equipment & Supplies Observation Sheet*

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### Resources

Sites that have power point presentations with--

**Nursery Equipment & Supplies Identification:**

- Okstate.edu
- Gaaged.org

---

### References

- 1.bp.blogspot.com
- 1.zoysiafarms.com
- 2.bp.blogpots.com
- 2.sunysuffolk.edu
- 877joebark.com
- acohardware.com
- acwsupply.com
- aircraftspruce.com
- alligata.co.uk/
- americannettings.com
- approvedgasmasks.com
- auction.uufh-nc.org
- beingwife.files.wordpress.com
- benmeadows.com
- cartsandanchors.com
- catalog.ehgriffith.com
- catalogclearance.com
- clark.wsu.edu
- continentalrollomixer.com
- cooltropicalplants.com
- creativeglassguild.co.uk
- crew1717.org/
- dawsonindia.com
- diy-green-home-improvement.com
- drillspot.com
- dridget.com
- drumsanders.net
- eex.images-amazon.com
- eijkelkamp.com
- emeraldseedandsupply.com
- farmtek.com
- fivenonblondes.files.wordpress.com
- free-background-wallpaper.com
- freelants.com
- furniture.lovetoknow.com
- gardening-tools-direct.co.uk
- gear.tinyfarmblog.com
- grocerystorefeet.files.wordpress.co
- n/
- gthydroponics.com
- gwestern.com
- hackedgadgets.com
- hardwareworld.com
- hollywoodsandvines.comtnfarmsup
- ply.com
- homedepot.com
- igoe.ie/
- image.made-in-china.com
- images.meredith.com
- img.alibaba.com
- img.diytrade.com
- img.hgtv.com
- imitationrain.com
- jelpc-pneumatic.com
- karlkuemmerling.com
- kiowacd.org
- kk.org
- landscapingwisconsin.com
- longfence.com
- mineralprocess.com
- monstrosupply.com
- northerntool.com/
- ohioline.osu.edu
- okstate.edu
- oregonwineproducts.com
- otteruk.com
- plantpropagation.com
- plumberssurplus.com
- portable-electric-power-generators.com
- prosupplydepot.com
- pubs.caes.uga.edu
- qcsupply.com
- reaselackpolymers.com
- repotme.com
- rittenhouse.ca
- robbinsaquatics.co.uk
- rumfordgardener.com
- s7d5.scene7.com
- sci.sdsu.edu
- sciencefirst.com
- sosecure.demonweb.co.uk
- suburbanlandscapesupply.com
- suppliers.jimtrade.com
- thecompostshop.co.uk
- thegarden.co.uk
- tlcfortrees.info
- turf.msu.edu
- ultimatehandyman.co.uk
- upload.wikimedia.org
- uthernoobserver.com
- veggiefmt.com
- verobeachbusinessdirectory.com
- wikipedia.com
- wilkinsonplus.com
- williamtheconer.files.wordpress.com
- wise4living.com
Landscape Design Ag 330

Nursery Equipment & Supplies Observation Sheet

Observe as many sources as possible to find the following nursery equipment and supplies. Determine the use of the items. Have a manager or sales clerk sign the next sheet as verification.

<table>
<thead>
<tr>
<th>Item</th>
<th>Use</th>
<th>Store</th>
<th>Item</th>
<th>Use</th>
<th>Store</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anvil-and-blade pruner</td>
<td></td>
<td>Garden (spading) fork</td>
<td>Architect’s scale</td>
<td></td>
<td>Garden (bow) rake</td>
</tr>
<tr>
<td>Ball cart (B&amp;B truck)</td>
<td></td>
<td>Gas mask</td>
<td>Bark mulch</td>
<td></td>
<td>Grafting band</td>
</tr>
<tr>
<td>Bark medium</td>
<td></td>
<td>Grafting tool</td>
<td>Bow saw</td>
<td></td>
<td>Granular fertilizer</td>
</tr>
<tr>
<td>Bow saw</td>
<td></td>
<td></td>
<td>Brick paver</td>
<td></td>
<td>Gravity (drop) spreader</td>
</tr>
<tr>
<td>Broadcast (cyclone) spreader</td>
<td></td>
<td>Grass shears</td>
<td>Bubbler head, irrigation</td>
<td></td>
<td>Ground/pelleted limestone</td>
</tr>
<tr>
<td>Bulb planter</td>
<td></td>
<td>Hearing protection</td>
<td>Burlap</td>
<td></td>
<td>Hedge shears</td>
</tr>
<tr>
<td>Chaps</td>
<td></td>
<td>Hoe</td>
<td>Core aerifier</td>
<td></td>
<td>Hose-end repair footing</td>
</tr>
<tr>
<td>Compressed air sprayer</td>
<td></td>
<td>Hook-and-blade pruners</td>
<td>Chain saw</td>
<td></td>
<td>Hose-end sprayer</td>
</tr>
<tr>
<td>Cut-off machine</td>
<td></td>
<td>Hose-end washer</td>
<td>Drip emitter, irrigation</td>
<td></td>
<td>Hose repair coupling</td>
</tr>
<tr>
<td>Dry-lock wall block</td>
<td></td>
<td>Impulse sprinkler</td>
<td>Duster</td>
<td></td>
<td>Landscape fabric</td>
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<tr>
<td>Dust mask</td>
<td></td>
<td>Leaf rake</td>
<td>Edger (power or hand)</td>
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<td>Loppers</td>
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<td>Edging</td>
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<td>Mattock</td>
<td>Engineer’s scale</td>
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<td>Measuring wheel</td>
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<td>Erosion netting</td>
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<td>Mist nozzle (mist bed)</td>
<td>Erosion netting</td>
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<tr>
<td>Fertilizer tablet</td>
<td></td>
<td>Mower blade balancer</td>
<td>Fertilizer tablet</td>
<td></td>
<td></td>
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<tr>
<td>Galvanized pipe</td>
<td></td>
<td>Nursery container</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Use</td>
<td>Store</td>
<td>Item</td>
<td>Use</td>
<td>Store</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------</td>
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<td>-------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Oscillating sprinkler</td>
<td>Planting/earth/soil auger</td>
<td></td>
<td>Polyethylene film</td>
<td>Siphon proportioner</td>
<td></td>
</tr>
<tr>
<td>Peat moss</td>
<td>Planting bar</td>
<td></td>
<td>Polyethylene pipe</td>
<td>Soaker hose</td>
<td></td>
</tr>
<tr>
<td>Pick axe</td>
<td>Pole pruner</td>
<td></td>
<td>Pop-up irrigation head</td>
<td>Soil sampling tube</td>
<td></td>
</tr>
<tr>
<td>Polyethylene film</td>
<td></td>
<td></td>
<td>Post-hole digger</td>
<td>Solenoid valve</td>
<td></td>
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<tr>
<td>Polyethylene pipe</td>
<td></td>
<td></td>
<td>Power blower</td>
<td>Spade</td>
<td></td>
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<tr>
<td>Pop-up irrigation head</td>
<td></td>
<td></td>
<td>Power hedge trimmer</td>
<td>Spark plug gap gauge</td>
<td></td>
</tr>
<tr>
<td>Post-hole digger</td>
<td></td>
<td></td>
<td>Pot-in-pot units</td>
<td>Sphagnum moss</td>
<td></td>
</tr>
<tr>
<td>Power blower</td>
<td></td>
<td></td>
<td>Propagation mat</td>
<td>Spray suit</td>
<td></td>
</tr>
<tr>
<td>Power hedge trimmer</td>
<td></td>
<td></td>
<td>Pruning saw</td>
<td>Square point (flat) shovel</td>
<td></td>
</tr>
<tr>
<td>Pot-in-pot units</td>
<td></td>
<td></td>
<td>PVC (polyvinylchloride) pipe</td>
<td>String trimmer</td>
<td></td>
</tr>
<tr>
<td>Propagation mat</td>
<td></td>
<td></td>
<td>Reel mower</td>
<td>Tape measure</td>
<td></td>
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<tr>
<td>Pruning saw</td>
<td></td>
<td></td>
<td>Resin-coated fertilizer</td>
<td>Timeclock</td>
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<tr>
<td>Resin-coated fertilizer</td>
<td></td>
<td></td>
<td>Respirator</td>
<td>Topsoil</td>
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<td>Respirator</td>
<td></td>
<td></td>
<td>Rotary mower</td>
<td>Tree caliper</td>
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<tr>
<td>Rotary mower</td>
<td></td>
<td></td>
<td>Rototiller</td>
<td>Tree wrap</td>
<td></td>
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<tr>
<td>Round point shovel</td>
<td></td>
<td></td>
<td>Safety goggles</td>
<td>T-square</td>
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<tr>
<td>Safety goggles</td>
<td></td>
<td></td>
<td>Sand</td>
<td>Vermiculite</td>
<td></td>
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<tr>
<td>Sand</td>
<td></td>
<td></td>
<td>Scoop shovel</td>
<td>Vertical mower</td>
<td></td>
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<tr>
<td>Scoop shovel</td>
<td></td>
<td></td>
<td>Shade fabric</td>
<td>Water breaker</td>
<td></td>
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<tr>
<td>Shade fabric</td>
<td></td>
<td></td>
<td>Sharpening stone</td>
<td>Wire tree basket</td>
<td></td>
</tr>
</tbody>
</table>

Signatures of sales clerks:

Store:            Clerk:
## Nursery Equipment & Supplies Comparison Sheet

Compare the following Nursery Equipment & Supplies and determine similarities & differences.

<table>
<thead>
<tr>
<th>SIMILARITIES:</th>
<th>ITEMS:</th>
<th>DIFFERENCES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bubbler head, irrigation</td>
<td>Bubbler head, irrigation</td>
<td></td>
</tr>
<tr>
<td>Drip emitter, irrigation</td>
<td>Drip emitter, irrigation</td>
<td></td>
</tr>
<tr>
<td>Pop-up irrigation head</td>
<td>Pop-up irrigation head</td>
<td></td>
</tr>
<tr>
<td>Impulse sprinkler</td>
<td>Impulse sprinkler</td>
<td></td>
</tr>
<tr>
<td>Oscillating sprinkler</td>
<td>Oscillating sprinkler</td>
<td></td>
</tr>
<tr>
<td>Mist nozzle (mist bed)</td>
<td>Mist nozzle (mist bed)</td>
<td></td>
</tr>
<tr>
<td>Soaker hose</td>
<td>Soaker hose</td>
<td></td>
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<td>Duster</td>
<td>Duster</td>
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<tr>
<td>Bark mulch</td>
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<tr>
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<td>Peat moss</td>
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<td>Pole pruner</td>
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<td>Description</td>
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<td>Square point (flat) shovel</td>
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<td>Ground/pelleted limestone</td>
<td>Resin-coated fertilizer</td>
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<td>Fertilizer tablet</td>
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<td>Cut-off machine</td>
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<td>Galvanized pipe</td>
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<td>Polyethylene pipe</td>
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<td>Engineer’s scale</td>
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<td>Loppers</td>
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<td>String trimmer</td>
<td>Edger (power or hand)</td>
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<td>Garden (spading) fork</td>
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<td>Hoe</td>
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<td>Hoe</td>
<td>Post-hole digger</td>
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<td>Mower blade balancer</td>
<td>Spark plug gap gauge</td>
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<td>Mattock</td>
<td>Pick axe</td>
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<td>Pick axe</td>
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<td>Measuring wheel</td>
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<tr>
<td>Tape measure</td>
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<td>Tree caliper</td>
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<tr>
<td>Timeclock</td>
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<td>Garden (bow) rake</td>
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<tr>
<td>Leaf rake</td>
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<td>Propagation mat</td>
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<td>Pot-in-pot units</td>
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<tr>
<td>Wire tree basket</td>
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<td>Nursery container</td>
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<td>Edging</td>
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<td>Dry-lock wall block</td>
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<tr>
<td>Bulb planter</td>
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<tr>
<td>Planting bar</td>
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<tr>
<td>Planting/earth/soil auger</td>
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<td></td>
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<tr>
<td>Soil sampling tube</td>
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<tr>
<td>Dust mask</td>
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<tr>
<td>Gas mask</td>
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<tr>
<td>Respirator</td>
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<tr>
<td>Compressed air sprayer</td>
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<td>Hose-end sprayer</td>
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<td>Safety goggles</td>
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<td>Hearing protection</td>
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<td>Chaps</td>
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<tr>
<td>Spray suit</td>
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<tr>
<td>Shade fabric</td>
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<tr>
<td>Landscape fabric</td>
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<tr>
<td>Polyethylene film</td>
<td></td>
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<tr>
<td>Grafting tool</td>
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<tr>
<td>Ball cart (B&amp;B truck)</td>
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<td></td>
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<tr>
<td>Gravity (drop) spreader</td>
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<td></td>
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<tr>
<td>Broadcast (cyclone) spreader</td>
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<td></td>
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<tr>
<td>Brick paver</td>
<td></td>
<td></td>
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<tr>
<td>Sharpening stone</td>
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</table>
Agricultural Science and Technology  
Landscape Design-Ag 330  
Installing a Landscape Design

Unit Objectives
1. Students will be able to describe how to plant several different kinds of trees.
2. Students will be able to complete a design model to scale of their landscape plan.
3. Students will be able to prepare a bill of materials for a landscape design.
4. Students will be able to determine the benefits of sod vs. seeding a lawn.
5. Students will be able to learn how to install a hardscape.

Power Point
Installing a Landscape Design

Student Handout
Bill of materials
Tree Planting Student Sheet

Evaluation
Tree Planting Master
Model Grading Sheet

Interest Approach
Help the students imagine a fairy tale landscape where plants are placed correctly and all is beautiful. Now help them imagine a landscape where trees are falling over, plants are dying and all is in chaos. Help them understand why it is so important to install landscapes correctly.

Student Activities
1. Planting a tree
   Have students observe the following internet videos in class:
   **Planting videos**
   - Tree planting techniques
   - Planting bare root trees
   - Balled and burlapped
   - Planting containerized trees
   [arborday.org/trees/video/howtoplant/cfm](arborday.org/trees/video/howtoplant/cfm)

2. Landscape Design Model
   This assignment allows students to “install” a landscape that they have created. You may have opportunity to landscape a client’s yard in this class, but lacking time and money, this assignment is a great substitute. Have students build a landscape design model out of a design they have already drawn. It is helpful to make a copy of their design and glue it to a base cardboard. This only works if they stay in the same scale as their drawing. I have found that students like to work in a larger scale for the model than they used for drawing. You may decide to have students choose a smaller section of their design to build their model. They may choose a key section such as a...
flower bed or water feature. This uses less material and saves time, depending on what resources you have. Detail may then be added in the form of hardscape etc. Have them follow the patterns for grass—felt or they may spray paint their cardboard with green paint. They may glue the trees and flowers into the floral foam. They will be very creative. You may encourage students to provide their own materials or charge a class fee and purchase the items yourself. Examples are included in the Installing a landscape Design ppt. As students complete this activity, you may wish to take pictures and add them to your ppt.

**Suggested Equipment & Supplies:**
- Glue gun & glue
- Scissors
- Knife
- Little colored candy or candy sprinkles—shrubs and flowers
- Floral foam for hills or contours
- Pinecones sprayed green for needle trees
- Dried plant material for deciduous trees
- Peat moss for mulch
- Felt for grass
- Matte board for stairs
- Water—Hot glue and blue paper (gum wrappers)
- Small rocks—boulders and borders
- Spray paint—shades of green
- Graham or other crackers and frosting for flagstone walkway
- Pretzel sticks for fences

**Landscape Design Model Variations:**
1. Have the students make a complete model out of modeling clay.
2. Have the students make a complete model out of all edible materials—such as a gingerbread house.
3. Use plants from your greenhouse to plant a miniature landscape model with real plants. You may plant them in a seed germination flat, add hardscape, trees, shrubs, etc.

3. **Bill of materials**
   Have the students determine the cost of installing the landscape they designed. You may choose to have them estimate one portion of the landscape design. Goods may be researched on line or locally. Labor usually doubles the cost of materials. Tax will need to be determined. Tax will be charged when items are purchased with a business license.

4. **Seeding Vs. Sod Activity**
   Have students calculate how much sod will be needed for a yard. Students could measure any space and have them calculate how much sod will be needed. They may use a plan they have drawn or another plan. Examples of areas to measure include: a parking lot, grass lot, school shop, etc. Sod costs 8-30 cents per square foot depending on variety and quality bought. A lawn with small areas, odd shapes or
steep grade will cost more. A lawn of 2000 square feet would cost between $160-$600. Labor usually doubles the cost. Seed will cost approximately $2 per pound. 1 lb covers 200 square feet. A 5,000 square foot lawn would cost approx $40.00.

**Equipment:**
- Measuring tape
- Calculator

5. **Hardscape**
   Build a frame 4x4 and have the students practice laying bricks or pavers in this space.
   Search the following references for details on how to install hardscapes:
   - Install a retaining wall—dakotahardscapesupply.com/diyretain.html
   - Install a stone patio or walkway—dakotahardscapesupply.com/diypatio.html
   - Install pavers—barkmanhardscapes.com/
   - Irrigation installation—doityourself.com/strylah2installsprinkler
   - Irrigationtutorials.com/
   - Lawnbeltusa.com/design.htm

**References**
Arborday.org
# Landscape Installation Model Grading Sheet

<table>
<thead>
<tr>
<th>Model Grading Items</th>
<th>Points Possible</th>
<th>Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed to scale</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Clean edges</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Appropriate materials</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Present to class</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td><strong>Model Subtotal:</strong></td>
<td><strong>150</strong></td>
<td></td>
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</tbody>
</table>

Late 10%/day

| **MODEL INSTALLATION SUBTOTAL:**                       | **150**         |

Instructor Comments:
Name ______________________________

Bill of Materials Student Sheet

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Price/ea.</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>

Total Materials = ____________

If you purchase items without paying tax, you will need to charge tax and report earnings to the Idaho State Tax Commission.

Total Tax =
(Materials Total x 0.06%)

___________

Labor Cost =
(Total Materials x 2)
You don’t need to charge tax on labor.

___________

TOTAL =
(Materials + Labor + Tax)

___________
Tree Planting Guide Student Sheet Master

Launch the tree planting guide found at--arborday.org/trees/video/howtoplant/cfm

Tree Planting Techniques

1. Why does a tree need to be planted correctly?
Healthy and strong

2. What are some considerations before planting a tree?
Safe to plant it
If in town permit
Not underground or overhead utility wires
Hazard as they grow such as maples, pines, oaks tangled in wires

3. If you plant a tree correctly, it can grow TWICE as fast and live TWICE as long as a poorly planted tree.

Planting bare root trees

4. What are 5 of the steps to planting a bare root tree?
Remove packing materials from roots
Soak water 3-6 hours
Dig hole wider than seems necessary so roots can spread
Clear grass 3 feet radius of planting site
Rotor till to turn bare soil or turn soil
Give a good watering

5. What is a root collar?
Bulge right above roots

Balled and Burlapped

6. What shape is the container?
Saucer shaped

7. How big should the hole for planting a tree be?
2 to 3 times as wide and 10-12 inches deep

8. What are 5 of the steps to planting a balled and burlapped tree?
Sides of hole slope
Don’t disturb soil at bottom
Set tree in center of hole
If moving, support the root ball and don’t move by the trunk alone
Measure for proper depth

Cut upside of wire basket vertically and peel away

Remove all burlap, nails, twine, and rope
Fold burlap back and cut away loose material
Make sure tree is straight

No air pockets
Soil just below root collar
Firmly pack soil around rootball

Give good watering
Mulch

9. When is it okay to leave burlap below the rootball? if not treated or vinyl

**Containerized trees**

10. What are five of the steps to planting containerized trees?

<table>
<thead>
<tr>
<th>Remove tree</th>
<th>Don’t plant too deep</th>
<th>Build a water holding basin around trunk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keep soil intact</td>
<td>Support tree in straight position</td>
<td></td>
</tr>
<tr>
<td>Tap sides and bottom</td>
<td>Firmly pack original soil around roots</td>
<td></td>
</tr>
<tr>
<td>Slide tree from container</td>
<td>Make sure no air pockets as backfilling just below root collar</td>
<td></td>
</tr>
<tr>
<td>Place tree in middle of hole</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Why shouldn’t you yank on the trunk of a tree? 
Don’t try to remove by yanking on trunk—separate roots from tree

12. What does it mean if a tree is rootbound? 
roots circle the rootball

13. What should you do if a tree is rootbound? 
If so, cut x on bottom of root ball with sharp knife and 4 vertical slices on sides to encourage outward growth of roots

14. What does the video say about watering a tree? 
Water well once a week for a slow hour trickle—won’t drown tree

15. Why should you remove all labels on a tree? 
Remove all labels—affect tree as it grows

16. What parts of a new tree should you prune?
Prune only broken, dead or rubbing branches, make sure leader doesn’t compete with other branches

17. What is the proper mulching technique? 
Mulch with wood chips or shredded bark 3 ft circle 2 inches deep.
Name______________________________________

Tree Planting Guide Student Sheet

Launch the tree planting guide found at–arborday.org/trees/video/howtoplant/cfm

Tree Planting Techniques

1. Why does a tree need to be planted correctly?

2. What are some considerations before planting a tree?

3. If you plant a tree correctly, it can grow ___________ as fast and live ___________ as long as a poorly planted tree.

Planting Bare Root Trees

4. What are 5 of the steps to planting a bare root tree?

5. What is a root collar?

Balled and Burlapped

6. What shape is the container?

7. How big should the hole for planting a tree be?
8. What are 5 of the steps to planting a balled and burlapped tree?

9. When is it okay to leave burlap below the rootball?

Containerized Trees

10. What are five of the steps to planting containerized trees?

11. Why shouldn’t you yank on the trunk of a tree?

12. What does it mean if a tree is rootbound?

13. What should you do if a tree is rootbound?

14. What does the video say about watering a tree?

15. Why should you remove all labels on a tree?

16. What parts of a new tree should you prune?

17. What is the proper mulching technique?
Agricultural Science and Technology  
Landscape Design-Ag 330  
Landscape Maintenance

Unit Objectives
1. Students will be able to identify design strategies for a low maintenance landscape.
2. Students will be able to list the benefits of trees.
3. Students will be able to identify proper pruning cuts.
4. Students will be able to list the benefits of mulch.
5. Students will be able to determine the amount of water needed in a landscape.
6. Students will be able to list the key elements in weeding a landscape.
7. Students will be able to list the key elements in fertilizing a landscape.

Power Point
Landscape Maintenance

Student Handout
Lawn Watering Guide  
Landscape Design Fertilizer Experiment Assignment Sheet  
Fertilizer Experiment Data Collection Sheet  
Landscape Design Fertilizer Experiment Grading Sheet  
Tree Pruning Animation Student Sheet

Evaluation
Landscape Maintenance Quiz  
Landscape Maintenance Quiz Master  
Tree Pruning Animation Master

Interest Approach
Have students list all the benefits of trees they can think of. List them on the board. Refer to the Maintaining a Landscape power point presentation or arborday.org/trees/benefits.cfm for more benefits. Lead a discussion on the benefits of maintaining a landscape design.

Teaching Content
Trees:
Where roots really grow
Grow outward to a diameter 1 to 2 times the height of the tree
Roots lie less than 8 to 12 inches below the surface
Don’t grow in compacted soil under paved streets

Girdling
Injures the bark of a tree trunk and extends around much of the trunk’s circumference  
Caused by lawnmowers and weed trimmers  
Destroy vital membranes that conduct water and minerals from the roots to the leaves and return the food produced by the leaves to the rest of the tree

Pruning
Don’t top trees
Never cut main branches back to stubs
Weakly attached limbs grow back higher than the original branches
New grow is ugly & bushy
Starves tree by drastically reducing food making ability
Makes tree more susceptible to insects and disease
1/3 and ¼ rules of pruning
Never remove more than ¼ of a trees’ crown in a season
Try to encourage side branches that form angles that are 1/3 off vertical (10:00 or 2:00 positions)
Most species—tree should have a single trunk
Main side branches should be at least 1/3 smaller than the diameter of the trunk
Don’t prune up from the bottom any more than 1/3 of the tree’s total height
How to make a pruning cut

**Large limbs**
Make a partial cut from beneath
Make a second cut from above several inches out and allow the limb to fall
Complete the job with a final cut just outside the branch collar

**Small branches**
Make a sharp clean cut, just beyond a lateral bud or other branch

**Mulching**
Insulates soil
Retains moisture
Keeps out weeds
Prevents soil compaction
Reduces lawnmower damage
Add aesthetic touch to yard or street

**How to mulch**
Pour wood chips or bark pieces 2 to 4 inches within the circle, but not touching the trunk (will rot)

**Mowing**
Mowing height and mowing frequency determine how nice a lawn looks
never cut away more than one-third of the grass blade in any one mowing
Ideal Mowing Heights:

<table>
<thead>
<tr>
<th>Grass type</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahia grass; fescue, tall; blue grama; buffalo grass</td>
<td>2 to 3 inches</td>
</tr>
<tr>
<td>Bent grass</td>
<td>1/4 to 1 inch</td>
</tr>
<tr>
<td>Bermuda grass, common</td>
<td>3/4 to 1-1/2 inches</td>
</tr>
<tr>
<td>Bermuda grass, hybrid</td>
<td>1/2 to 1 inch</td>
</tr>
<tr>
<td>Centipede grass; zoysia grass*</td>
<td>1 to 2 inches</td>
</tr>
<tr>
<td>Fescue, fine; St. Augustine grass</td>
<td>1-1/2 to 2-1/2 inches</td>
</tr>
<tr>
<td>Kentucky bluegrass</td>
<td>1-3/4 to 2-1/2 inches</td>
</tr>
<tr>
<td>Ryegrass</td>
<td>1-1/2 to 2 inches</td>
</tr>
</tbody>
</table>

Edging and trimming are the finishing touches of mowing
leave clippings on the lawn
pieces break down quickly
reduce the amount of fertilizer by as much as 25%
research has proven that the clippings don't cause thatch to build up

**Watering**

give your plants enough water without giving them too much water
Watering too little can lead to wilt from which the plant may not recover
watering too much starves the roots of oxygen
Different size and types of plants require different depths and widths.
completely wet the root zone each time you water
root zone—the area in which the plant’s feeder roots are concentrated.
The 1-2-3 Rule is an easy way to remember how deep to water:
Grass should be watered to a depth of 10 inches
Water small plants such as groundcovers, cacti, and annuals to a depth of 1 foot.
Water medium plants such as shrubs to a depth of 2 feet.
Water large plants such as trees to a depth of 3 feet.
test watering depth with a soil probe (or a very long screwdriver)
Wait one hour after watering
push the probe into the soil
it will slide easily through wet soil but will be difficult or impossible to push through dry soil
Water your plants and lawn until you can easily slide the probe to the recommended depth.
After plants are established, most water absorbing roots are located near the dripline
beneath the outer edge of the plant’s canopy—not close to the trunk or stem
Concentrate your emitters along the dripline of each plant.
The water will spread down and horizontally as it soaks into the soil, reaching the entire root zone.
When plants get more water than they need, they grow more than they should, and will need to
have more pruning and mowing.
While fertilizers promote plant growth, they also increase water consumption. Apply the
minimum amount of fertilizer needed.

**Watering tips:**

Thatch in the lawn restricts penetration of water, air and nutrients, and should be removed as
soon as possible.
If soil is compacted, aerate (core) to increase water and air penetration
done only during spring
Properly fertilize
Don’t change turf mowing height
Eliminate weeds that compete for moisture
Mulch helps planting beds retain moisture
Use an oscillating sprinkler, or impact-drive revolving sprinkler
Don’t use a hand-held hose
Make sure sprinkler system is in good repair
no leaks
heads are properly adjusted to eliminate any overspray
When installing new landscapes, a properly designed and installed irrigation system should be
included as a water conservation tool.
Consider water consumption when selecting and placing plants (zoning).
Water early in the day to avoid loss due to evaporation.
Water slowly for longer periods of time to avoid loss due to run-off.

**Weeding**
A weed is any plant that grows where it is not wanted
compete with crops for nutrients and water
Weeds and crops can coexist for about 3 weeks before too much competition
convert productive land into unusable scrub
poisonous, distasteful, produce burrs, thorns or other damaging body parts
contaminate harvests
host pests and diseases that can spread to cultivated crops
seeds can lay dormant in the soil for as long as 80-100 years
will germinate if soil is disturbed
can produce as many as 30,000 seeds per plant
Remove weeds before they seed out

**Herbicides:**
Contact herbicides destroy only that plant tissue in contact with the chemical spray.
fastest acting herbicides
ineffective on perennial plants that are able to re-grow from roots or tubers.
Systemic herbicides are foliar-applied and are translocated through the plant and destroy a
greater amount of the plant tissue.
designed to leave no harmful residue in the soil.
Soil-borne herbicides are applied to the soil and are taken up by the roots of the target plant.
Pre-emergent herbicides are applied to the soil and prevent germination or early growth of weed
seeds.

**Organic Weeding Methods:**
Drip irrigation: Rubber hoses bring water to the roots of the desired plants. This limits weed
access to water.
Manually: pulling weeds by hand
Mechanical tilling: carefully till weeds around plants
Weed mat: A weed mat is an artificial mulch, fibrous cloth material, bark or newspaper laid on
top of the soil preventing weeds from growing to the surface.

**Fertilizing**

**Rates of Application:**
Woody plants--N-P-K ratio between 3-1-1 and 4-1-2 (such as 12-4-4)
Landscape plants--N-P-K ratio of 3-1-2

**Timing Fertilizer Treatments:**
once a year is preferable to less frequent applications
twice a year in light sandy soils or in seasons of excess rainfall
best time to fertilize in the northern United States is autumn
after the first hard freeze in October and before the soil freezes in December
next best time prior to growth in early spring
between February and early April
applications may be made up to July 1
after this midsummer date is not recommended--it could delay acclimation to winter weather
conditions

**Methods of Application:**
soil should be moist at the time of fertilizing to prevent fertilizer injury
Liquid Injection into Soil— injection sites for fertilizer
Drill Hole or Punch Bar—opens of heavy, compacted soils which allow air and fertilizer to penetrate the soil
Surface Application—surface of the ground
Fertilizer Stakes or Spikes—driven into the soil
Foliar Spraying—spraying liquid or water soluble fertilizer on the foliage
Tree Trunk Injection or Implants—holes placed in the trunk root flare and infusing with liquid or implants of fertilizer

**Low-Maintenance Landscape Planning**

**Design**
Keep outlines of grass, decks, sidewalks simple
Keep lawn out of small wedges and acute angles
If it can be mowed with a riding lawnmower without a lot of trimming, it is a low maintenance design

**Trees and Shrubs**
Own planting bed
Less edging and trimming if not planted in grass
Next to building Placement
Genetically small w/ slow rate of growth
Selection
Little pruning
pest resistance
Avoid messy fruit droppage

**Lawn**
Keep plant materials separate from grass
Learn to use weed barrier fabrics, mulches, groundcovers and chemicals to reduce weeds
Only plant grass where it is actually needed
Use edging materials that are impregnable
Bender board, metal or concrete edging
Distinct mowing edge, clean lawn boundary

**Flowers**
Use annuals sparingly
Plant every year
Labor and money intensive
Rely more heavily on perennial flowers, ground covers, flowering shrubs & vines

**Student Activities**
1. **Launch the Tree Pruning Guide Animation**
The Arbor Day Foundation website arborday.org has a tree pruning animated guide to help students see pruning guidelines. Use the *Tree Pruning Animation Student Sheet* and *Master*. Guide students through pruning a tree on school grounds. Get permission first.
2. **Lawn Watering Guide**  
Follow the instruction on the *Lawn Watering Guide Student Sheet* and determine the amount of water needed for a school lawn.  

**Equipment:**  
- *Lawn Watering Guide Student Sheet*  
- 5 cans  
- Watering system or sprinklers  
- Ruler

3. **Weed Id.**  
Have students study for the Agronomy CDE. They will need to identify weeds and weed seeds.  

**Equipment:**  
- Agronomy weed and seed id

4. **Fertilizer Application Experiment**  
Students will conduct an experiment to determine the best methods to use for applying fertilizer. They will need to come up with an experiment and implement their ideas. Please see student handout. They may conduct an experiment using different types of fertilizers, application, frequency, duration, and amounts. They will write a report on their findings.  

**Equipment:**  
- *Landscape Design Fertilizer Experiment Assignment Sheet*  
- *Fertilizer Experiment Data Collection Sheet*  
- *Landscape Design Fertilizer Experiment Grading Sheet*  
- differs depending on student experiments  
- fertilizers  
- measuring devices  
- plants

**References**  
The Teaching Content came from the following web sites. See Individual Slide for complete URL.  
- arborday.org  
- dummies.com  
- uri.edu  
- wateruseitwisely.com  
- wikipedia.org  
- wsnla.org
Landscape Design
Fertilizer Experiment Assignment Sheet

Names of Group Members:

Due Date:

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<th>Value:</th>
<th>150 points</th>
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**Requirements:**

- **Research** fertilization application and rate procedures.

**Choose** an experiment that will help you determine optimum conditions for fertilizing plants. You may manipulate the amounts, types, frequency, and duration of fertilizers. You will need to:

- **Write a Hypothesis**—what you think will happen,

- **Determine the Control Group**—normal conditions—no experiment done

- **Determine the Experimental Group**—manipulated conditions

- **Collect Data**—measure results and record on data collection sheet

- **Assign a Time Line**—length of time for experiment—how you will know when your experiment is finished

- **Determine Variables**—what happened that changed the outcome, and

- **Write a Conclusion**—was your hypothesis correct or incorrect according to data collected.

**Report** all of your findings in a typed report—2 pages, double spaced, 12 pt. font. While writing your report, consider the following questions: What were the results of the experiment? Did the experiment turn how you thought it would? Why or Why not? What did you learn about fertilizer? What would you recommend now that the experiment is completed? Complete an extra credit poster of your findings for 25 points.

**Equipment Needed:**

**Comments:** The class will be discussing proper fertilizer. There are many different types of fertilizers and applications. This assignment requires students to gain hands-on experience by conducting an experiment to determine procedures that will provide optimal growing conditions for landscape plants.
Names of Group members

Fertilizer Experiment
Data Collection Sheet

<table>
<thead>
<tr>
<th>Dates</th>
<th>Control Group</th>
<th>Experimental Group</th>
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<tbody>
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</table>
NAME_________________________

LANDSCAPE DESIGN

FERTILIZER EXPERIMENT GRADING SHEET

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Possible Earned</th>
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</thead>
<tbody>
<tr>
<td>Hypothesis</td>
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<td>Variables</td>
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<td>Conclusion</td>
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<tr>
<td>Report (typed, 2 pgs, double spaced, 12 pt. font)</td>
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<tr>
<td>Grammar/spelling</td>
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<tr>
<td>Overall</td>
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<tr>
<td>Late deductions (10%/day)</td>
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<td>Extra Credit Poster (up to 25)</td>
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<tr>
<td><strong>Total</strong></td>
<td>150</td>
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</table>
Lawn Watering Guide Student Sheet

Here's a simple way to determine your lawn watering needs:

1. Place five or more flat bottom cans (tuna can) or coffee mugs randomly around your lawn.
2. Turn on your sprinkler(s) for 15 minutes.
3. Measure the depth of the water in each can with a ruler to determine the average water depth in the cans.
4. Refer to the following chart and read the number of minutes you should water, every third day. Record times for future reference.

<table>
<thead>
<tr>
<th>Depth in Cans</th>
<th>Minutes to Water</th>
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<tbody>
<tr>
<td></td>
<td>Spring*</td>
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<tr>
<td>1/8&quot;</td>
<td>30</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>15</td>
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<tr>
<td>2/3&quot;</td>
<td>10</td>
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<tr>
<td>1/2&quot;</td>
<td>7.5</td>
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<tr>
<td>5/8&quot;</td>
<td>6</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>5</td>
</tr>
<tr>
<td>1&quot;</td>
<td>4</td>
</tr>
<tr>
<td>1 1/8&quot;</td>
<td>3 1/3</td>
</tr>
</tbody>
</table>

*Minutes you should water, every third day.

**Reminders:** Use this chart as a guide only, and alter your watering to climatic conditions. Decrease watering times and frequencies during cool and/or humid weather. Skip at least one scheduled watering after any substantial rainfall.

http://www.wsnla.org/WaterForLife/wfl2.html
Landscape Maintenance Quiz

Circle the statements which are **TRUE**.

Each line is worth 2 points.  74 points total.

**Which of the following statements are true about trees?**

Roots lie less than 8 to 12 inches below the surface.

Tree roots grow in compacted soil under paved streets.

**Which of the following statements are true about girdling?**

Girdling may be caused by lawnmowers and weed trimmers.

Girdling destroys vital membranes that conduct water and minerals from the roots to the leaves and return the food produced by the leaves to the rest of the tree.

**Which of the following pruning statements are true about cutting main branches back to stubs?**

Weakly attached limbs grow back higher than the original branches, making new growth ugly & bushy.

Starves the tree by drastically reducing food making ability and makes tree more susceptible to insects and disease.

**Which of the following statements are true about pruning?**

Never remove more than ¼ of a tree’s crown in a season.

Most species of trees should have multiple trunks.

**Which of the following statements are true about mulching?**

Insulates soil, retains moisture, keeps out weeds, & prevents soil compaction.

Mulching increases lawnmower damage.

**Which of the following statements are true about mowing?**

Never cut away more than one-third of the grass blade in any one mowing.

Edging and trimming are the finishing touches of mowing.

**Which of the following statements are true about fertilizing?**

Fertilizing once a year is preferable to less frequent applications.

The best time to fertilize in the northern United States is summer.
Soil should be moist at the time of fertilizing to prevent fertilizer injury.

**Which of the following statements are true about watering?**

Watering too little starves the roots of oxygen.
Watering too much may lead to wilt from which the plant may not recover.
Different size and types of plants require different depths and widths.
Completely wet the root zone each watering.
After plants are established, most water absorbing roots are located near the dripline.
While fertilizers promote plant growth, they also increase water consumption. Apply the minimum amount of fertilizer needed.
Use a hand-held hose for optimum watering.
Sprinkler systems in need of repair are properly adjusted to eliminate any overspray.
When installing new landscapes, a properly designed and installed irrigation system should be included as a water conservation tool.
Water at noon to avoid loss due to evaporation.
Water quickly for shorter periods of time to avoid loss due to run-off.

**Which of the following are true about weeding?**

Weeds and crops can coexist for about 3 weeks before too much competition.
Poisonous, distasteful, produce burrs, thorns or other damaging body parts.
Weeds host pests and diseases that can spread to cultivated crops.
Seeds can lay dormant in the soil for as long as 80-100 years.
Weeds can produce as many as 30,000 seeds per plant.
Pre-emergent herbicides are applied to the soil and prevent germination of weed seeds.
Two organic weeding methods are manual and use of a weed mat.

**Which of the statements are true regarding low-maintenance landscape planning?**

Keep lawn out of small wedges and acute angles and only plant grass where it is actually needed.
If it can be mowed with a riding lawnmower without a lot of trimming, it is low maintenance.
Trees and shrubs should have their own planting bed.
Perennial flowers are labor and money intensive.
Circle the statements which are TRUE. Each line is worth 2 points. 74 points total.

**Instructors: All statements with an asterisk (*) are false. All others should be circled.**

Which of the following statements are true about trees?

Roots lie less than 8 to 12 inches below the surface.

*Tree roots grow in compacted soil under paved streets.

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Trees and shrubs should have their own planting bed.
* Perennial flowers are labor and money intensive.
Tree Pruning Guide Student Sheet

→Arborday.org
→Trees
→Pruning guide
→Launch the tree pruning animation

Fill in the following blanks and/or answer the following questions:

1. A tree that is properly pruned is:
   a. 
   b. 
   c. 
   d. 
   e. 
   f. 

2. What are the characteristics of a rambling bush?
   a. 
   b. 
   c. 
   d. 

3. What things should be started in the nursery?
   a. 
   b. 
   c. 
   d. 
   e. 
   f. 
   g.
4. When to prune:
   a. What would be a condition where trees could be pruned in the summer?

   b. When is the best time to prune?

   c. Why would it be unhealthy to prune in the fall?

   d. What does the animation say about pruning in the spring?

   e. What does the animation say about pruning after a storm?

   f. When are other times to prune?

5. Identify the 7 Keys to good pruning:
   a. 
   b. 
   c. 
   d. 
   e. 
   f. 
   g. 
   h. 

6. What 5 items does the animation say about pruning for strength?
   a. 
   b. 
   c. 
   d. 
   e. 
7. Pruning for form
   a. Shape trees that is aesthetically pleasing and don’t prune too high too quick, no more than _____________________% of life crown should be removed during a season.
      i. What are Protuders and ingrowers?
      ii. What does the pruning lesson mean by thinning and spacing?
      iii. What is a reason to prune for Function?
      iv. What is a double leader?

8. Virtual pruning lesson--
   a. What is the difference between a tree that is properly pruned and one that is not?

   b. Where specifically do I cut?
      1.
      2.
      3.
      4.

   c. Practice cutting the right branches.
      i. We found a few problems—what advice does the computer give you for proper pruning?
Tree Pruning Guide Student Sheet

→Arborday.org
→Trees
→Pruning guide
→Launch the tree pruning animation

Fill in the following blanks and/or answer the following questions:

1. A tree that is properly pruned is:
   a. tall
   b. straight trunk
   c. full
   d. healthy crown to provide beautiful shade
   e. more able to resist damage from wind and ice
   f. much easier to maintain

2. What are the characteristics of a rambling bush?
   a. Low growing branches
   b. Obscure Streets and driveways
   c. Branches damaged during storms
   d. Unsightly shoots sprout everywhere

3. What things should be started in the nursery?
   a. Strong developed central leader-main shoot
   b. Bright, healthy bark
   c. Trunk and limbs free of insect or mechanical injury
   d. Healthy buds
   e. Branches well distributed around trunk, smaller caliper than trunk
   f. Ideal spacing between branches, 8-12” apart
   g. Good trunk taper, widest at base, tapering gradually to the top
   h. Low branches temporary, but help develop taper; promote trunk caliper growth and prevent sun damage.

4. When to prune:
   a. What would be a condition where trees could be pruned in the summer?
      Corrective purposes
   b. When is the best time to prune?
      Winter, during dormancy most common after coldest part of winter has passed
c. Why would it be unhealthy to prune in the fall?
   Fall no decay fungi, spread spores, healing slower

d. What does the animation say about pruning in the spring? Leave alone

e. What does the animation say about pruning after a storm?
   Prune broken branches—wait to cut it down if wounded, 50% of crown gone—cut the tree down

f. When are other times to prune? Anytime—light pruning, water sprouts and suckers

5. Identify the 7 Keys to good pruning:
   a. Early—wounds small growth where want
   b. Start top—visual inspection from top and work down
   c. Follow leader—best leader and lateral branches
   d. No paint needed—doesn’t prevent or reduce decay
   e. Stay sharp—curved one hand pruner the best
   f. Be safe
   g. Leave collar—swollen area at the branch base, no protruding stubs
   h. Head back—choose bud, grow in desired direction, ¼ beyond bud

6. What 5 items does the animation say about pruning for strength?
   a. Prune modestly if at all—when transplanting, strengthen and expand root system—reduced 80-90% by transplanting, loose leaf surface—food factory
   b. After the first year prune
      i. Best way to avoid weak branches later on and prevent expensive correction later
   c. Narrow angles—future weakness in trunk or crown; grow against each other, hammering a wedge.
   d. Strength—ideal branch angle 10 and 2 o’clock
      i. Branches No more than ½ to ¾ diameter of trunk
   e. Rubbing branches—rub result in wounds, decay, and notches—best to remove one.
   f. Center of gravity—trees deformed by wind more central over trunk by cutting back leader and lateral on windward side

7. Pruning for form
   a. Shape trees that is aesthetically pleasing and don’t prune too high too quick, no more than 25% of life crown should be removed during a season.
      i. What are Protuders and ingrowers?—limbs turn inward, extend beyond natural outline
      ii. What does the pruning lesson mean by thinning and spacing?
removing a portion of the limbs that compete for space and light even spaced laterals 8-12 in apart in a young tree

iii. What is a reason to prune for Function? headed toward house, walkway, sign

iv. What is a double leader?—protect leader from competition, lopsided

8. Virtual pruning lesson--
   a. What is the difference between a tree that is properly pruned and one that is not?
   b. Where specifically do I cut?
      1. 1st cut partway through the branch A
      2. Next cut off branch at B
      3. Then cut along C-D
      4. Do not cut along C-X
   c. Practice cutting the right branches.
      i. We found a few problems—what advice does the computer give you for proper pruning?
Unit Objectives
1. Students will be able to identify and classify nursery pests and disorders.

Power Point
Nursery Pests & Disorders Identification

Student Handout
Nursery Pests & Disorders Identification Student Sheets

Evaluation
Nursery Pests & Disorders Identification Quiz (ppt format)

Interest Approach
Bring in different samples of pest and disorders and start a discussion about what causes these plant disorders. Brainstorm different ways to capture pests. Discuss the impact of plant pests and disorders.

Student Activities
1. Nursery Pests & Disorders Identification
   After discussing the nursery pests & plant disorders identification slides, allow students to explore the greenhouse or school grounds to find different samples. Place sticky yellow insect cards in the greenhouse to capture pests. Have students identify their findings. You may want students to bring in samples from home—depending on availability at school.

   Equipment:
   - Yellow sticky cards
   - Various insect collection equipment

2. Nursery Pests & Disorders Identification Sheets
   Divide the nursery pests & disorders Id items and have each student research the items on the Nursery Pests & Disorders Identification Student Sheet. Have them present their findings to the class. You may wish to have them prepare a power point of the items and add them to your Nursery Pests & Disorders Identification Power Point Presentation.
   The students will find the following information for the pests and disorders:
   - Pest or Disorder No.—pest or disorder number from the official list of Nursery Pest & Disorders Identification
   - Common name—name typically called, may have more than one
   - Unique characteristics—things that make the pest or disorder easier to identify
   - Classification—insect, disease, physiological problem, weed
   - Habitat—where the pest or disorder can be found
• **Growing requirements**—what are the optimal growing conditions for this pest or disorder
• **Image**—draw a sketch of the pest or disorder or upload one from the internet
• **other**—any other things that you would like to remember about the pest that will make it easier to identify

**Equipment:**
*Nursery Pests & Disorders Identification Student Sheets*

**References:**
The photos in the Nursery Pests & Disorders Ppt. have come from the following sites:
altnature.com
associatedcontent.com
bing.com
caf.wvu.edu
colostate.edu
cornell.edu
Edis.ifas.ufl.edu
gardeningknowhow.com
iastate.edu
illinois.edu
Inhs.uic.edu
na.fs.fed.us
nu-distance.unl.edu
OhioLin.osu.edu
orst.edu
pbsgrow.com
pestproducts.com
plant-shed.com
purdue.edu
tamu.edu
ucdavis.edu
utahstate.edu
uwex.edu
vt.edu
wikimedia.org
wikipeida.org
wildmanstevebrill.com
wsu.edu
wsu.edu
Nursery Pests & Disorders Identification
Student Sheet

Obtain the official list of Nursery Pests and Disorders Identification. These pests & disorders are numbered from 217-254. Using your book, internet, or a lab manual, research the following information about nursery pests and disorders and fill out this Student Sheet.

- **Pest or Disorder No.**—pest or disorder number from the official list of Nursery Pest & Disorders Identification
- **Common name**—name typically called, may have more than one
- **Unique characteristics**—things that make the pest or disorder easier to identify
- **Classification**—insect, disease, physiological problem, weed
- **Habitat**—where the pest or disorder can be found
- **Growing requirements**—what are the optimal growing conditions for this pest or disorder
- **Image**—draw a sketch of the pest or disorder or upload one from the internet
- **other**—any other things that you would like to remember about the pest that will make it easier to identify

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<th>Disorder No.</th>
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Agricultural Science and Technology
Floral Design-- Ag 330
Nursery/Landscape Plant Identification

Unit Objectives:
1. Students will learn why scientific classification of plants is important.
2. Students will be able to properly write a scientific name.
3. Students will be able to identify nursery and landscape plants used in the industry.
4. Students will be able to determine which climate zone they live in.
5. Students will be able to classify plants according to climate zone, growth habits, and growing requirements.
6. Students will be able to identify trees according to a dichotomous key.

Power Point Presentations:
The Classification of Plants
Nursery/Landscape Plant Identification A-E
Nursery/Landscape Plant Identification F-L
Nursery/Landscape Plant Identification M-P
Nursery/Landscape Plant Identification Q-Z

Please note that the sources for all slides are found in the notes section for each slide.

Evaluation (power points):
Nursery/Landscape Plant Identification A-E Quiz
Nursery/Landscape Plant Identification F-L Quiz
Nursery/Landscape Plant Identification M-P Quiz
Nursery/Landscape Plant Identification Q-Z Quiz

The quiz answers will be found in the notes section of each slide.

Instructors may use the Nursery/Landscape Career Development Events Guide to evaluate plant identification scoring.
Nursery/Landscape CDE Plant Identification Lists pgs.
Nursery/Landscape CDE Plant Identification Score Card pg.

Student Handout
Nursery/Landscape Plant Identification Student Sheet
Nursery/Landscape CDE Plant Identification List
Nursery/Landscape CDE Identification Score Card
Climate Zone Student Sheet
What Tree Is That? Student Sheet
What Tree Is That? Master

Interest Approach
Show the students the power point The Classification of Plants. Have the students write their own names according to the correct way to write scientific names.
The Classification of Plants

Taxonomy is the study and practice of classifying living things into a natural system of groups based on evolutionary relationships. Whenever one deals with groups of things as large as the more than 350,000 known species of plants, some form of classification is essential. Taxonomists have attempted to make their basic classifications of plant and animals correspond with actual degrees of relationship, as nearly as these can be determined. The plants within any of the major divisions of the plant kingdom are thus understood to be more closely related to each other than they are to plants in any other division (in the animals kingdom, the first level of division is called a phylum). Each division is in turn broken down into progressively smaller categories, and at each level the most closely related plants are placed together into one group. From time to time, especially in modern times with more advanced testing techniques, classifications are changed based on the discovery of some new genetic evidence.

The system of classification most widely used at present, separates the plant kingdom into twelve divisions based mostly on reproductive characteristics, which distinguish among various groups of vascular plants (flowering and non-flowering), fungi, and byophytes (mosses and liverworts). Each division is further separated into classes, each class is divided into orders, the orders into related families, the families into related genera, and each genus into related species. As species may be further divided into subspecies, varieties, and cultivars, the latter category being especially used to identify by trade name the flowers and plants which have been bred or selected for the horticulture and floriculture industries. Historically, Latin has been the language of the science, including botany, and has been conceived to be internationally understandable. Many of the unusual sounding names of flowers and plants have their origins in Latin as well as Greek terminology. The binomial system of nomenclature (the naming of living organisms with a pair of Latin or Latinized word which identify the genus and species) is the comprehensive system by which living things are categorized (at least among Western societies). In technical writing, these words are written in italics. For example: the botanical name for the Bird of Paradise flower is Strelitzia (genus name) reginae (specific epithet).

The botanical name typically references some special characteristic of the plant or flower, its place of origin, or it may commemorate a person, such as the individual who discovered or described it, or the patron who funded the expedition during which the plant was found. The genus name may be thought of as being similar to a last name or surname, and plants within the same genus are understood to be closely related to each other. The specific epithet is like a given name or first name, and it further distinguishes genetically related plants from each other. Just as in human communities, given species names may occur within any number of different genera.

This system of binomial nomenclature originated with the great Swedish botanist, Carl von Linne (1707-1778), who, in 1735, published the first edition of his classification of living things, Systema Naturae. He is more commonly known by the Latinized name with which he dubbed himself, Carolus Linnaeus, and is often called the Father of Taxonomy.
The following chart shows, as an example, the taxonomic classification of the Bird of Paradise:

<table>
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<th>Taxonomic Hierarchy Chart</th>
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<td><strong>Kingdom</strong></td>
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<td><strong>Subdivision</strong></td>
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<td><strong>Family</strong></td>
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<td><strong>Genus</strong></td>
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<td><strong>Species</strong></td>
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<td><strong>Common name</strong></td>
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**Student Activities**

1. **Nursery/Landscape Plant Identification Student Sheet**

   Students will research information for the Nursery/Landscape plants. They will find several different pieces of information:

   **Instructions on the sheet:**

   Obtain the official list of Nursery/Landscape Plant Identification. These plants are numbered from 101-216. Using your book, internet, or a lab manual, research the following information about nursery/landscape plants and fill out the Information Sheet.

   - **Plant no.**—plant number from the official list of Nursery/Landscape Plant Identification
   - **Common name**—name typically called, may have more than one
   - **Scientific name**—Latin botanical epithet
   - **Unique characteristics**—things that make the plant easier to identify
   - **Plant classification**—herbaceous or woody, annual, biennial, perennial, woody plant, vine
   - **Hardiness zone**—zone the plant can withstand as the coldest freezing temperature and still grow
   - **Growing requirements**—does the plant prefer shade or sun, what type of soil, etc
   - **Image**—draw a sketch of the plant or upload one from the internet
   - **Other**—any other things that you would like to remember about the plant that will make it easier to identify

   **Equipment:**

   Nursery/Landscape Plant Identification List
   One copy for each student of the first sheet, several copies of the second sheet—Nursery/Landscape Plant Identification Student Sheet
2. Nursery/Landscape Plant Identification List
   Have the students study the power points and learn the **Nursery/Landscape Plant Identification List**. Each has been divided into 15-20 plants. Help students prepare for the quizzes provided.

3. Climate Zone
   Have the students log onto arborday.org and follow the directions on **Climate Zone Student Sheet** and find which climate zone they live in. This will help when deciding which plants to plant in a particular zone.

4. Arborday.org What Tree Is That? Animation
   Students will launch the “What Tree Is That?” Animation from arborday.org and work through a worksheet to learn how to identify six mystery trees and then they will learn how to use a simple dichotomous key. Students will need to collect information for six trees to identify on their own. **What Tree Is That? Student Sheet & Master**

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The photos in the Plant Identification Ppt. have come from the following sites:

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hortmag.com
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Resources
Nursery/Landscape CDE Guide
What Tree Is That? Student Sheet

→ Log on to Arborday.org
→ What Tree is that? Online Edition
→ Tree ID Tutorial
→ Click to launch the animation
→ Choose a mystery tree to identify until you have identified all six.

All six trees identified:
1. ________________________  4. ________________________
2. ________________________  5. ________________________
3. ________________________  6. ________________________

Fill in the blanks and answer the following questions as you identify the mystery trees:
_______________________have cones. Most conifers are evergreen. Some broadleaf trees, like ________________________, remain evergreen, holding on to their leaves throughout the year-______________________ them gradually over time.

What part of the tree is next year’s leaf? ________________________

A ________________________ leaf has one blade attached to the leaf stalk or ________________________.

A ________________________ leaf has more than one blade attached to the ________________________.

Compound leaves have many individual leaf blades called ________________________.
_______________________ leaves stagger up the twig and are not located directly across from each other on the twig.

_______________________ leaves have two leaves arranged directly across from each other on the twig.

The edge of a leaf is called the _________________________. Some broadleaf trees have leaves with smooth edges or entire margins. Some have ________________________ leaves, leaves with projections that shape the edge of the leaf. Some have toothed margins characterized by a -___________ edge on the leaf.
means the trees keep their leaves through the winter. Conifers have leaves that either look like or leaves that look like small , resembling fish scales.

Broadleaf trees have a variety of and . They have leaves that are and . Most broadleaf trees are , meaning they lose their leaves in the fall.

Collect leaf samples from six more trees. Use samples you have collected to identify six more trees:

→Arborday.org
→What Tree is That? Online Edition
→Western United States
→Begin the Tree Identification

Start sorting which characteristics your trees contain by clicking yes to each of the sets of questions until your tree is the only possible answer.

1.
2.
3.
4.
5.
6.
What Tree Is That?

→ Log on to Arborday.org
→ What Tree is that? Online Edition
→ Tree ID Tutorial
→ Click to launch the animation
→ Choose a mystery tree to identify until you have identified all six.

All six trees identified:

1. Eastern White Pine
2. Bur Oak
3. Eastern Redcedar
4. Honey locust
5. Silver Maple
6. Green Ash

Fill in the blanks and answer the following questions as you identify the mystery trees:

Conifers have cones. Most conifers are evergreen. Some broadleaf trees, like holly, remain evergreen, holding on to their leaves throughout the year—shedding them gradually over time.

What part of the tree is next year’s leaf? Bud

A simple leaf has one blade attached to the leaf stalk or petiole.

A compound leaf has more than one blade attached to the leaf stalk.

Compound leaves have many individual leaf blades called leaflets.

Alternate leaves stagger up the twig and are not located directly across from each other on the twig.

Opposite leaves have two leaves arranged directly across from each other on the twig.

The edge of a leaf is called the margin. Some broadleaf trees have leaves with smooth edges or entire margins. Some have lobed leaves, leaves with projections that shape the edge of the leaf. Some have toothed margins characterized by a saw-like edge on the leaf.

Evergreen means the trees keep their leaves through the winter. Conifers have leaves that either look like needles or leaves that look like small scales, resembling fish scales.

Broadleaf trees have a variety of fruits and flowers. They have leaves that are thin and flat.

Most broadleaf trees are deciduous, meaning they lose their leaves in the fall.

Collect leaf samples from six more trees. Use samples you have collected to identify six more trees:

→ Arborday.org
→ What Tree is That? Online Edition
→ Western United States
→ Begin the Tree Identification

Start sorting which characteristics your trees contain by clicking yes to each of the sets of questions until your tree is the only possible answer.

1. _______________________
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3. _______________________
4. _______________________
5. _______________________
6. _______________________
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FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education. National FFA Online, wwwffa.org, FFA’s Internet web site, can provide information about the National FFA Organization.

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This is your copy of the official rules and regulations for National FFA Career Development Events for 2006–2010. Please retain this manual throughout the five-year period. Refer to the Local Program Resource CD-ROM or FFA online for the most up-to-date edition of the Career Development Event Handbook.

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<td><a href="mailto:marion.fletcher@arkansas.gov">marion.fletcher@arkansas.gov</a></td>
</tr>
<tr>
<td>Horse Evaluation</td>
<td>Mr. Joe Cunningham</td>
<td>918-479-6221</td>
<td><a href="mailto:jlcunningham@lg.k12.ok.us">jlcunningham@lg.k12.ok.us</a></td>
</tr>
<tr>
<td>Job Interview</td>
<td>Ms. Linda Story</td>
<td>270-733-4173</td>
<td><a href="mailto:ljstory@bellsouth.net">ljstory@bellsouth.net</a></td>
</tr>
<tr>
<td>Livestock Evaluation</td>
<td>Dr. Fred Rayfield</td>
<td>229-896-2293</td>
<td><a href="mailto:frayfield@cook.k12.ga.us">frayfield@cook.k12.ga.us</a></td>
</tr>
<tr>
<td>Marketing Plan</td>
<td>Mr. John Jeans</td>
<td>503-999-6914</td>
<td><a href="mailto:jeans@astoria.k12.or.us">jeans@astoria.k12.or.us</a></td>
</tr>
<tr>
<td>Meats Evaluation</td>
<td>Dr. Randy Harp</td>
<td>254-968-9212</td>
<td><a href="mailto:harp@tarleton.edu">harp@tarleton.edu</a></td>
</tr>
<tr>
<td>and Technology</td>
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<tr>
<td>Nursery/Landscape</td>
<td>Dr. Alan McDaniel</td>
<td>540-231-5781</td>
<td><a href="mailto:alanmcd@vt.edu">alanmcd@vt.edu</a></td>
</tr>
<tr>
<td>Parliamentary</td>
<td>Dr. James Connors</td>
<td>614-292-3386</td>
<td><a href="mailto:connors.49@osu.edu">connors.49@osu.edu</a></td>
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<tr>
<td>Procedure</td>
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<tr>
<td>Poultry Evaluation</td>
<td>Dr. Jason Emmert</td>
<td>479-575-3595</td>
<td><a href="mailto:jemmert@uark.edu">jemmert@uark.edu</a></td>
</tr>
<tr>
<td>Prepared Public Speaking</td>
<td>Mr. Dustin DeVries</td>
<td>703-727-9866</td>
<td><a href="mailto:ddevries@falconpro.net">ddevries@falconpro.net</a></td>
</tr>
</tbody>
</table>
PHILOSOPHY FOR NATIONAL FFA CAREER DEVELOPMENT EVENTS

Students are important customers of agricultural education and FFA who recognize quality and value in products and activities. When provided an opportunity to fashion their educational experiences, they generally make wise decisions based on needs. Perceptions, images and opinions of others influence students. They value change based on their perceived personal needs as well as the needs of others. They sometimes value change for the sake of variety. Adults are concerned about the experiences of students and want to help organize experiences that will meet the future needs of students while accomplishing the purposes of agricultural education and the National FFA Organization. The National FFA Organization should assume the leadership role in developing and continuously improving relevant FFA career development events. Although the National FFA Organization should be aware of the needs of state associations and should react to those needs, it should help initiate opportunities that reflect relevant and emerging technology. National FFA Career Development Events should be developed with significant input from FFA members, teachers, partners, respective industry sponsors and others involved in agricultural education.

National career development events should reflect instruction that currently takes place in the entire agricultural education program, including classroom instruction, laboratory instruction, individualized instruction, and/or supervised agricultural experience. However, it is appropriate for the national organization to develop career development events and awards that stimulate instruction in emerging areas that reflect both current and future community, national and global work force needs. The authority for insuring the relevance of an FFA activity is ultimately vested in the National FFA Board of Directors.

The national organization should promote career development events. Career development events that include team activities should be based on cooperation and teamwork while recognizing the value of competition and individual achievement. The role of career development events is to motivate students and encourage leadership, personal growth, citizenship and career development.

Students should be recognized for achievement in career development events. Quality standards should be used as a basis for achievement. The national organization should ensure that the recognition is appropriate and meaningful. Recognition for achievement should be reflective of the total effort required by the chapter/team/individual and should take place at all levels of participation.

The National FFA Organization shall encourage accessibility and provide opportunities for achievement and recognition for students with diverse backgrounds. High expectations should be consistently communicated to those who are involved in career development events and awards.

GENERAL RULES AND OFFICIAL POLICIES

Violations of any of the following rules may be grounds for the event superintendent to disqualify the participants.

National FFA staff and event superintendents will use the published rules and procedures to organize and implement the National FFA Career Development Events. Event activities may not be conducted, modified or substituted due to lack of necessary materials, expertise or extreme impact to event budgets. Every effort will be taken to
maintain the quality and integrity of the event. In this case notification will be provided at the team orientation meeting. Teams that qualify to compete will be mailed the current format for the specific event in a team orientation packet prior to the convention for which they have qualified.

Team Activities

The primary goal of career development events is to develop individual responsibilities, foster teamwork and promote communications while recognizing the value of ethical competition and the value of individual achievement. Where appropriate team activities will be included that requires two or more members from one chapter working cooperatively. Career development events and awards are intended to be an outgrowth of instruction.

Career development events should:

- include problem solving and critical thinking.
- promote an appreciation for diversity by reducing barriers to participation.
- promote new directions and focus on future needs of members and society.
- include cooperative activities, where appropriate.
- encourage broad participation among members and recognize excellence within levels of experience.
- recognize individual and team achievement, develop general leadership and recognize levels of ability.
- provide local recognition for superior performance at the state and national level.

Eligibility of Participants

1. Each participant must be a current bona fide dues paying FFA member in good standing with the local chapter, state FFA association and the National FFA Organization at the time of his/her certification and at the time of the national career development event in which he/she participates.

   If the participant's name is not on the chapter's official roster for the years in which the dues were payable to the National FFA Organization, a past due membership processing fee of $25, in addition to the dues must be paid prior to certification.

2. The participant, at the time of his/her certification as a national team member:

   a. must be a high school FFA member, (a graduating senior is considered eligible to compete in state and national career development events up to and including his/her first national convention following graduation). (High school refers to grades 9–12.)

   b. must have qualified as either a 7th, 8th or 9th grade member to compete in the creed speaking event.

   c. while in school, must be enrolled in at least one agricultural education course during the school year and/or follow a planned course of study; either course must include a supervised agricultural experience program, the objective of which is preparation for an agricultural career.

   The National FFA Constitution provides flexibility to meet the needs of students enrolled in non-traditional programs. For this purpose a student needs to be enrolled in at least one agricultural education course during the year they qualified for the event.

   d. must have qualified as a state representative in a respective career development event; if he or she moves to a
different chapter or a different state, they may be allowed to compete in the national event with the school they qualified with during the qualifying year. Certification forms submitted to the national FFA will be the list that will be accepted.

3. A student may not participate more than once in the same official National FFA Career Development Event. No student may participate in more than one National FFA Career Development Event each year.

4. CDE participants who start an event and do not complete the event without notifying event officials at the time of departure will be disqualified. This can affect the overall team rank and position. In some events this will also disqualify the entire team.

Official Dress

1. Participants are expected to observe the National FFA Code of Ethics and the Proper Use of the FFA Jacket during the career development events. (Please see the latest edition of the Official FFA Manual.) Official dress is highly recommended for all participants where appropriate and is required for the awards presentation and recognition.

SELECTION AND CERTIFICATION OF STATE TEAMS

1. Each state team may be composed of four members except for agricultural communications, agricultural issues, marketing plan and parliamentary procedure. The members of a state team must be from the same chapter. Members must qualify in the career development event in which they are to participate at the national level. With extenuating circumstances a teacher may substitute another student from the chapter who may not have participated at a state qualifying event.

2. Each team will be composed of the number of members determined by the specific event committee. See chart on next page for number of team members and number of scores used to comprise the team score.

3. Teams must be selected at a state or interstate career development event held between the immediate previous National FFA Career Development Event Convention and prior to the National FFA Convention in which they are participating. States that qualify more than one year out must request and submit a written waiver for approval at least 110 days prior to the national event.

4. Each state will submit a team declaration form by June 1st prior to the national FFA convention. A $25 entry-processing fee will be charged for participation in each declared event with the exception of the Dairy Cattle Handlers’ Activity. Processing fee must be paid in conjunction with certification of each team.

5. The state supervisor of agricultural education or the executive secretary must certify that participants are eligible. If an ineligible student participates in any career development event, the member will be disqualified and may result in the disqualification of the team as well.

6. All students must be certified by the designated deadline. Once original certification has been completed, no member may be added without first deleting a member.

7. Certification forms will be made available each year to the state supervisor of agricultural education and the executive secretary through the National FFA CDE website and National Agricultural Education Inservice CD-ROM. States must certify participants to the National FFA Organization 110 days
### OFFICIAL DRESS RECOMMENDATIONS, NUMBER OF PARTICIPANTS
### AND NUMBER OF SCORES FOR TEAM TOTAL

<table>
<thead>
<tr>
<th>Event</th>
<th>Official Dress Appropriate</th>
<th>Number of Participants Allowed (per team)</th>
<th>Number of Scores for Team Total</th>
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<tr>
<td>Agricultural Communications</td>
<td>Yes</td>
<td>5</td>
<td>5</td>
</tr>
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<td>Agricultural Issues</td>
<td>Optional</td>
<td>3–7</td>
<td>Team Score Event</td>
</tr>
<tr>
<td>Agricultural Mechanics</td>
<td>No</td>
<td>4</td>
<td>Top 3 Scores</td>
</tr>
<tr>
<td>Agricultural Sales</td>
<td>Yes</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Agronomy</td>
<td>Yes</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Creed Speaking</td>
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<td>1</td>
<td>N/A</td>
</tr>
<tr>
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<td>Top 3 Scores</td>
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<tr>
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<tr>
<td>Dairy Foods</td>
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<tr>
<td>Environmental and Natural Resources</td>
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<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Extemporaneous Speaking</td>
<td>Yes</td>
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<td>NA</td>
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<tr>
<td>Farm Business Management</td>
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<td>Top 3 Scores</td>
</tr>
<tr>
<td>Floriculture</td>
<td>Yes</td>
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<td>4</td>
</tr>
<tr>
<td>Food Science and Technology</td>
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<td>4</td>
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<tr>
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prior to the start of the national convention. The names of all participants may be submitted after the 110 day certification deadline, but must be in the National FFA Center at least ten (10) business days prior to the career development event in which they are to participate. Any additions or deletions of participants less than ten (10) business days prior to the career development event must be done at the national FFA convention within one (1) hour prior to the time of each respective career development event team orientation meeting.

8. To certify at the convention, advisors are to complete an on-site add/delete form. Membership of those participants listed on the on-site add/delete form will be verified after the convention. If at that time, a member is found to be inactive, the team may be disqualified, if the member who is in question had an effect on the team placing. Regardless, the member in question will be disqualified. These participants must also meet all other requirements of eligibility printed in this handbook. When possible membership checks will be done at the time the on-site add/delete form is processed on site. If at this time the participant is not a member the chapter advisor will have the opportunity to pay membership processing fees, state dues and national dues.

9. Each member participating in a National FFA Career Development Event must submit the proper Waiver, Release of Liability and Consent to Medical Treatment Form. The form must be sent to the National FFA Center within 30 days prior to the event. If a team does not qualify for participation in the national event until after this deadline, the waiver form must be submitted with the certification form. Participants who do not submit this form will not be allowed to participate. National FFA staff highly recommend that all liability waiver forms be submitted with the event certification form prior to the certification deadline. Liability waivers must be submitted with all add/delete forms.

Emergency Conditions

1. Under emergency conditions, a state team participating in a National FFA Career Development Event may be made up of less than the required members. States must still certify teams prior to the national FFA convention, but fewer than the required number could compete if an emergency condition such as illness, death in the family or an act of God would occur. Those individuals competing would still be eligible to qualify for individual awards.

2. Event committees will strive to divide teams into groups so that no two participants from a team will be in the same group. In any case no two members will be placed side-by-side.

Disqualification

1. Any communication, verbal or non-verbal, between participants during a career development event will be sufficient cause to eliminate the team member involved from the career development event. The only exception to this would be communication between team members during the team activity portion of a given career development event.

2. Teams or participants arriving after the career development event has begun may be disqualified or penalized.

3. Any assistance given to a team member from any source other than the career development event officials or assistants will be sufficient cause to eliminate the team from the career development event.
4. Event superintendents may stop any participant if they deem their manner to be hazardous either to themselves or others. Such stoppage shall deem the individuals disqualified for that section of the career development event.

5. CDE participants who start an event and do not complete the event without notifying event officials at the time of departure will be disqualified. This can affect the overall team rank and position. In some events this will also disqualify the entire team.

6. Participants will not be allowed to utilize personal electronic communication devices, other than those approved by the event officials, during the entire course of the event. Participants who access personal electronic communication devices without prior approval of the event officials will be disqualified.

7. No team, participant, advisor or coach shall visit the event facilities from September 1 to the end of the event. Any team, participant, advisor or coach reported and proven to do so will cause the elimination or disqualification of that team from the national event.

8. Assess a penalty of 10% of the total points allotted for the written documents post-marked after the postmarked deadline in the following events: Agricultural Communications, Agricultural Issues, Job Interview, Marketing Plan and Prepared Public Speaking. If the document is still not received seven days after the postmarked deadline, the team/individual may be subject to disqualification.

Waiver of FFA Rules
Any local chapter seeking a waiver of a National FFA Board Policy or Procedure must submit in writing to the chapter’s state FFA association office. If the request is approved at the state level, it must be forwarded, under the signature of the state FFA advisor or executive secretary, to the national FFA advisor. After study by the appropriate staff, the waiver request must be submitted to the national FFA staff at least 30 days prior to the scheduled event or due date for which the waiver is requested. This policy does not supersede any current FFA policy for appeals already established for a particular FFA program.

Rules Committee of the National FFA Award, Recognition and Career Development Events Advisory Committee

1. The committee will meet only when needed at the national FFA convention and will make all final decisions on interpretation of the rules and regulations of the National FFA Career Development Events. The committee will be chaired by the National FFA Awards, Recognition and Career Development Events Advisory Committee chairperson who will in turn appoint a representative of each of the following organizations: National Association of Supervisors of Agricultural Education (NASAE), National Association of Agricultural Educators (NAAE) and the American Association for Agricultural Education, (AAAE). The program manager responsible for career development events will also serve. All five committee members will have one vote each.

2. The rules committee will resolve detailed written appeals associated only with scoring errors. Official judges’ decisions are final. The announced results are the official results and awards may be duplicated as a result of the appeal. The written appeal must be filed with the education division staff responsible for career development events within seven (7) calendar days of the results announcement and accompanied with a $50 filing fee. The fee will be returned if the appeal is justified.
Additional Operational Procedures and Policies

Check-in
Participants will report at the national FFA convention as indicated in the annual team orientation packet. Dates, hours and location will be sent annually to the state supervisor of agricultural education and to each team advisor in the team orientation packet. All participants will be given an identification number by which they will be designated throughout the event.

Assistants, Group Leaders and Officials
Each state agricultural education department is encouraged to provide staff and students to help administer and conduct specific National FFA Career Development Events. States with prepared, extemporaneous and creed speaking participants must provide a judge. States entering a team may recommend a person or persons to serve as an assistant in the career development event in which a team will participate. These persons may be supervisors, teacher educators, teachers of agriculture or other qualified individuals. A person designated as an assistant, group leader or official for a career development event must neither be the coach, advisor or agricultural instructor of a team/individual in that same career development event; nor shall they have had any direct part in training/coaching the team/individual in preparation for the event after qualification for nationals has occurred. If an individual wishes to train/coach their team/individual, they must excuse themselves from the committee and event preparation for that convention year.

Special Need
Accessibility for all students—All special needs requests and appropriate documentation as outlined in the special needs request procedure must be submitted with appropriate career development event certification form by certification deadline. National FFA staff and the event superintendent will be responsible for scheduling assistance from a different state association to assist participants.

Scoring
Continuous revisions of scoring sheets, due to computer scoring, will be necessary. Copies of any revised sheets will be sent to the state supervisor/executive secretary of agricultural education 60 days prior to the career development event.

TEAM AND INDIVIDUAL AWARDS

The ranking of teams and individuals in each of the career development events will be on the basis of three logical groups within the total range of scores. These groups will be designated as gold emblem, silver emblem and bronze emblem. Teams and individuals participating in each of the career development events will be rated gold, silver and bronze emblem through a specific procedure that will be predetermined. However, officials will honor natural breaks in scores. In the final written announcement of results, teams and individuals will be ranked from top to bottom in the order of their placing. Awards will be distributed to the winning teams and individuals at award programs following the completion of the career development events.

1. All awards will be provided by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

2. The team having the highest ranking in each career development event will receive an award and members will receive individual high team awards provided they are present at the time of the awards ceremony.
3. The high individual in each of the National FFA Career Development Events will be announced at the time the awards are distributed and presented with a special award.

4. Results of all National FFA Career Development Events will be released through the education division, National FFA Organization office at the appropriate event award ceremonies.

Career Development Event Scholarships

1. Scholarships may be awarded in the National FFA Career Development Events, as funding is available.

Scholarships will be held for a full year beyond the student’s graduation date. If the scholarship is not requested within one year after graduation from high school, the scholarship will be forfeited. Information on availability of scholarships will be sent annually along with the “Program for National FFA Career Development Events” to state participating teams and state agricultural education officials. Only one career development event scholarship may be awarded per student per year.

2. Additional scholarships may be available to top FFA members who have participated in National FFA Career Development Events at local, state and/or national levels through the National FFA Collegiate Scholarship Program. Students must meet the criteria for each specific area as outlined in the national scholarship application and complete the application that is mailed to each chapter in order to be considered for these scholarships.

3. Farm Business Management Career Development Event Fellows Program is for the advisors of the top two National FFA Farm Business Management Career Development Event teams. The advisor of the first place team will receive a $1,500 award and the advisor of the 2nd place team will receive a $1,000 award. The advisors may use the awards for a) in-service or continuing education b) farm business management instructional materials c) a scholarship fund for the local FFA chapter. The Fellows awards will be awarded on an “as available” basis. Fellows awards may only be awarded to a FFA advisor for a total lifetime amount of $2,500. These awards are provided by the National FFA Organization through National FFA Foundation sponsorship by the career development event sponsor.

Written Tests

All written tests used in National FFA Career Development Events will be available for sale through the National FFA Catalog effective the January following each career development event. Please request Item NCQ (year).

Career Development Events Additions/Deletions

a. National FFA staff in cooperation with the National FFA Board of Directors is expected to be proactive in developing new or initiating changes within existing career development events to ensure they meet the needs of FFA members.

b. Three years following the initiation of a new career development event, 15 states should be participating and 26 states should be participating after the next three-year period in order to retain the event at the national level.

c. In addition, if 15 state supervisors/executive secretaries develop a proposal for a new career development event, the national FFA staff will conduct a study for the validity of the career development event and make a recommendation to the National FFA Board of Directors. Representatives of these states
must be from each of the FFA regions. The same process may be used to eliminate a national career development event.

d. The national organization will certify National FFA Career Development Event winners for international competition when states request, with the understanding that the state team will provide their own travel expenses.

e. The National FFA Board of Directors and national officers shall approve all changes in the general plan, rules and methods of selecting winners.

**NATIONAL FFA AWARD, RECOGNITION AND CAREER DEVELOPMENT EVENTS ADVISORY COMMITTEE**

Purpose: To advise the National FFA Board of Directors on issues impacting both National FFA Career Development Events and Awards to ensure:

1. all activities are consistent with industry needs.
2. all activities are available to all members.
3. all activities are conducted openly, fairly and in a quality manner.
4. cooperation among various activities occurs, to the degree possible, to promote the interconnectedness of agriculture (i.e. forestry and agricultural mechanics or farm business management and dairy or livestock) and agricultural education (classroom, SAE, FFA).
5. new and innovative activities are being put forward for consideration.
6. as many students as possible have the opportunity to participate.
7. a constant process of local advisor in-service on proper use of these activities as tools for learning is being championed.
8. all activities are operated consistently with national FFA board policy.
9. activities are conducted within available budgets approved by the FFA board and, if appropriate, FFA foundation board.

**Membership**

1. Two members of the National FFA Board of Directors, selected by the board, one of which will be a state supervisor (preference may be given for the second position to be held by the teacher acting as the USDE representative).
2. Two members, who are agricultural education instructors, selected by National Association of Agricultural Educators, (NAAE) through a process of their choosing.
3. Two members, who are state staff, selected by National Association of Supervisors of Agricultural Education, (NASAE) through a process of their choosing.
4. Two members, who are teacher educators, selected by American Association of Agricultural Education, (AAAE) through a process of their choosing.
5. Two FFA members who are or were delegates selected by the FFA national officers through a process of their choosing.
6. One member who is a career development event superintendent selected by the CDE superintendents through a process of its choosing.
Consultants
The current superintendent of each FFA career development event area will serve as a consultant.

Term
Members serve a three-year term except for the two FFA member representatives who will serve a one-year term.

Chair
The chair of the national advisory committee on awards and career development events will be the state staff member selected by the National FFA Board of Directors.

Meeting Schedule
1. Annual national convention meeting will be held to report on the completion of activities at convention and provide input into the winter meeting agenda.
2. The annual winter meeting will allow for most of the committee’s work to be conducted as a whole group and in sub-groups focused on specific issues or specific types of activities (e.g., team career development events, individual awards, chapter awards).

Costs for all official members and consultants:
- convention meeting cost is borne by each participant.
- the winter meeting cost will be borne by the National FFA Organization, education division budget and the National FFA Foundation special project budgets for career development events.

National FFA Career Development Event Committee Responsibilities
The National Career Development Event Committee should:
1. broadly represent agriculture teachers, agriculture educators, subject matter specialists and industry personnel.
2. be appointed/confirmed by the chief operating officer with authority to manage the team activities and events.
3. build on the principles of volunteerism and individual members should be recognized for their contributions.
4. elect a superintendent to a five-year term that is confirmed by the FFA chief operating officer.
5. develop and propose a three-year budget to be approved by the appropriate FFA staff subject for submission to the National FFA Board of Directors.
6. develop committee assignments cooperatively with FFA staff.
7. be structured to encourage member development within the committee and be sensitive to, and represent the needs of diverse populations and cultures.
8. be large enough to adequately manage the team activities.
9. be responsible for the identification of the number of teams eligible to participate at the national level. They should encourage equal opportunity for members of teams to participate from across the states.
Conflict of Interest
Any career development event committee member who has a team qualify for or choose to train a team that qualifies for national competition in the event related to their committee assignment shall excuse themselves from their committee duties and event preparation for that convention year to eliminate the conflict of interest. It is the committee member’s responsibility to inform the event superintendent and national FFA staff of their involvement with a team that has qualified for national competition. A person designated as an assistant, group leader or official for a career development event must neither be the coach, advisor or agricultural instructor of a team/individual in that same career development event; nor shall they have had any direct part in training/coaching the team/individual in preparation for the event, after qualification for nationals has occurred.
I. EVENT SCOPE
The Nursery/Landscape Career Development Event includes all aspects of the industry in producing, marketing, utilizing and maintaining landscape plants (woody and herbaceous plants and turf grasses), plus related products, equipment and services including landscape design.

II. EVENT PURPOSE
To stimulate career interest, encourage proficiency development and recognize excellence in students of nursery practices and landscaping through the agricultural education curriculum.

III. OBJECTIVES
PLANT MATERIALS — to demonstrate the ability to identify nursery and landscape plant materials and turf grasses commonly used in the United States.

PLANT DISORDERS — to demonstrate the ability to identify unhealthy plant conditions due to pests, nutritional or physiological disorders and mechanical or chemical injury.

CULTURAL PRACTICES — to demonstrate knowledge of the principles and skills involved in propagation, growth requirements, growing techniques, harvesting, marketing and maintenance of nursery plants and landscape turf.

DESIGN AND CONSTRUCTION — to demonstrate knowledge of the principles and techniques of landscape design and construction.

SUPPLIES AND EQUIPMENT — to demonstrate the ability to identify, select, use and maintain appropriate supplies and equipment for nursery and landscape operations, including equipment and procedures in mechanization and automation.

IMPORTANT NOTE
Please thoroughly read the Introduction Section at the beginning of this handbook for complete rules and procedures that are relevant to all National FFA Career Development Events.
SAFETY— to demonstrate knowledge of safety practices in nursery and landscape operations.

INTERPERSONAL RELATIONS — to demonstrate skills in oral and written business communications.

MARKETING — to demonstrate understanding of marketing principles and proper sales and service skills.

RECORDS AND REPORTS— to demonstrate the ability to prepare accurate and legible records and reports and to interpret business documents.

IV. RULES OF THE EVENT

1. Under no circumstances will any participant be allowed to touch or handle plant materials or other specimens during the event except as expressly permitted in certain practicums.

2. Coaches may accompany participants to the event site but then must leave the area. At the conclusion of all event components, the superintendent will announce when participants and coaches may enter the competition area to review the materials and organization.

V. EVENT FORMAT

A. Equipment

Materials student must supply — Each participant must have the following individual tools: a clean clipboard, at least two No. 2 pencils, a ball-point or felt-tip pen, a calculator, a 12-inch ruler for use as a straightedge, an architect's scale and an engineer's scale. Calculators used in this event should be battery operated, non-programmable and silent with large keys and large displays. Calculators may have only these functions – addition, subtraction, multiplication, division, equals, percent, square root, +/- key and one memory register. No other calculators are allowed to be used during the event. Additional items allowed but not required include the following: a circle template, a plastic block or stick eraser, a pocket-size dictionary or electronic speller, and a personal hand pruner or knife. Note that landscape symbol templates are not allowed.

B. Team Activity

Phase 1 — (50 points each + 100 team points)
This practicum involves the team members working together towards accomplishing an assignment. It is designed to evaluate individual and group contributions in coordination and cooperation of knowledge, evaluation and decision-making. The team activity has two parts, described below.

1. Team Preparation — The team members work as a group in evaluating a landscape or nursery business-type situation (production, service, personnel, or business operations or relations), as in the following examples:
   a. A landscape plan (new or renovation) with a planting plan, hardscapes (patio, etc.) plan, irrigation system plan, and landscape maintenance plan, with each of the components evaluated to describe them verbally.
   b. Two landscape plans of the same property to evaluate for making a verbal comparative description and recommendation on which plan is preferred by the team.
   c. Preparation of a 4 × 5 inch newspaper advertisement (e.g., for the school paper promoting enrollment in the school nursery and landscape program).

The team will have 30 minutes for this preparation part. Notepaper and other supplies, including computer resources that may be appropriate for the situation
will be available. References will not be provided or needed for this preparation part. A judge will be observing and scoring during this time but not interacting with the team. If needed, the team may ask the judge basic questions about the assignment or materials provided.

2. **Team Presentation** — Each of the team members will make a verbal presentation to a judge based on decisions made during the preparation part. For the examples above this might be conducted as follows:

   a. Each team member separately describes one of the plan components (plants, hardscapes, irrigation and maintenance).

   b. Positive and negative qualities of Plan A are described by a team member, repeated for Plan B by another, the team recommendation is provided by the third, while the fourth serves as moderator.

   c. Members separately discuss the audience characteristics, program features considered and selected for promotion, ad layout and ad timing.

The team will have 15 minutes for individual presentations and interaction with the judge. The presentation format is informal and conversational with all seated at a conference table, not a prepared visual-aid speech. Division of the time and organization of the presentations is at the team’s discretion. The judge may ask questions of the presenter or other team members during this time. Information will be provided on the judge’s role as business client, supervisor or other appropriate party to facilitate the dialogue.

Scoring criteria for the team preparation and presentation portions are given on the “Team Activity” scorecard. Individual components from both phases have a value of 50 points added to the individual score, while the team components of both phases have a value of 100 points added to the composite team score.

C. **Individual Activities**

**Phase 2 — General Knowledge Examination (150 points)**

Fifty objective multiple-choice questions will be prepared on topics reflecting subject areas in the objectives. This phase will evaluate the participant’s knowledge and understanding of basic horticultural principles in producing, marketing, using and maintaining landscape plants and turf. Participants are allowed 50 minutes to complete this phase. Each answer has a value of three points. Participants will record their answers on a scanning sheet.

**Phase 3 — Identification of Plants, Pests, Disorders, Equipment and Supplies (150 points)**

Participants will identify 50 items selected from the provided list covering the following categories:

- Plant Materials
- Pests and Disorders
- Equipment and Supplies

Plants to identify will be presented as intact, live specimens. Equipment may be either an intact item or photograph. Pest and disorder items may be presented as an intact specimen, photograph or preserved specimen (herbarium sheet, insect mount, etc.). When a problem must be presented with an affected plant, a “Disorder” label will be with the item to designate identification of the problem rather than the plant.

Each specimen will be designated by a station number (1-50). When the participant identifies the item, its name is then located on the identification list. The participant then records the
number by that name on a scanning sheet at the respective station number.

Each participant will be provided a copy of the list at the event site. Three points will be awarded for each correct identification, and participants have 50 minutes to complete this event phase.

No specimens or items may be touched or handled in any way.

**Phase 4 — Landscape Estimating (100 points)**

This practicum is designed to evaluate participant knowledge of and ability in 1) evaluating a landscape design 2) reading a landscape drawing 3) measuring and calculating materials needed to execute a landscape plan 4) evaluating factors that affect profitability of a landscape business.

A landscape drawing and scratch paper will be provided to the participants. There will be 20 objective questions about the landscape plan, and each correct answer has a value of five points. The questions may include such areas as determining how accent was provided in the public area, the form and size specified for a certain plant, the cost of fencing, the number of patio pavers required, the area of sod to be installed, the volume of mulch required and the labor cost to install a ground cover bed. Fifty minutes will be allowed for this practicum. Participants will record their answers using a scanning sheet.

**Phase 5 — Landscape Drawing (50 points)**

This practicum is designed to evaluate participant knowledge of and ability in applying the tools of landscape design through preparation of a plan drawing. Written information about a property will be given, including such details as lot dimensions and orientation; house size and setbacks; size and location of paving, decking and fencing; and the location, size and type of plant materials to be included. This will be translated into a scale drawing on 8.5 x 11-inch grid paper provided. An objective score sheet specific to the assignment will be used by a judge to evaluate that all components are included with appropriate size, location, symbol, and label, for a possible 50 points total. Participants will have 30 minutes to prepare the drawing. Allowed drawing aids are a straightedge, ruler or scale, and circle template along with the pencil, eraser, and calculator. Templates with landscape symbols are not allowed.

**Phase 6 – Verbal Customer Assistance (50 points)**

This interpersonal relations practicum is designed to evaluate participant knowledge of and ability in 1) verbal communication 2) sales and customer assistance skills 3) preparation of business documents 4) plant materials, plant culture and problems and garden center supplies and equipment.

The participant will assume the role of a customer service representative (garden center or other related business or an educational agency) responding to an assistance need of a customer or client (the judge). Example situations might include, but are not limited to, the following individually or in combination:

* **Assistance with product purchase and use** — from a selection of merchandise and related informational materials provided.
* **Disorder diagnosis and treatment recommendation** — from a sample of the pest or symptoms, photograph, or verbal description (from the list in Phase 3) and selection of specimen labels from common retail-packaged garden chemicals.
* **Advice on plant selection or culture questions** — from informational materials provided.
* **Assistance with a client complaint or problem** — from personnel instructions and procedures provided.

Each participant will be located at a separated station with one minute allotted to review the materials and information provided prior to arrival of the judge. These materials may be handled and referred to as appropriate for the
conversation with the judge. Plants and disorders presented will come from the current list for Phase 3. Tools and supply items, if not on the Phase 3 list, will be appropriately labeled for identification and use. Depending on the situation presented, preparation of a store order form may also be appropriate.

Seven minutes will be allowed for completion of this practicum. Scoring criteria are presented on the “Verbal Customer Assistance” score card, to be recorded by the judge.

**Phase 7 — Written Customer Assistance (50 points)**

This interpersonal relations practicum has the same objectives as in Phase 6 – Verbal Customer Assistance applied to written communication.

The participant will assume the role of a customer service representative. A copy of correspondence about a plant, landscape or business question will be provided, along with the appropriate response information. Each participant will hand-write in ink pen and in business letter format the response to the writer. Scratch paper will be provided for a rough draft in pencil if desired. Only the final draft in ink on the letterhead stationary provided will be scored.

Thirty minutes will be allowed for this practicum. A pocket-size dictionary or electronic speller is allowed for checking spelling. Scoring criteria are presented on the “Written Customer Assistance” score card, which will be recorded by a judge.

**Phase 8 — Nursery Production Practices (50 points)**

This practicum is designed to evaluate participant knowledge of and ability in performing fundamental nursery production practices. All participants will perform one of the following exercises. The selected exercise will not be announced prior to the start of the event.

**Propagating Nursery Stock** — Each participant will be furnished a stock plant, rooting flat and media, rooting powder, a hand pruner and a label and marking pen. (Personal knives or pruners are allowed, if desired.) Participants are to prepare the designated softwood or hardwood cuttings and place them in the media with a single label. Seven minutes will be allowed for making and sticking up to 20 cuttings. An official will observe and score each participant during this practicum. Scoring criteria are presented on the “Propagating Nursery Stock” score card.

**Potting Nursery Stock** — Each participant will be furnished a supply of plants, nursery containers or pots of appropriate size and media. Hand pruners, a label and a marking pen will also be provided. (Personal pruners are allowed, if desired.) The participants will pot the plants, one per container, using standard nursery practices. Plant division or grading of liners may be involved. One finished container will be labeled. Seven minutes will be allowed for potting up to 10 containers. An official will observe and score each participant during this practicum. Scoring criteria are presented on the “Potting Nursery Stock” score card.

**Phase 9 – Assessment and Solution (50 points)**

This practicum is designed to evaluate participant knowledge of and ability in 1) assessing the request or problem presented 2) reviewing alternative procedures or courses of action based on individual knowledge or reference information provided 3) deciding on a solution. Possible solutions will be presented in multiple-choice form for the participant to mark on a scanning sheet.

Ten situations will be presented from the following four areas:

**Measuring Nursery Stock** — One nursery plant will be measured for market size (height, spread or caliper as appropriate) according to the American Standard for Nursery Stock for BR and B&B evergreen and deciduous trees and shrubs. A
caliper and measuring rule will be provided. Plants presented in containers will be assumed as growing in the field, and a label will advise on whether it is to be dug BR or B&B. Cut trunk sections may be presented for larger tree measurement.

**Pruning Nursery Stock** — One or more nursery plants will be displayed with points marked for possible pruning cuts. No plant will be actually pruned. Participants are to evaluate each labeled point and decide if the plant part should be pruned or not for improvement of the plant’s health, form and overall quality. The answer choice then will be the combination of cuts that should be made.

**Equipment Maintenance** – Tools from the list in Phase 3, a part for a tool and/or an operating manual will be presented with answer choices of possible maintenance needs, corrective actions and/or operating specifications. Examples of possible choices are low oil, uneven height setting, blade needs sharpening, incorrect gas:oil ratio provided or replace broken handle.

Equipment will be placed to allow observing all components in the answer choices without handling the item. If handling should be required, allowance for this will be stated with that answer choice.

**Problem Solving** — Other situations of nursery and landscape plants, supplies or practices where observation and analysis of the subject and resource materials are involved in a decision-making process. Example situations may include the following:

- According to the information provided, which plants in this list would likely need a protected site for winter survival in the Indianapolis, Indiana area?

Participants have 10 minutes to complete this phase. Each correct solution has a value of five points.

## VI. SCORING

Participant scores are the sum of the nine individual phases of the event, and team scores are the sum of the three highest member scores plus the group portion of the team activity. Possible points are as follows:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Member</th>
<th>Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A. Team Activity – Individual</td>
<td>. . . 50</td>
<td>. . . 150</td>
</tr>
<tr>
<td>1B. Team Activity – Group</td>
<td>. . . 100</td>
<td></td>
</tr>
<tr>
<td>2. Examination</td>
<td>. . . 150</td>
<td>. . . 450</td>
</tr>
<tr>
<td>3. Identification</td>
<td>. . . 150</td>
<td>. . . 450</td>
</tr>
<tr>
<td>4. Landscape Estimating</td>
<td>. . . 100</td>
<td>. . . 300</td>
</tr>
<tr>
<td>5. Landscape Drawing</td>
<td>. . . 50</td>
<td>. . . 150</td>
</tr>
<tr>
<td>6. Verbal Customer Assistance</td>
<td>. . . 50</td>
<td>. . . 150</td>
</tr>
<tr>
<td>7. Written Customer Assistance</td>
<td>. . . 50</td>
<td>. . . 150</td>
</tr>
<tr>
<td>8. Production Practices</td>
<td>. . . 50</td>
<td>. . . 150</td>
</tr>
<tr>
<td>9. Assessment and Solution</td>
<td>. . . 50</td>
<td>. . . 150</td>
</tr>
</tbody>
</table>

**INDIVIDUAL TOTAL** . . . 700 . . . 2100

**TEAM TOTAL** . . . . . . . . . . . . . . 2200

## VII. TIEBREAKERS

If needed in the case of tied individual or team total scores, final placings will be determined by comparing, in order, scores for the following:

1. Phase 2 – Written Exam
2. Phase 3 – Identification Section
3. Phase 4 – Landscape Estimating
4. Phase 9 – Assessment & Solution
VIII. AWARDS

Awards will be presented at the awards ceremony. Awards are presented to teams as well as individuals based upon their rankings. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

In addition to the general awards of the career development events, the top three participants in the following two areas will be specially recognized:

**Nursery/Landscape Knowledge and Principles** — based on the composite score from Written Exam and Identification section.

**Nursery/Landscape Applications** — based on the composite score from the seven practicums from the following sections: Team Activity – Individual; Landscape Estimating; Landscape Drawing; Verbal Customer Assistance; Written Customer Assistance; Production Practices; Assessment and Solution.

IX. RECOMMENDED REFERENCES

The following list of references is a guide to team training. Some content areas have more than one title listed. This reflects the wide array of quality references available that will provide a proper foundation for this event. No single reference is recommended as superior over others in that area. However, multiple references for the plant materials may be desirable as no single source is comprehensive for the entire country or plant list. Other references than those listed may be equally valuable resources, along with the many video and computer-based training aids that are available.

**Books**


Ohio State University, Columbus, OH. Item #9512M.

*Care and Operation of Small Gasoline Engines*. 1990. American Association for Vocational Instructional Materials, Athens, GA. No. 1086W.


**Trade Periodicals**

*American Nurseryman*. American Nurserymen Publishing Co., Chicago, IL

*Grounds Maintenance*. Primedia, Overland Park, KS.

**Catalogs**

Many horticultural supply company catalogs can be utilized for reference support on tools, equipment, and supplies that may not be illustrated in other sources. The following company has given permission for listing their catalog:


*Websites and Problem Samples*

Visit the National FFA website at http://www.ffa.org/ for information on career development events, access to prior-year event materials, and links to additional study aids. The Nursery/Landscape CDE committee website at http://www.hort.vt.edu/faculty/McDaniel/nationalFFA.htm also offers additional aids for team preparation. Additional links and resources will be included as they are developed or identified, along with the following links of the CDE sponsors:

http://www.stihlusa.com/knowhow/
http://www.kubota.com
http://www.arvesta.com/

**Special Note for State Events**

No national listings of plant materials and disorders can match perfectly the industry situation in every state due to the wide range of environments across the U.S. Thus, the national event committee recommends that state event coordinators, wherever feasible, modify both sections of the list to serve better their industry and student educational needs.
## Nursery/Landscape Plant Identification

**Participant Name/Number ____________________________**

<table>
<thead>
<tr>
<th>No.</th>
<th>Botanical Name/Common Name</th>
<th>No.</th>
<th>Botanical Name/Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Abelia × grandiflora / Glossy Abelia</td>
<td>128</td>
<td>Dracaena fragrans ‘Massangeana’ / Corn Plant</td>
</tr>
<tr>
<td>102</td>
<td>Abies concolor / White Fir</td>
<td>129</td>
<td>Echinacea purpurea / Purple Coneflower</td>
</tr>
<tr>
<td>103</td>
<td>Acer palmatum cv. / Japanese Maple</td>
<td>130</td>
<td>Epipremnum spp. / Pothos</td>
</tr>
<tr>
<td>104</td>
<td>Acer platanoides cv. / Norway Maple</td>
<td>131</td>
<td>Euonymus alatus / Winged Euonymus</td>
</tr>
<tr>
<td>105</td>
<td>Acer rubrum cv. / Red Maple</td>
<td>132</td>
<td>Euonymus fortunei cv. / Wintercreeper</td>
</tr>
<tr>
<td>106</td>
<td>Acer saccharum cv. / Sugar Maple</td>
<td>133</td>
<td>Fagus sylvatica cv. / European Beech</td>
</tr>
<tr>
<td>107</td>
<td>Ajuga reptans cv. / Carpet Bugle</td>
<td>134</td>
<td>Festuca spp. and cv / Fescue</td>
</tr>
<tr>
<td>108</td>
<td>Antirrhinum majus cv / Snapdragon</td>
<td>135</td>
<td>Ficus benjamina / Benjamin Fig</td>
</tr>
<tr>
<td>109</td>
<td>Aquilegia × hybrida cv. / Columbine</td>
<td>136</td>
<td>Ficus elastica ‘Decora’ / Decora Rubber Plant</td>
</tr>
<tr>
<td>110</td>
<td>Amelanchier arborea / Downy Serviceberry</td>
<td>137</td>
<td>Forsythia x intermedia cv. / Border Forsythia</td>
</tr>
<tr>
<td>111</td>
<td>Astilbe hybrid cv. / Astilbe</td>
<td>138</td>
<td>Fraxinus americana cv. / White Ash</td>
</tr>
<tr>
<td>112</td>
<td>Begonia semperflorens-cultorum / Wax Begonia</td>
<td>139</td>
<td>Gaillardia aristata cv. / Common Blanketflower</td>
</tr>
<tr>
<td>113</td>
<td>Berberis × mentorensis / Mentor Barberry</td>
<td>140</td>
<td>Gardenia jasminoides ‘Fortuniana’ / Common Gardenia</td>
</tr>
<tr>
<td>114</td>
<td>Betula nigra / River Birch</td>
<td>141</td>
<td>Ginkgo biloba / Ginkgo, Maidenhair Tree</td>
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<tr>
<td>115</td>
<td>Brassaia actinophylla / Schefflera, Octopus Tree</td>
<td>142</td>
<td>Gleditsia triacanthos inermis cv. / Thornless Honeylecucst</td>
</tr>
<tr>
<td>116</td>
<td>Buxus microphylla cv. / Littleleaf Boxwood</td>
<td>143</td>
<td>Hedera helix cv. / English Ivy</td>
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<tr>
<td>117</td>
<td>Camellia japonica cv. / Common Camellia</td>
<td>144</td>
<td>Hemerocallis spp. and cv / Day lily</td>
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<tr>
<td>118</td>
<td>Cedrus atlantica ‘Glaucia’ / Blue Atlas Cedar</td>
<td>145</td>
<td>Hosta × hybrida cv. / Plaintain Lily</td>
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<tr>
<td>119</td>
<td>Cercis canadensis / Redbud</td>
<td>146</td>
<td>Hydrangea × quercifolia / Oakleaf-Hydrangea</td>
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<tr>
<td>120</td>
<td>Chaenomeles speciosa cv. / Japanese (Flowering) Quince</td>
<td>147</td>
<td>Ilex cornuta cv. / Chinese Holly</td>
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<tr>
<td>121</td>
<td>Cornus florida cv. / Flowering Dogwood</td>
<td>148</td>
<td>Ilex × crenata cv. / Japanese Holly</td>
</tr>
<tr>
<td>122</td>
<td>Cotoneaster dammeri / Bearberry</td>
<td>149</td>
<td>Ilex × meserveae cv. / Preserve Holly</td>
</tr>
<tr>
<td>123</td>
<td>Cotoneaster divaricatus / Spreading Cotoneaster</td>
<td>150</td>
<td>Impatiens hybrid cv. / Impatiens</td>
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<tr>
<td>124</td>
<td>Crataegus × phaenopyrum / Washington Hawthorn</td>
<td>151</td>
<td>Iris × germanica florentina cv. / Bearded Iris</td>
</tr>
<tr>
<td>125</td>
<td>Cynodon dactylon cv / Bermudagrass</td>
<td>152</td>
<td>Juniperus chinensis cv. / Chinese Juniper</td>
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<tr>
<td>126</td>
<td>Dieffenbachia maculata cv. / Spotted Dumb Cane</td>
<td>153</td>
<td>Juniperus horizontalis cv. / Creeping Juniper</td>
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<tr>
<td>127</td>
<td>Dracaena deremensis ‘Warneckii’ / Striped Dracaena</td>
<td>154</td>
<td>Lagerstroemia indica cv / Crape Myrtle</td>
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<td></td>
<td></td>
<td>155</td>
<td>Leucanthemum × superbium cv. / Shasta Daisy</td>
</tr>
<tr>
<td>No.</td>
<td>Botanical Name/Common Name</td>
<td>No.</td>
<td>Botanical Name/Common Name</td>
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<tr>
<td>156</td>
<td>Liquidambar styraciflua / Sweet Gum</td>
<td>187</td>
<td>Prunus laurocerasus cv. / Cherry Laurel</td>
</tr>
<tr>
<td>157</td>
<td>Liriodendron tulipifera / Tuliptree</td>
<td>188</td>
<td>Prunus serrulata 'Kwanzan' / Kwanzan</td>
</tr>
<tr>
<td>158</td>
<td>Liriope spp. cv. / Lily-Turf</td>
<td>189</td>
<td>Japanese Flowering Cherry</td>
</tr>
<tr>
<td>159</td>
<td>Lobularia maritima / Sweet Alyssum</td>
<td>190</td>
<td>Pyracantha coccinea cv. / Firethorn</td>
</tr>
<tr>
<td>160</td>
<td>Lonicera japonica 'Halliana' / Hall’s Japanese Honeysuckle</td>
<td>191</td>
<td>Quercus alba / White Oak</td>
</tr>
<tr>
<td>161</td>
<td>Magnolia grandiflora cv. / Southern Magnolia</td>
<td>192</td>
<td>Quercus rubra / Red Oak</td>
</tr>
<tr>
<td>162</td>
<td>Magnolia x soulangiana cv. / Chinese (Saucer) Magnolia</td>
<td>193</td>
<td>Rhododendron x catawbiense / Catawba</td>
</tr>
<tr>
<td>163</td>
<td>Mahonia aquifolia cv. / Oregon Grape</td>
<td>194</td>
<td>Rhododendron Hybrid / Exbury Hybrid Azalea</td>
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<tr>
<td>164</td>
<td>Malus spp. and cv. / Flowering Crabapple</td>
<td>195</td>
<td>Rosa spp. Class Hybrid Tea cv. / Hybrid Tea Rose</td>
</tr>
<tr>
<td>165</td>
<td>Myrica pensylvanica / Bayberry</td>
<td>196</td>
<td>Salvia nemorosa cv. / Meadow Sage</td>
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<tr>
<td>166</td>
<td>Nandina domestica / Heavenly Bamboo</td>
<td>197</td>
<td>Sedum spurium cv. / Sedum</td>
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<tr>
<td>167</td>
<td>Narcissus pseudonarcissus cv. / Daffodil</td>
<td>198</td>
<td>Solenostemon scutellarioides / Coleus</td>
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<tr>
<td>168</td>
<td>Nyssa sylvatica / Sour (Black) Gum</td>
<td>199</td>
<td>Sorbus aucuparia / European Mountain Ash</td>
</tr>
<tr>
<td>170</td>
<td>Pachysandra terminalis / Japanese Spurge</td>
<td>200</td>
<td>Spiraea x bumalda / Bumalda Spirea</td>
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<tr>
<td>171</td>
<td>Peonia hybrid cv. / Peony</td>
<td>201</td>
<td>Syringa vulgaris cv. / Common Lilac</td>
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<tr>
<td>172</td>
<td>Parthenocissus tricuspidata / Boston Ivy</td>
<td>202</td>
<td>Tagetes spp. cv. / Marigold</td>
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<tr>
<td>173</td>
<td>Pennisetum ruppelia / Fountain Grass</td>
<td>203</td>
<td>Taxodium distichum / Bald Cypress</td>
</tr>
<tr>
<td>174</td>
<td>Petunia x hybrida cv. / Petunia</td>
<td>204</td>
<td>Taxus spp. and cv. / Yew</td>
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<td>175</td>
<td>Philodendron scandens oxycardium / Heartleaf Philodendron</td>
<td>205</td>
<td>Thuja occidentalis cv. / American Arborvitae</td>
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<tr>
<td>176</td>
<td>Picea abies / Norway Spruce</td>
<td>206</td>
<td>Tilia cordata / Littleleaf Linden</td>
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<tr>
<td>177</td>
<td>Picea pungens cv. / Colorado (Blue ) Spruce</td>
<td>207</td>
<td>Tsuga canadensis / Canadian Hemlock</td>
</tr>
<tr>
<td>178</td>
<td>Pieris japonica / Lily-of-the-Valley Bush</td>
<td>208</td>
<td>Tulipa spp. cv. / Tulip</td>
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<tr>
<td>179</td>
<td>Pinus mugo / Mugo Pine</td>
<td>209</td>
<td>Verbena x hybrida cv. / Garden Verbena</td>
</tr>
<tr>
<td>180</td>
<td>Pinus strobus / Eastern White Pine</td>
<td>210</td>
<td>Viburnum x burkwoodii / Burkwood</td>
</tr>
<tr>
<td>181</td>
<td>Pinus sylvestris / Scotch Pine</td>
<td>211</td>
<td>Viburnum trilobum / American</td>
</tr>
<tr>
<td>182</td>
<td>Pinus thunbergiana / Japanese Black Pine</td>
<td>212</td>
<td>Cranberrybush Viburnum</td>
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<tr>
<td>183</td>
<td>Platanus x acerifolia / London Planetree</td>
<td>213</td>
<td>Vinca minor cv. / Periwinkle</td>
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<tr>
<td>184</td>
<td>Poa pratensis cv Kentucky Bluegrass</td>
<td>214</td>
<td>Viola x wittrockiana cv. / Pansy</td>
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<tr>
<td>185</td>
<td>Podocarpus macrophyllus / Southern Yew</td>
<td>215</td>
<td>Wisteria sinensis cv. / Chinese Wisteria</td>
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<tr>
<td>186</td>
<td>Potentilla fruticosa cv. / Shrubby Cinquefoil</td>
<td>216</td>
<td>Yucca filamentosa / Adam’s Needle</td>
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<td></td>
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<td>Zinnia elegans / Zinnia</td>
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### NURSERY/LANDSCAPE PESTS AND DISORDERS IDENTIFICATION

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<td>Borer</td>
<td>232</td>
<td>Cedar-Apple Rust</td>
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<td>Crown Gall</td>
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<td>Scale</td>
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<td>223</td>
<td>Spider Mite</td>
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<td><strong>Physiological Problems</strong></td>
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<td>248</td>
<td>Frost/Freeze Injury</td>
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<td>249</td>
<td>Iron Deficiency</td>
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<td>250</td>
<td>Leaf Scorch (drought/ winter burn)</td>
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<td>251</td>
<td>Nitrogen Deficiency</td>
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<td>Pot-bound roots</td>
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<td>String Trimmer Injury</td>
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<td>254</td>
<td>2,4-D Injury</td>
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### NURSERY/LANDSCAPE EQUIPMENT AND SUPPLIES IDENTIFICATION

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<td>255</td>
<td>anvil-and-blade pruner</td>
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<td>hose-end repair fitting</td>
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<td>256</td>
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<td>edging</td>
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<tr>
<td>257</td>
<td>ball cart (B&amp;B truck)</td>
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<td>bark mulch</td>
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<td>erosion netting</td>
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<td>262</td>
<td>broadcast (cyclone) spreader</td>
<td>282</td>
<td>garden (bow) rake</td>
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<td>mattock</td>
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<td>granular fertilizer</td>
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<td>287</td>
<td>gravity (drop) spreader</td>
<td>306</td>
<td>nursery container</td>
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<td>288</td>
<td>grass shears</td>
<td>307</td>
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<td>ground/pelleted limestone</td>
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<td>hoe</td>
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<tr>
<td>314</td>
<td>polyethylene pipe</td>
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<td>rototiller</td>
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<td>pop-up irrigation head</td>
<td>328</td>
<td>round point shovel</td>
<td>343</td>
<td>string trimmer</td>
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<td>316</td>
<td>post-hole digger</td>
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<td>safety goggles</td>
<td>344</td>
<td>tape measure</td>
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<td>317</td>
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<td>sand</td>
<td>345</td>
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<td>pot-in-pot units</td>
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<td>siphon proportioner</td>
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<td>trowel</td>
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<tr>
<td>322</td>
<td>PVC (polyvinylchloride) pipe</td>
<td>335</td>
<td>soaker hose</td>
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<td>T-square</td>
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<tr>
<td>323</td>
<td>reel mower</td>
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<td>soil sampling tube</td>
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<td>vermiculite</td>
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<td>324</td>
<td>resin-coated fertilizer</td>
<td>337</td>
<td>solenoid valve</td>
<td>352</td>
<td>vertical mower</td>
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<tr>
<td>325</td>
<td>respirator</td>
<td>338</td>
<td>spade</td>
<td>353</td>
<td>water breaker</td>
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<td>326</td>
<td>rotary mower</td>
<td>339</td>
<td>spark plug gap gauge</td>
<td>354</td>
<td>wire tree basket</td>
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<td></td>
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<td>340</td>
<td>sphagnum moss</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>341</td>
<td>spray suit</td>
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# Nursery/Landscape Career Development Event

## Nursery/Landscape

<table>
<thead>
<tr>
<th>Name:</th>
<th>Chapter:</th>
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<table>
<thead>
<tr>
<th>State:</th>
<th>Team No.:</th>
<th>Member No.:</th>
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## POTTING NURSERY STOCK PRACTICUM SCORECARD

<table>
<thead>
<tr>
<th>POTTING PROCESS (35 POINTS)</th>
<th>POSSIBLE POINTS</th>
<th>MEMBER SCORE</th>
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<tbody>
<tr>
<td><strong>PREPARATION OF PLANTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Plants selected for quality and uniformity</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>• Inspects/prunes/grooms damaged parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Prunes excess root length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Handles plants properly</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **PLACEMENT OF PLANTS IN CONTAINERS** | | |
| • Plant centered and vertical | 10 | |
| • Roots carefully and properly spread | | |
| • Plant at proper depth | | |
| • Plant roots covered | | |

| **MEDIA FILLING AND SETTLING** | | |
| • Sufficient media added | 10 | |
| • Media settled by bumping | | |
| • Plant remains stable | | |

| **LABELING OF COMPLETED UNITS** | | |
| • Plant (variety) name and date | 2 | |
| • Legible | | |

| **SAFETY PRACTICES APPLIED** | | |
| • Proper cutting technique | 3 | |
| • Tool closed when finished | | |
| • Minimal clutter/good organization in work area | | |

| POTTING PRODUCTIVITY (15 POINTS) | | |
| **NUMBER OF UNITS COMPLETED** | 10 | |
| **QUALITY OF UNITS COMPLETED** | | |
| • Overall quality and uniformity of lot | 5 | |

**TOTAL POINTS** (50 POINTS)

---

Judge’s Name

Judge’s Signature/Date
## Nursery/Landscape

Name: ___________________________ Chapter: ____________________

State: ___________________________ Team No.: ____________________

Member No.: ________________

### PROPAGATING NURSERY STOCK PRACTICUM SCORECARD

<table>
<thead>
<tr>
<th>Propagation Process (35 Points)</th>
<th>Possible Points</th>
<th>Member Score</th>
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<tbody>
<tr>
<td><strong>Removal of Cuttings</strong></td>
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<td></td>
</tr>
<tr>
<td>• Selects best quality, uniform stock</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>• Cuts at appropriate lengths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Makes clean cuts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Preparation of Cuttings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Leaves stripped/trimmed/groomed as needed</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>• Proximity of cuts to nodes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Angled or wounded basal cut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cutting/buds not damaged</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Application of Proper Hormone</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Sufficient applied and excess removed</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>• Hormone kept clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Placement of Cuttings in Media</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Proper medium depth, as applicable</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>• Media furrow cut and closed</td>
<td></td>
<td></td>
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<tr>
<td>• Proper sticking depth</td>
<td></td>
<td></td>
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<tr>
<td>• Efficient row and cutting spacing</td>
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<tr>
<td><strong>Labeling of Completed Units</strong></td>
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<td>• Plant (variety) name, date, treatment</td>
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<td>• Legible</td>
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<td><strong>Safety Practices Applied</strong></td>
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<tr>
<td>• Proper cutting technique</td>
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<td></td>
</tr>
<tr>
<td>• Tool closed when finished</td>
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<td></td>
</tr>
<tr>
<td>• Minimal clutter in work area</td>
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<tr>
<td><strong>Potting Productivity (15 Points)</strong></td>
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<tr>
<td>Number of Units Completed</td>
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<tr>
<td>Quality of Units Completed</td>
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<tr>
<td>• Uniform size and placement</td>
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<td>5</td>
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<tr>
<td>• Cuttings stable in media</td>
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<tr>
<td>Total Points</td>
<td>(50 points)</td>
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Judge’s Name ___________________________ Judge’s Signature/Date ___________________________
# Nursery/Landscape

Name: _____________________________  Chapter: __________________________

State: _____________________________  Team No.: __________________________

Member No.: __________________________

## Team Activity Scorecard

<table>
<thead>
<tr>
<th>TEAM PREPARATION</th>
<th>INDIVIDUAL POSSIBLE SCORE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>TEAM ACTUAL TEAM SCORE</th>
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<tbody>
<tr>
<td>• Team leadership roles established/evident</td>
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<td>(10)</td>
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<tr>
<td>• Project assignment and goal defined</td>
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<td></td>
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<td>(10)</td>
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<tr>
<td>• Member responsibilities outlined and defined</td>
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<td></td>
<td></td>
<td>(10)</td>
</tr>
<tr>
<td>• Members effective in individual tasks</td>
<td>(10 pts each)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Members supportive of each other</td>
<td>(10 pts each)</td>
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<td></td>
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</tr>
<tr>
<td>• Members interact in positive/constructive way</td>
<td>(10 pts each)</td>
<td></td>
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<tr>
<td>Sub-Total (A)</td>
<td>(30 possible)</td>
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<td>• Agreement reached on individual evaluation</td>
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<td></td>
<td></td>
<td></td>
<td>(10)</td>
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<tr>
<td>• Presentation plan developed</td>
<td>(who does what/when)</td>
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<td></td>
<td></td>
<td></td>
<td>(10)</td>
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<tr>
<td>Sub-Total (B)</td>
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<th>INDIVIDUAL POSSIBLE SCORE</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>TEAM ACTUAL TEAM SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Positive voice, grammar, eye contact</td>
<td>(5 pts each)</td>
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<td></td>
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<tr>
<td>• Effective organization of information</td>
<td>(5 pts each)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Effective communication of information</td>
<td>(5 pts each)</td>
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</tr>
<tr>
<td>• Demonstrates knowledge of subject</td>
<td>(5 pts each)</td>
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<tr>
<td>Sub-Total (C)</td>
<td>(20 possible)</td>
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</tr>
<tr>
<td>• Effective team interaction during presentations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(15)</td>
</tr>
<tr>
<td>• Appropriate participation from each team member</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(15)</td>
</tr>
<tr>
<td>• Effective total team presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10)</td>
</tr>
<tr>
<td>• Team Assignments fulfilled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10)</td>
</tr>
<tr>
<td>Sub-Total (D)</td>
<td>(50)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Team Member Points (A + C)</td>
<td>(50 possible)</td>
<td></td>
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</tbody>
</table>

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Judge’s Name, section A & B  
Signature/Date

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278 NATIONAL FFA CAREER DEVELOPMENT EVENTS HANDBOOK
Nursery/Landscape

Name: ___________________________  Chapter: ___________________

State: ___________________________  Team No.: ___________________  

Member No.: ___________________

### VERBAL CUSTOMER ASSISTANCE PRACTICUM SCORECARD

<table>
<thead>
<tr>
<th>CONVERSATION (35 POINTS)</th>
<th>POSSIBLE POINTS</th>
<th>MEMBER SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPROACH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Effective greeting and offer to help</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>• Positive, enthusiastic; not hesitant</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PERSONALITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pleasant, friendly manner</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>• Not pushy in selling</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VOICE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Easy to hear and understand</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>• Proper grammar used; good speaking form</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INFORMATION REQUESTED FROM CUSTOMER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Determines assistance needs</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>• Effectively ask details/preferences</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SALESMAINSHP</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Effective; tries to expand sale</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>• Develops customer confidence in product/service</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CLOSING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Repeats order, handles payment (as applicable)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>• Asks if instructions understood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Thank you close</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRODUCT/PROBLEM/PROCEDURE PRESENTATION *</th>
<th>(15 POINTS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORRECT PRODUCT/PROCEDURE/SELECTIONS</td>
<td>6</td>
</tr>
<tr>
<td>CORRECT PRODUCT/PROBLEM INFORMATION PROVIDED</td>
<td>6</td>
</tr>
<tr>
<td>CLARITY OF INFORMATION PROVIDED TO CUSTOMER</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Points** (50 points)

* Includes, as applicable, evaluation of order form for completeness, spelling and arithmetic accuracy, clarity.

Judge’s Name ___________________________  Judge’s Signature/Date ___________________________
# Nursery/Landscape

Name: ____________________________  Chapter: ____________________________

State: ____________________________  Team No.: ____________________________

Member No.: ____________________________

## WRITTEN CUSTOMER ASSISTANCE PRACTICUM SCORECARD

<table>
<thead>
<tr>
<th></th>
<th>POSSIBLE POINTS</th>
<th>MEMBER SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Customer Relations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Does the letter create/maintain goodwill (is it free of negative words that create an unpleasant tinge)?</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>• Is the tone appropriate for the letter purpose?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Does the letter emphasize reader (you) rather than writer (I)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is the tone and reading level appropriate for reader?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Business Letter Form</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is the letter written in acceptable business format including the date, inside address, salutation, body, complimentary close, signature and additional data (pc, enclosure, etc.)?</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is the content organized in logical, coherent order?</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>• Is the letter properly divided into paragraphs with topic sentences?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is the letter divided into sentences which clearly convey key points?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Does the letter use short conversational words?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technical Information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is the technical information provided in letter correct?</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>• Is the information provided in simple, clear, concise manner?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Does the letter relate directly to the inquiry?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grammar/Punctuation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is the letter free of grammatical errors and misspelled words?</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**Total Score:** 50

*Deductions (i.e., Rules Infractions, Missing Content)*

| Deductions (i.e., Rules Infractions, Missing Content) | ( ) |

**Grand Total:**

---

*Judge’s Name*  
*Judge’s Signature/Date*
Name ______________________________

Climate Zone Student Sheet

Arborday.org

✓ Go to  Arborday.org
✓ Click on  Trees
✓ Click on  Your Hardiness Zone
✓ Enter your  Zip Code
✓ A map will come up with your climate hardiness zone.

What is the zone where you live?_______________________

✓ Click on  Show me the most popular trees for zone____

What are 5 of the most popular trees for your zone?

✓ Click on  Show me all trees that grow well in zone___

What are 5 more trees that grow well in your zone?

Why would a climate zone map of your area be helpful?
Nursery/Landscape Plant Identification  
Student Sheet

Obtain the official list of Nursery/Landscape Plant Identification. These plants are numbered from 101-216. Using your book, internet, or a lab manual, research the following information about nursery/landscape plants and fill out this Student Sheet.

- **Plant no.**—plant number from the official list of Nursery/Landscape Plant Identification
- **Common name**—name typically called, may have more than one
- **Scientific name**—Latin botanical epithet
- **Unique characteristics**—things that make the plant easier to identify
- **Plant classification**—tree form, herbaceous—annual, biennial, perennial/ or woody plant
- **Hardiness zone**—zone the plant can withstand as the coldest freezing temperature and still grow
- **Growing requirements**—does the plant prefer shade or sun, what type of soil, etc..
- **Image**—draw a sketch of the plant or upload one from the internet
- **Other**—any other things that you would like to remember about the plant that will make it easier to identify

<table>
<thead>
<tr>
<th>Plant No.</th>
<th>Plant Id. Information:</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>common name:</td>
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<tr>
<td>scientific name:</td>
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<tr>
<td>unique characteristics:</td>
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<tr>
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<tr>
<td>hardiness zone:</td>
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<tr>
<td>growing requirements:</td>
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</tbody>
</table>
TREE FORMS

ROUND  SPREAD  PYRAMID

OVAL  CONICAL  VASE  COLUMNAR

OPEN  WEEPING  IRREGULAR