Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA100 - SAFETY

Unit Number: PA100

Dates: Spring 2016 **Hours:** 75.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to identify and follow general, laboratory, and field-site safety. They will follow OSHA safety standards, procedures written in the MSDS information system, safe use of horticulture equipment, proper protective equipment and clothing, and basic first-aid practices and procedures in horticulture.

Tasks:

PA101 - Identify and follow all general safety, laboratory safety and field-site safety practices and procedures in horticulture.

PA102 - Identify and follow all OSHA safety standards for the horticulture services industry.

PA103 - Identify and follow procedures written in the Safety Data Sheet (SDS) information system.

PA104 - Demonstrate the safe use of horticulture equipment.

PA105 - Select the proper protective clothing and equipment.

PA106 - Demonstrate basic first aid procedures for injuries.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Instructional Activities:

Knowledge:

Explain the importance of safety in horticulture
Describe working conditions in the horticulture industry
Know where to find the MSDS information book

Skill:

Utilize step guides for instruction
Practice safety precautions necessary when handling, applying, and storing chemicals
Identify the rules of the Horticulture program
Identify the guidelines of the Horticulture program
Identify the Right To Know
Identify the MSDS information
Complete self-evaluation using rubric
Participate in discussion and answer questions during lecture
Complete description sheet for each task
Read reference material as needed
Read assigned module
Define personal protective equipment and give examples
Demonstrate tool safety
Demonstrate the proper use of tool for a specified task
Identify tool and model the use of the tool
Complete task sheet assigned
Interpret and review the reference orally to the instructor
Complete anticipation guide
Complete reading strategy assignment
Participate in group activity
Complete assigned individual and group projects
Present and review grading rubrics for projects
Maintain a notebook
Maintain a clean work area
Write a research paper
Demonstrate the safe use of power tools
Demonstrate the safe use of power equipment
Demonstrate the safe use of landscape hand tools
Demonstrate the safe use of floral tools
Demonstrate the safe use of nursery tools
Demonstrate the rules of the Horticulture program
Demonstrate use of the MSDS information book
Demonstrate understanding of a MSDS data sheet

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Special Adaptations:

- Extended Time (assignments and/or testing)
- Graphic Organizer
- Chunking of Assignments/Material
- Preferential Seating
- Directions/Comprehension Check (frequent checks for understanding)
- Study Guide
- Directions and/or Tests Read Aloud
- Adapted Tests and/or Assignments
- Use of Calculator
- Taking Tests in Alternate Setting (or if requested)
- Verbal/Gestural Redirection (prompts to remain on task)
- Drill and Practice (Repetition of Material)
- No Penalization for Spelling
- Copy of Teacher/Student Notes/Skeleton Notes
- Provide Visual Model to Accompany Verbal Directions (Written/Oral Directions)
- Use of Daily Planner/Assignment Book (monitor use of)
- Teacher Modeling
- Use of Computer (Access to)
- Positive Reinforcement
- Have Student Repeat Directions
- Wait Time
- Access to School Counselor
- Use of Highlighter/Highlighted Text
- Positive Reinforcement
- Provide Frequent Feedback
- Provide Frequent Breaks
- Regular Notebook Check
- Use of Assistive Device (i.e. notepad, laptop, etc.)
- Limited, Short Directions
- Communication Regarding Behavior & Consequences (PBS)
- Clear Language for Directions
- Provide Opportunities to Retest
- Books on Tape or CD
- Allow Oral Answers for Testing
- Provide Editing Assistance
- Copies of Text for Home
- Cue for Oral Response

- De-Escalation Opportunities
- Daily Classwork Check
- Encourage Student to Check Work Before Turning In
- Opportunities for Repeated Practice of MATH Skills
- Provide repetition During Initial Instruction
- Allow Pre-read of Questions Before Reading Written Passage
- Provide Verbal and Written Directions
- All Vocabulary to be Defined Before Testing
- Testing - Allow Dictation of Lengthy Answers
- Time out
- Monitor Speed/Accuracy in which Student Completes Assignment
- Encouragement to Participate in Positive Leadership Role
- Student Self-Evaluation for Behavior

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Use adequate ventilation when working in enclosed area
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tools for task
Safety sign off sheet
Student checklist
Grading rubrics for projects
Notebook

- FORMATIVE/SUMMATIVE EVALUATION
- Business and Industry Credentialing Tests
- Traditional Tests - multiple choice, matching, true/false, short answer completion
- Traditional Quizzes - multiple choice, matching, true/false, short answer completion
- Graded Homework
- Graded Writing assignments
- Graded Math practice assignments
- Graded Reading assignments
- Notebook checks
- Completed and Turned-in Make Up work
- Exit Slips
- Student Hand Held Response Systems
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- OBSERVATIONAL EVALUATION
- Class Oral Responses
- Scores on projects when they are completed
- Teacher observing and scoring each step of the process as a job is being completed
- Teacher observing and recording the quality of work being done on an assigned job
- Teacher checking and scoring as each part of an activity is being done correctly
- Teacher observing and scoring as a job is done within a timeframe
- Teacher checking and scoring that students use the appropriate terminology for particular jobs

- Teacher determining if the student has the skills to work independently on an assigned job
- Teacher evaluating if PA Program of Study tasks are being achieved as expected
- Teacher evaluating student class participation
- Teacher evaluating a student media presentation
- Peer evaluation of individual students
- Student self-assessment

- WORK ETHIC
- Determine if students follow the daily plan as laid out at the start of class
- Evaluate the student's ability to work within a team when teamwork is necessary
- Evaluate the student's responsibility to complete work logs as expected
- Determine and evaluate if students adhere to all safety procedures
- Evaluate if students work without hindering other students' progress
- Evaluate if students stay on task in accordance with the job expectation
- Account if students are prepared for class each day
- Account if students are wearing appropriate clothing when necessary
- Account if students make up missed assignments in the established time limit

- SPECIAL NEEDS ASSESSMENT ADAPTATIONS
- Study guides provided prior to tests
- Use of calculator
- Multiple Choice will include 3 choices instead of 4
- Matching with groups of no more than 10 (depends on IEP)
- Matching with groups of no more than 5
- Tests read aloud
- Word bank with no more than 10 options
- Word bank with no more than 5 options
- Extended time to complete the assessment
- Alternate assessment-project or presentation instead of written assessment

Resources/Equipment:

Ingels, J. & (2004). Ornamental horticulture science, operations, and management. Delmar. (Ingels & 2004)

Griner, C. (2004). Floriculture designing & merchandising. Delmar. (Griner, 2004)
Internet
E-unit 030005: Practicing Horticulture Safety. Danville, IL: CAERT, Inc.
www.mycaert.com
Trade Magazines

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turf grass Science and Management. Albany, NY: Delmar, 1984.

Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Tools:

Various Hand tools
Pruner
Scissors
Floral Knife
Loppers
Hedge Shears
Drill
Circular Saw
Pump Sprayer
Back Pack Sprayer
Kubota Tractor
Push Mower
Weed Wacker
Roto Tiller
Skid steer
Wet Saw
Variety of chemicals and fertilizers
Examples of personal protective equipment

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA200 - DEMONSTRATE SAFE AND PROPER PLANT HEALTH CARE PRACTICES

Unit Number: PA200

Dates: Spring 2016 **Hours:** 50.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate safe and proper plant health care practices.

Tasks:

PA201 - Practice safety when controlling weeds, insects, and plant diseases.

PA202 - Read and interpret horticulture product labels.

PA203 - Properly calculate and mix quantities of horticultural products used in plant health care.

PA204 - Demonstrate knowledge of federal and state pesticide laws.

PA205 - Define the concept of, “Plant Health Care,” such as disease, nutrients etc.

PA206 - Distinguish the components of an Integrated Pest Management program including the effects of chemicals and pesticides on the environment.

PA207 - Identify various horticultural pests including their signs and symptoms.

PA208 - Identify and use equipment for the application of plant health care products.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

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Connecting Anchor/Standard:

- Pennsylvania Core Standards for Mathematics Standard 2.0

Supporting Anchor/Standards:

NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.

Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Explain orally or in writing what biological control means.
Explain orally or in writing what integrated pest management means.
Describe the seven ways in which insects are killed by insecticides and the type of insect against which each is most effective.
Explain the relationship between the life cycle of insects and timing of insecticide application.
Describe three ways in which herbicides destroy weeds.

Skill:

Utilize step guides for instruction
Outline a pest control program, explaining when biological control should be used and at what point chemicals must be used.
List at least three insects that have been effectively controlled without man-made chemicals.
List at least one plant disease controlled by biological means.
List at least one weed and the biological method used to control it.
Identify the three main routes by which pesticides enter the body.
Examine five pesticide labels and identify the type of each and its degree of toxicity.
Examine five pesticide labels and demonstrate the recommended precautions in the mixing and handling of each.
List first aid steps to be taken in case of poisoning by one pesticide from each of the three families of pesticides.
Identify common insect pests Sand select an effective control method for each.
List the names and characteristics of the three major groups of insecticides (according to their chemical makeup)
Compare the six ways in which insecticides are applied.
Identify the common biological controls of insects.
Identify fungus diseases on plants and set up a spray or dusting schedule for effective control.

Recognize at least two types of rodents and apply a rodenticide in a bait station.
Recognize slugs and snails on sight and develop a slug control program, including chemicals used in the bait station or as contact poisons.
Identify two nemotocides and explain in writing their application to specific situations.
Identify a weed problem and select an herbicide to control the problem.
Define the difference between selective and nonselective herbicides.
Outline in writing how a sprayer is calibrated.
List three possible reasons for failure of an herbicide to work properly.
Properly apply an herbicide.
Practice safety when controlling weeds, insects, and plant diseases.
Demonstrate knowledge of federal and state pesticide laws.
Define the concept of Plant health care.

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
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FFA leadership related activities

Special Adaptations:

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Assessment:

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Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tool's for task
Safety sign off sheet
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Outcome of student crops
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Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA300 - BASIC BOTANY

Unit Number: PA300

Dates: Spring 2016 **Hours:** 60.00

Last Edited By: Michelle Bonser (02-08-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate knowledge of basic botany.

Tasks:

PA301 - Describe the process of photosynthesis, respiration, translocation, and transpiration.

PA302 - Identify plant cell structure, organization and function.

PA303 - Identify plant structures and explain their functions.

PA304 - Identify conditions essential for seed germination.

PA305 - Explain the environmental factors that affect the growth and development of a plant.

PA306 - Distinguish between sexual and asexual plant reproduction.

PA307 - Identify plant nutrient requirements.

PA308 - Describe the nutrient cycles.

PA309 - Classify plants and use appropriate binomial taxonomic terminology.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

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Focus Anchor/Standard #2:

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Supporting Anchor/Standards:

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Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Instructional Activities:

Knowledge:

Explain why scientific plant names are used.
Explain the difference between genus, species, and variety.
Explain the process of photosynthesis.
Explain the process of respiration.
Describe the process of translocation.
Describe the process of transpiration.
Explain the major structural difference between dicot and monocot stems and how the stems grow.
Describe the process of pollination.
Describe the differences between clay, sand, and loamy soils and identify a sample of each.
Explain three ways to improve soil drainage and two ways to increase moisture retention in soil.
Explain what is meant by the pH value of soil.
Describe the nutrient cycles.

Skill:

Note two contributions of plants to the life cycle on earth.
List and describe the purpose of the four main parts of a plants.
List four factors that affect the roots of a plant.
Compose a balance fertilizer for one plant that is grown commercially in the area.
List four above ground requirements for good plant growth.
List the three major plant food elements and two functions of each.
Identify the parts of a seed and the function of each.
Differentiate between indirect and direct seeding methods.
Prepare a medium for seeds, sow seeds, and provide the proper conditions for germination.
Water, fertilize, and harden off seedlings before transplanting.
Transplant seedlings into flats or pots.
Distinguish between sexual and asexual plant reproduction.

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tools for task
Safety sign off sheet
Student checklist
Grading rubrics for projects
Notebook
Outcome of student crops

Resources/Equipment:

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

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Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA400 - HORTICULTURE BUSINESS OPERATIONS

Unit Number: PA400

Dates: Spring 2016 **Hours:** 30.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate knowledge of horticulture business operations.

Tasks:

PA401 - Determine criteria for selecting a site for a horticulture business.

PA402 - Research state and local requirements for horticulture businesses.

PA403 - Develop a horticultural business plan.

PA404 - Analyze pricing and mark-up techniques.

PA405 - Determine human resource needs in a horticulture business.

PA406 - Research vendors to obtain product information.

PA407 - Demonstrate appropriate customer/client relationship attributes.

PA408 - Identify and develop various horticulture record keeping systems.

PA409 - Analyze record keeping system to determine best management practices.

PA410 - Analyze business ethics.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

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CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key

terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

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Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

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RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Connecting Anchor/Standard:

- Pennsylvania Core Standards for Mathematics Standard 2.0

Supporting Anchor/Standards:

NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.

Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Describe and compare three legal forms of business operation.
Explain the value of a market survey.
Describe the methods, values, and limitations of advertising.
Describe steps in planning a business venture.
Identify and develop various horticulture record keeping systems.

Skill:

Utilize step guides for instruction
List sources of capital for new and established businesses.
List factors to be considered in choosing a business site.
Draw up a physical plant layout plan and a staff organization chart.
Outline the major laws and regulations that affect horticulturalists.
List the characteristics of effective advertising.
List the characteristics of effective displays.
State five basic functions performed in the operation of a small business.
Select a product or service for a personal or group enterprise.
Determine the basic functions performed by small-business managers.
Analyze the outcome of a business venture.
Use small-business financial records.
Analyze the benefits of self-employment virus other types of employment.
Select and explain the reason for the most appropriate form of communication for specific business needs.
Compose a correct and effective business letter.
Place a business telephone call correctly.
Answer a business call correctly.

Determine criteria for selecting a site for a horticulture business.
Research state and local requirements for horticulture businesses.
Develop a horticultural business plan.
Analyze pricing and mark-up techniques.
Determine human resource needs in a horticulture business.
Research vendors to obtain product information.
Demonstrate appropriate customer/client relationship attributes.
Analyze record keeping system to determine best management practices.
Analyze business ethics.

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Special Adaptations:

- Extended Time (assignments and/or testing)
- Graphic Organizer
- Chunking of Assignments/Material
- Preferential Seating
- Directions/Comprehension Check (frequent checks for understanding)
- Study Guide
- Directions and/or Tests Read Aloud
- Adapted Tests and/or Assignments
- Use of Calculator
- Taking Tests in Alternate Setting (or if requested)
- Verbal/Gestural Redirection (prompts to remain on task)
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- Teacher Modeling
- Use of Computer (Access to)
- Positive Reinforcement
- Have Student Repeat Directions
- Wait Time
- Access to School Counselor
- Use of Highlighter/Highlighted Text
- Positive Reinforcement
- Provide Frequent Feedback
- Provide Frequent Breaks
- Regular Notebook Check
- Use of Assistive Device (i.e. notepad, laptop, etc.)

- Limited, Short Directions
- Communication Regarding Behavior & Consequences (PBS)
- Clear Language for Directions
- Provide Opportunities to Retest
- Books on Tape or CD
- Allow Oral Answers for Testing
- Provide Editing Assistance
- Copies of Text for Home
- Cue for Oral Response
- De-Escalation Opportunities
- Daily Classwork Check
- Encourage Student to Check Work Before Turning In
- Opportunities for Repeated Practice of MATH Skills
- Provide repetition During Initial Instruction
- Allow Pre-read of Questions Before Reading Written Passage
- Provide Verbal and Written Directions
- All Vocabulary to be Defined Before Testing
- Testing - Allow Dictation of Lengthy Answers
- Time out
- Monitor Speed/Accuracy in which Student Completes Assignment
- Encouragement to Participate in Positive Leadership Role
- Student Self-Evaluation for Behavior

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Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tool's for task
Student checklist
Grading rubrics for projects
Notebook
Writing surface
Overhead projector
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheet
Meeting paraphernalia
- Business and Industry Credentialing Tests
- Traditional Tests - multiple choice, matching, true/false, short answer completion
- Traditional Quizzes - multiple choice, matching, true/false, short answer completion
- Graded Homework
- Graded Writing assignments
- Graded Math practice assignments
- Graded Reading assignments
- Notebook checks
- Completed and Turned-in Make Up work
- Exit Slips
- Student Hand Held Response Systems

- Textbook Computer Generated Tests
- OBSERVATIONAL EVALUATION
- Class Oral Responses
- Scores on projects when they are completed
- Teacher observing and scoring each step of the process as a job is being completed
- Teacher observing and recording the quality of work being done on an assigned job
- Teacher checking and scoring as each part of an activity is being done correctly
- Teacher observing and scoring as a job is done within a timeframe
- Teacher checking and scoring that students use the appropriate terminology for particular jobs
- Teacher determining if the student has the skills to work independently on an assigned job
- Teacher evaluating if PA Program of Study tasks are being achieved as expected
- Teacher evaluating student class participation
- Teacher evaluating a student media presentation
- Peer evaluation of individual students
- Student self-assessment
- WORK ETHIC
- Determine if students follow the daily plan as laid out at the start of class
- Evaluate the student's ability to work within a team when teamwork is necessary
- Evaluate the student's responsibility to complete work logs as expected
- Determine and evaluate if students adhere to all safety procedures
- Evaluate if students work without hindering other students' progress
- Evaluate if students stay on task in accordance with the job expectation
- Account if students are prepared for class each day
- Account if students are wearing appropriate clothing when necessary
- Account if students make up missed assignments in the established time limit
- SPECIAL NEEDS ASSESSMENT ADAPTATIONS
- Study guides provided prior to tests
- Use of calculator
- Multiple Choice will include 3 choices instead of 4
- Matching with groups of no more than 10 (depends on IEP)
- Matching with groups of no more than 5
- Tests read aloud
- Word bank with no more than 10 options
- Word bank with no more than 5 options
- Extended time to complete the assessment
- Alternate assessment-project or presentation instead of written assessment

Resources/Equipment:

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA500 - SOILS AND CLIMATE

Unit Number: PA500

Dates: Spring 2016 **Hours:** 45.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate knowledge of soils and climate.

Tasks:

PA501 - Identify and describe soil characteristics.

PA502 - Identify soil and/or plant nutrients.

PA503 - Describe soil management techniques.

PA504 - Conduct proper soil sampling techniques.

PA505 - Test soil for pH, texture, macronutrients and soluble salts.

PA506 - Interpret commercial soil test reports.

PA507 - Describe criteria for selecting fertilizers and soil amendments.

PA508 - Describe factors influencing fertilizer application.

PA509 - Identify environmental factors that affect plant growth.

PA510 - Describe techniques used to control environmental factors.

PA511 - Describe how weather and climate impact growing conditions and plant selection.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

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CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

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Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

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TEXT TYPES AND PURPOSE GRADES 9-10-11-12
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Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Discuss what soil is and where it comes from.
Describe soil layers and how they differ.
Describe how plants depend on soils for growth.
Describe how soils develop.
Decibel the horizons of the soil profile.
Discuss the different definitions of soil.
Discuss what creates soil texture.
Discuss how the physical and chemical properties of soil affect plant growth.
Describe soil particle sizes.
Discuss how iron and organic matter influence the color of some soil.
Describe sodic and saline soils.
Discuss the effect of organic material in a soil.
Explain cation exchange capacity.
Explain how plant nutrients behave in soil.
Describe soil testing for determining plant nutrient needs and fertilizer sources.
Discuss how plant nutrients behave in the soil.
Discuss what soil pH is and how it is managed.
Describe the effect organic matter has on soil fertility.
Describe how soil pH influences the availability of the nutrients.
Describe the deficiency signs of five elements.
Describe how many pounds of nitrogen, phosphate, and potash are in a bag of fertilizer.
Discuss the process of soil erosion, its importance and prevention.
Describe soil management techniques.
Describe techniques used to control environmental factors.
Describe how weather and climate impact growing conditions and plant selection.

Skill:

Utilize step guides for instruction
Define a soil body.
List examples of the five soil-forming factors.
List soil components.
List the basic physical properties of soils.
Identify the chemical properties of soil.
Use the soil texture triangle to name soil.
Calculate bulk density of soil.
Identify the pH of neutral, acidic, and alkaline soil.
Name three ways soils are classified.
Name the essential plant nutrients and describe their role in plant growth.
List plant nutrients and fertilizer materials that are compatible with environment.
Name the 16 essential elements for plant growth.
Use conversion factors when working with fertilizers. List five types and sources of fertilizers
Conduct proper soil sampling techniques.
Test soil for pH, texture, macronutrients and soluble salts.
Interpret commercial soil test reports.
Identify environmental factors that affect plant growth.

Remediation:

Re-teach major concepts
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- All Vocabulary to be Defined Before Testing
- Testing - Allow Dictation of Lengthy Answers
- Time out
- Monitor Speed/Accuracy in which Student Completes Assignment
- Encouragement to Participate in Positive Leadership Role
- Student Self-Evaluation for Behavior

Resources/Equipment:

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA600 - SUSTAINABLE HORTICULTURE

Unit Number: PA600

Dates: Spring 2016 **Hours:** 50.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate basic sustainable horticulture practices.

Tasks:

PA601 - Identify different methods of sustainable horticulture.

PA602 - Compare sustainable watering and fertilizing techniques to conventional techniques.

PA603 - Compare sustainable plant material selection to conventional plant material.

PA604 - Recycle horticultural waste.

PA605 - Compare the efficiency of current energy sources with future energy sources in horticulture.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among

concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Connecting Anchor/Standard:

- Pennsylvania Core Standards for Mathematics Standard 2.0

Supporting Anchor/Standards:

NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.

Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Compare sustainable watering and fertilizing techniques to conventional techniques.
Compare sustainable plant material selection to conventional plant material.
Compare the efficiency of current energy sources with future energy sources in horticulture.

Skill:

Utilize step guides for instruction
Identify different methods of sustainable horticulture.
Recycle horticultural waste.

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Special Adaptations:

- Extended Time (assignments and/or testing)
- Graphic Organizer
- Chunking of Assignments/Material
- Preferential Seating
- Directions/Comprehension Check (frequent checks for understanding)
- Study Guide
- Directions and/or Tests Read Aloud
- Adapted Tests and/or Assignments
- Use of Calculator
- Taking Tests in Alternate Setting (or if requested)
- Verbal/Gestural Redirection (prompts to remain on task)
- Drill and Practice (Repetition of Material)
- No Penalization for Spelling
- Copy of Teacher/Student Notes/Skeleton Notes
- Provide Visual Model to Accompany Verbal Directions (Written/Oral Directions)
- Use of Daily Planner/Assignment Book (monitor use of)
- Teacher Modeling
- Use of Computer (Access to)
- Positive Reinforcement
- Have Student Repeat Directions
- Wait Time
- Access to School Counselor
- Use of Highlighter/Highlighted Text
- Positive Reinforcement
- Provide Frequent Feedback
- Provide Frequent Breaks
- Regular Notebook Check
- Use of Assistive Device (i.e. notepad, laptop, etc.)
- Limited, Short Directions
- Communication Regarding Behavior & Consequences (PBS)
- Clear Language for Directions
- Provide Opportunities to Retest
- Books on Tape or CD
- Allow Oral Answers for Testing
- Provide Editing Assistance
- Copies of Text for Home
- Cue for Oral Response
- De-Escalation Opportunities
- Daily Classwork Check
- Encourage Student to Check Work Before Turning In
- Opportunities for Repeated Practice of MATH Skills
- Provide repetition During Initial Instruction
- Allow Pre-read of Questions Before Reading Written Passage
- Provide Verbal and Written Directions
- All Vocabulary to be Defined Before Testing
- Testing - Allow Dictation of Lengthy Answers
- Time out
- Monitor Speed/Accuracy in which Student Completes Assignment
- Encouragement to Participate in Positive Leadership Role
- Student Self-Evaluation for Behavior

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tool's for task
Student checklist
Grading rubrics for projects
Notebook
Writing surface
Overhead projector
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheet
Meeting paraphernalia
- Business and Industry Credentialing Tests
- Traditional Tests - multiple choice, matching, true/false, short answer completion
- Traditional Quizzes - multiple choice, matching, true/false, short answer completion
- Graded Homework
- Graded Writing assignments
- Graded Math practice assignments
- Graded Reading assignments
- Notebook checks
- Completed and Turned-in Make Up work
- Exit Slips
- Student Hand Held Response Systems
- Textbook Computer Generated Tests
- OBSERVATIONAL EVALUATION
- Class Oral Responses
- Scores on projects when they are completed
- Teacher observing and scoring each step of the process as a job is being completed
- Teacher observing and recording the quality of work being done on an assigned job
- Teacher checking and scoring as each part of an activity is being done correctly
- Teacher observing and scoring as a job is done within a timeframe
- Teacher checking and scoring that students use the appropriate terminology for particular jobs
- Teacher determining if the student has the skills to work independently on an assigned job
- Teacher evaluating if PA Program of Study tasks are being achieved as expected
- Teacher evaluating student class participation
- Teacher evaluating a student media presentation
- Peer evaluation of individual students
- Student self-assessment
- WORK ETHIC
- Determine if students follow the daily plan as laid out at the start of class
- Evaluate the student's ability to work within a team when teamwork is necessary
- Evaluate the student's responsibility to complete work logs as expected
- Determine and evaluate if students adhere to all safety procedures
- Evaluate if students work without hindering other students' progress
- Evaluate if students stay on task in accordance with the job expectation

- Account if students are prepared for class each day
- Account if students are wearing appropriate clothing when necessary
- Account if students make up missed assignments in the established time limit
- SPECIAL NEEDS ASSESSMENT ADAPTATIONS
- Study guides provided prior to tests
- Use of calculator
- Multiple Choice will include 3 choices instead of 4
- Matching with groups of no more than 10 (depends on IEP)
- Matching with groups of no more than 5
- Tests read aloud
- Word bank with no more than 10 options
- Word bank with no more than 5 options
- Extended time to complete the assessment
- Alternate assessment-project or presentation instead of written assessment

Resources/Equipment:

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

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Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA700 - HORTICULTURE TECHNOLOGY

Unit Number: PA700

Dates: Spring 2016 **Hours:** 45.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate knowledge of horticulture technology.

Tasks:

PA701 - Explain the uses of technologically altered plants.

PA702 - Research advanced technologies in horticulture equipment.

PA703 - Describe the use of different methods of plant tissue culture.

PA704 - Research new and emerging technologies in horticulture.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

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Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

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INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

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Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
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Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

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Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

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RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Instructional Activities:

Knowledge:

Discuss the benefits and limitations of modern technology in the green industry.
Explain the major types of computer programs currently popular in the industry.
Explain other technological advances that now serve the industry.
Project future benefits of technology to the industry.
Explain the uses of technologically altered plants.
Describe the use of different methods of plant tissue culture.

Skill:

Utilize step guides for instruction
Research advanced technologies in horticulture equipment.
Research new and emerging technologies in horticulture.

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
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Checklists

Enrichment:

Upon completion students will move to the next task/assignment
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Special Adaptations:

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- Student Self-Evaluation for Behavior

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Use hand tools in a safe manner
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Use tools and equipment in a professional work-like manner according to OSHA standards
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Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tool's for task
Student checklist
Grading rubrics for projects
Notebook
Writing surface
Overhead projector
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheet
Meeting paraphernalia
- Business and Industry Credentialing Tests
- Traditional Tests - multiple choice, matching, true/false, short answer completion
- Traditional Quizzes - multiple choice, matching, true/false, short answer completion
- Graded Homework
- Graded Writing assignments

- Graded Math practice assignments
- Graded Reading assignments
- Notebook checks
- Completed and Turned-in Make Up work
- Exit Slips
- Student Hand Held Response Systems
- Textbook Computer Generated Tests
- OBSERVATIONAL EVALUATION
- Class Oral Responses
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- Teacher observing and recording the quality of work being done on an assigned job
- Teacher checking and scoring as each part of an activity is being done correctly
- Teacher observing and scoring as a job is done within a timeframe
- Teacher checking and scoring that students use the appropriate terminology for particular jobs
- Teacher determining if the student has the skills to work independently on an assigned job
- Teacher evaluating if PA Program of Study tasks are being achieved as expected
- Teacher evaluating student class participation
- Teacher evaluating a student media presentation
- Peer evaluation of individual students
- Student self-assessment
- WORK ETHIC
- Determine if students follow the daily plan as laid out at the start of class
- Evaluate the student's ability to work within a team when teamwork is necessary
- Evaluate the student's responsibility to complete work logs as expected
- Determine and evaluate if students adhere to all safety procedures
- Evaluate if students work without hindering other students' progress
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- Study guides provided prior to tests
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Resources/Equipment:

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Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

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Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA800 - HISTORY AND CURRENT STATUS OF HORTICULTURE

Unit Number: PA800

Dates: Spring 2016 **Hours:** 20.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will explore the history and current status of horticulture.

Tasks:

PA801 - Describe major historical developments in the field of horticulture.

PA802 - Compare/contrast the effect human beings have had on various plant species.

PA803 - Determine how development of certain plant species has affected cultural development.

PA804 - Describe the role horticulture plays in the economy of the state and nation.

PA805 - Identify current issues regarding plant and soil management that impacts agronomic and horticultural practices.

PA806 - Explain the psychological impact of botanical gardens, public parks, trees, flowers and plants have on people in a society.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

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RESEARCH GRADES 9-10-11-12
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RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Connecting Anchor/Standard:

- Pennsylvania Core Standards for Mathematics Standard 2.0

Supporting Anchor/Standards:

NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.

Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Describe major historical developments in the field of horticulture.
Describe the role horticulture plays in the economy of the state and nation.
Explain the psychological impact of botanical gardens, public parks, trees, flowers and plants have on people in a society.

Skill:

Utilize step guides for instruction
Compare/contrast the effect human beings have had on various plant species.
Determine how development of certain plant species has affected cultural development.
Identify current issues regarding plant and soil management that impacts agronomic and horticultural practices.

Remediation:

Re-teach major concepts
Review with teacher assistance
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Individual tutoring
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Create a chart
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Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Special Adaptations:

- Extended Time (assignments and/or testing)
- Graphic Organizer
- Chunking of Assignments/Material
- Preferential Seating
- Directions/Comprehension Check (frequent checks for understanding)
- Study Guide
- Directions and/or Tests Read Aloud
- Adapted Tests and/or Assignments
- Use of Calculator
- Taking Tests in Alternate Setting (or if requested)
- Verbal/Gestural Redirection (prompts to remain on task)
- Drill and Practice (Repetition of Material)
- No Penalization for Spelling
- Copy of Teacher/Student Notes/Skeleton Notes
- Provide Visual Model to Accompany Verbal Directions (Written/Oral Directions)
- Use of Daily Planner/Assignment Book (monitor use of)
- Teacher Modeling
- Use of Computer (Access to)
- Positive Reinforcement
- Have Student Repeat Directions
- Wait Time
- Access to School Counselor
- Use of Highlighter/Highlighted Text
- Positive Reinforcement
- Provide Frequent Feedback
- Provide Frequent Breaks
- Regular Notebook Check
- Use of Assistive Device (i.e. notepad, laptop, etc.)
- Limited, Short Directions
- Communication Regarding Behavior & Consequences (PBS)
- Clear Language for Directions
- Provide Opportunities to Retest
- Books on Tape or CD
- Allow Oral Answers for Testing
- Provide Editing Assistance
- Copies of Text for Home
- Cue for Oral Response
- De-Escalation Opportunities
- Daily Classwork Check
- Encourage Student to Check Work Before Turning In
- Opportunities for Repeated Practice of MATH Skills
- Provide repetition During Initial Instruction
- Allow Pre-read of Questions Before Reading Written Passage
- Provide Verbal and Written Directions
- All Vocabulary to be Defined Before Testing
- Testing - Allow Dictation of Lengthy Answers
- Time out
- Monitor Speed/Accuracy in which Student Completes Assignment
- Encouragement to Participate in Positive Leadership Role
- Student Self-Evaluation for Behavior

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tool's for task
Student checklist
Grading rubrics for projects
Notebook
Writing surface
Overhead projector
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheet
Meeting paraphernalia
- Business and Industry Credentialing Tests
- Traditional Tests - multiple choice, matching, true/false, short answer completion
- Traditional Quizzes - multiple choice, matching, true/false, short answer completion
- Graded Homework
- Graded Writing assignments
- Graded Math practice assignments
- Graded Reading assignments
- Notebook checks
- Completed and Turned-in Make Up work
- Exit Slips
- Student Hand Held Response Systems
- Textbook Computer Generated Tests
- OBSERVATIONAL EVALUATION
- Class Oral Responses
- Scores on projects when they are completed
- Teacher observing and scoring each step of the process as a job is being completed
- Teacher observing and recording the quality of work being done on an assigned job
- Teacher checking and scoring as each part of an activity is being done correctly
- Teacher observing and scoring as a job is done within a timeframe
- Teacher checking and scoring that students use the appropriate terminology for particular jobs
- Teacher determining if the student has the skills to work independently on an assigned job
- Teacher evaluating if PA Program of Study tasks are being achieved as expected
- Teacher evaluating student class participation
- Teacher evaluating a student media presentation
- Peer evaluation of individual students
- Student self-assessment
- WORK ETHIC
- Determine if students follow the daily plan as laid out at the start of class
- Evaluate the student's ability to work within a team when teamwork is necessary
- Evaluate the student's responsibility to complete work logs as expected
- Determine and evaluate if students adhere to all safety procedures
- Evaluate if students work without hindering other students' progress

- Evaluate if students stay on task in accordance with the job expectation
- Account if students are prepared for class each day
- Account if students are wearing appropriate clothing when necessary
- Account if students make up missed assignments in the established time limit
- SPECIAL NEEDS ASSESSMENT ADAPTATIONS
- Study guides provided prior to tests
- Use of calculator
- Multiple Choice will include 3 choices instead of 4
- Matching with groups of no more than 10 (depends on IEP)
- Matching with groups of no more than 5
- Tests read aloud
- Word bank with no more than 10 options
- Word bank with no more than 5 options
- Extended time to complete the assessment
- Alternate assessment-project or presentation instead of written assessment

Resources/Equipment:

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: PA900 - PLANT IDENTIFICATION

Unit Number: PA900

Dates: Spring 2016 **Hours:** 20.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate knowledge of plant identification.

Tasks:

PA901 - Outline the proper use of plant material in various segments of the horticulture industry.

PA902 - Determine the impact of environmental factors on plant materials.

PA903 - List the identifying characteristics of various plant categories associated with plants in the horticulture industry.

PA904 - Identify 100 plants used in horticulture industry by horticultural reference/botanical reference (65 need to be woody trees and shrubs; and, herbaceous annuals and perennials).

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Instructional Activities:

Knowledge:

Outline the proper use of plant material in various segments of the horticulture industry.
Identify 100 plants used in horticulture industry by horticultural reference/botanical reference. (65 need to be woody trees & shrubs and herbaceous annuals and perennials)
List the identifying characteristics of various plant categories associated with plants in the horticulture industry.

Skill:

Utilize step guides for instruction
Determine the impact of environmental factors on plant materials.
Identify 100 plants used in horticulture industry by horticultural reference/botanical reference. (65 need to be woody trees & shrubs and herbaceous annuals and perennials)

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Special Adaptations:

- Extended Time (assignments and/or testing)
- Graphic Organizer
- Chunking of Assignments/Material
- Preferential Seating
- Directions/Comprehension Check (frequent checks for understanding)
- Study Guide
- Directions and/or Tests Read Aloud
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- Use of Calculator
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- Teacher Modeling
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- Use of Highlighter/Highlighted Text
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- Provide repetition During Initial Instruction
- Allow Pre-read of Questions Before Reading Written Passage
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- All Vocabulary to be Defined Before Testing
- Testing - Allow Dictation of Lengthy Answers
- Time out
- Monitor Speed/Accuracy in which Student Completes Assignment
- Encouragement to Participate in Positive Leadership Role
- Student Self-Evaluation for Behavior

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Student must:
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Use protective clothing and equipment
Use hand tools in a safe manner
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Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tool's for task
Student checklist
Grading rubrics for projects
Notebook
Writing surface
Overhead projector
Copies of sample test
Visuals from accompanying masters

Copies of student lab sheet
Meeting paraphernalia
- Business and Industry Credentialing Tests
- Traditional Tests - multiple choice, matching, true/false, short answer completion
- Traditional Quizzes - multiple choice, matching, true/false, short answer completion
- Graded Homework
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- Notebook checks
- Completed and Turned-in Make Up work
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- Class Oral Responses
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- Teacher observing and scoring each step of the process as a job is being completed
- Teacher observing and recording the quality of work being done on an assigned job
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- Teacher checking and scoring that students use the appropriate terminology for particular jobs
- Teacher determining if the student has the skills to work independently on an assigned job
- Teacher evaluating if PA Program of Study tasks are being achieved as expected
- Teacher evaluating student class participation
- Teacher evaluating a student media presentation
- Peer evaluation of individual students
- Student self-assessment
- WORK ETHIC
- Determine if students follow the daily plan as laid out at the start of class
- Evaluate the student's ability to work within a team when teamwork is necessary
- Evaluate the student's responsibility to complete work logs as expected
- Determine and evaluate if students adhere to all safety procedures
- Evaluate if students work without hindering other students' progress
- Evaluate if students stay on task in accordance with the job expectation
- Account if students are prepared for class each day
- Account if students are wearing appropriate clothing when necessary
- Account if students make up missed assignments in the established time limit
- SPECIAL NEEDS ASSESSMENT ADAPTATIONS
- Study guides provided prior to tests
- Use of calculator
- Multiple Choice will include 3 choices instead of 4
- Matching with groups of no more than 10 (depends on IEP)
- Matching with groups of no more than 5
- Tests read aloud
- Word bank with no more than 10 options
- Word bank with no more than 5 options
- Extended time to complete the assessment
- Alternate assessment-project or presentation instead of written assessment

Resources/Equipment:

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.
Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: L1000 - FLORAL DESIGN

Unit Number: L1000

Dates: Spring 2016 **Hours:** 405.00

Last Edited By: Horticulture (05-11-2016)

Unit Description / Objectives:

Student will know and be able to design a variety of floral arrangements including body flowers using the elements and principles of design, identify and describe characteristics and uses of cut flowers, foliage, fillers and floral mechanics, and complete all tasks using proper safety and operating techniques for floral design.

Tasks:

L1001 - Describe and apply the principles and elements of floral design.

L1002 - Order, receive, store and rotate inventory of floral materials.

L1003 - Demonstrate proper safety and operating techniques for floral design.

L1004 - Identify and describe the characteristics and uses of cut flowers, foliage and fillers.

L1005 - Identify and describe the use floral mechanics.

L1006 - Create corsages and other body flowers.

L1007 - Create various types of free standing floral arrangements using fresh and/or permanent materials.

L1008 - Create holiday decorations.

L1009 - Create special event designs.

L1010 - Operate a cash register.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Connecting Anchor/Standard:

- Pennsylvania Core Standards for Mathematics Standard 2.0

Supporting Anchor/Standards:

NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.

Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Participate in discussion and answer questions during lecture
Describe how to make a floral sale
Describe supplies needed to create a corsage or boutonniere
Describe corsage design mechanics and techniques
Discuss proper placement and pinning of corsages and boutonnieres
Explain basic geometric designs
Describe floral arrangements for holidays
Describe typical wedding needs
Explain the process of designing a wedding
Explain how to service a wedding
Explain the importance of sympathy flowers
Analyze the principles of floral design
Examine the concept of proportion
Explain how the concept of balance is applied to floral design
Describe how rhythm is applied in floral work
Explain how the principles of dominance and focal point are used in floral design
Describe the major forms used in floral design
Explain how space and depth enhance floral design
Assess the importance of texture in floral design
Analyze when and how to harvest everlasting flowers
Explain the methods of preserving plant materials
Describe designing with everlasting plant materials (dried and silk)
Explain the importance of effective buying

Skill:

Demonstrate tool safety
Demonstrate the proper use of tool for a specified task
Identify the correct tools for the task and model the use of the tool
Complete task sheet assigned
Complete self-evaluation using rubric
Complete description sheet for each task
Identify the qualities of a good salesperson
Make a bow
Identify supplies needed to create a corsage or boutonniere
Identify and describe styles of corsages and boutonnieres
Identify supplies and tools needed in floral work
Define naturalistic style design
Design bud-vase arrangements
Design vase arrangements
Demonstrate how to design centerpieces
Learn how to take a centerpiece order
Identify the major holidays
Identify and describe types of wedding bouquets
Identify and describe typical sympathy pieces
Evaluate the influences of color on floral work
Construct dried and silk arrangements
Determine the costs for floral arrangements
Read reference material as needed
Interpret and review the reference orally to the instructor
Read assigned module
Complete anticipation guide
Complete reading strategy assignment
Participate in group activity
Complete assigned individual and group projects
Present and review grading rubrics for projects
Maintain a notebook
Maintain a clean work area

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tools for task
Safety sign off sheet
Student checklist
Grading rubrics for projects
Notebook

Resources/Equipment:

Ingels, J. (2004). Ornamental horticulture science, operations, and management. Delmar. (Ingels, J. 2004)

Griner, C. (2004). Floriculture designing & merchandising. Delmar. (Griner, 2004

Internet

E-unit: Selling Floral Orders. Danville, IL: CAERT, Inc.

E-unit 030059: Designing Corsages and Boutonnieres. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 642: Floral Design 2: Principles and Practices. Urbana: University

E-unit 030060: Designing Basic Floral Work. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 642: Floral Design 2: Principles and Practices. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030061: Designing Vase Arrangements. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 642: Floral Design 2: Principles and Practices. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030062: Designing Centerpieces. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 642: Floral Design 2: Principles and Practices. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030063: Designing Holiday Arrangements. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 642: Floral Design 2: Principles and Practices. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030064: Designing Wedding Pieces. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030065: Designing Sympathy Arrangements. Danville, IL: CAERT, Inc.www.mycaert.com

E-unit 030057: Understanding the Principles of Floral Design. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 642: Floral Design 2: Principles and Practices. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030058: Understanding the Design Elements. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 642: Floral Design 2: Principles and Practices. Urbana: University of Illinois Information Technology and Communication Services.

E-unit: Advertising and Displaying Horticultural Products. Danville, IL: CAERT

E-unit 030055: Caring for Fresh Cut Flowers and Foliage. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 641: Floral Design 1: Plant Material. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030066: Using Everlasting Flowers. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030055: Caring for Fresh Cut Flowers and Foliage. Danville, IL: CAERT, Inc. www.mycaert.com
PowerPoint Presentation MDS 641: Floral Design 1: Plant Material. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030067: Pricing Floral Design Work. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Establishing a Horticultural Business. Danville, IL: CAERT, Inc.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Floriculture Designing & Merchandising Book
Ornamental Horticulture Book
Copies of newspapers/ Trade Magazines
Writing surface
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheets
Dried plant materials
Cut flowers (carnations are ideal and inexpensive)
Graduated cylinders
Water
Floral preservative in packets
Clear soda pop
Floral design tools and supplies
Examples of floral designs (pictures or actual designs)
Photos of floral arrangements
Horticultural products (e.g., those in a greenhouse)

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: L1100 - LANDSCAPING TECHNOLOGY SKILLS

Unit Number: L1100

Dates: Spring 2016 **Hours:** 320.00

Last Edited By: Michelle Bonser (02-08-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate many aspects of landscaping technology skills.

Tasks:

L1101 - Demonstrate proper safety and operating techniques for landscape tools and equipment.

L1102 - Find resources that describe specifications for landscape construction projects.

L1103 - Describe and apply principles of landscape and landscaping design.

L1104 - Describe and apply principles of landscape management.

L1105 - Calculate areas and volumes from information shown on a blueprint.

L1106 - Estimate costs of landscape materials.

L1107 - Explain the purpose of Pennsylvania 'One Call' service.

L1108 - Identify landscape site management issues.

L1109 - Determine drainage/elevations using the appropriate layout and leveling devices.

L1110 - Read and interpret blueprints, blueprint symbols and abbreviations.

L1111 - Prepare and plant turf using seed or sod.

L1112 - Install plants that are bare-root, containerized, balled and burlapped, boxed, or machine-moved.

L1113 - Identify appropriate types of irrigation systems and installation methods.

L1114 - Determine management schedules as appropriate for various turf and ornamental installations.

L1115 - Explain methods for rough and fine grading.

L1116 - Prune evergreen and deciduous trees and shrubs.

L1117 - Install landscape structures.

L1118 - Create landscape bed edges.

L1119 - Describe the characteristics of lawn, recreation and sports turf.

L1120 - Explain the characteristics of cool season and warm season grasses.

L1121 - Select grasses and seed mixes/blends for particular turf purposes and areas.

L1122 - Calculate quantities of turf grass for installation.

L1123 - Plan the construction of a new turf area and install turf grass.

L1124 - Develop a fertilizer program for turf grass and apply it in correct amounts.

L1126 - Describe hydro-seeding techniques.

L1127 - Demonstrate various methods and procedures for turf maintenance, including de-thatching.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.
RANGE OF READING GRADES 9-10-11-12

Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Connecting Anchor/Standard:

- Pennsylvania Core Standards for Mathematics Standard 2.0

Supporting Anchor/Standards:

NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.

Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Explain the purpose of Pennsylvania 'One Call' service
Explain how turf grasses are selected based on climate
Describe how turf grass is established by seeding
Describe how turf grass is established vegetatively
Explain how turf can be renovated
Describe fertilization practices for turf grass
Explain proper mowing procedures
Discuss water practices for turf grass
Describe other maintenance practices for turf grass
Discuss turf grass diseases and management practices
Discuss turf grass management for golf courses
Explain turf grass management for athletic fields
Describe the turfgrasses used for golf courses and athletic fields
Explain aspects of outdoor living area design
Describe the functions of a service area
Explain how to use annuals and perennials in the landscape
Describe how to design a flower garden
Explain why plant names are important
Describe how to label a landscape plan
Describe landscape specifications
Describe skills needed to manage a landscape business
Analyze the requirements of starting a landscape business
Describe the basic management practices of a landscape company
Discuss the use of computers in the landscape industry
Interpret a landscape plan
Discuss the preparation of the landscape site
Determine irrigation requirements
Determine water capacity and pressure
Select sprinklers and establish spacing ranges
Establish sprinkler circuits and install valves
Locate controllers and size wiring
Prepare the final irrigation plan
Identify the different methods of harvesting plant materials
Outline proper planting techniques
Describe the methods of planting annuals, perennials, and ground covers
Discuss post-planting care
Compare the types of materials used in paving
Explain how to select patio materials
Describe how to install a walkway or patio
Discuss proper deck installation procedures
Explain the reasons for installing a fence or wall
Identify the different parts of a fence
Discuss how to properly install a fence
Describe the different materials used to build a retaining wall
Explain how to install a retaining wall

Identify the major lighting techniques available for the garden
Explain the difference between high and low voltage
Describe the proper installation of low-voltage lighting systems
Identify the different materials needed to create a water feature
Describe the proper technique for creating a small pond
Explain how to construct a waterfall feature
Analyze the influence of woody plant biology on maintenance practices
Explain recommended watering practices for woody landscape plants
Explain guidelines for fertilizing woody landscape plants
Describe how to select and apply mulches to the landscape
Explain why woody landscape plants are pruned
Describe how to prune deciduous and evergreen trees and shrubs properly
Describe various pruning techniques used with shrubs
Describe how to estimate landscape maintenance costs
Discuss some advantages and disadvantages of using computer spreadsheets in a landscape maintenance business
Discuss the types of digging and grading hand tools and their uses
Explain the major types of pruning and cutting hand tools and their uses
Describe other types of hand tools used in horticulture
Discuss common shop hand tools used in horticulture
Explain how to maintain hand tools
Discuss the proper maintenance of power tools and equipment

Skill:

Demonstrate proper safety and operating techniques for landscape tools and equipment.
Identify major parts of turfgrass plants
Identify characteristics of grass plants used for turfgrass purposes
Examine site preparation for establishing turfgrass
Identify turfgrass weeds and describe methods for managing weeds
Identify turfgrass pests and pest management practices
Identify hand tools used in the turfgrass industry.
Identify power tools used in the turfgrass industry
Identify heavy equipment used in the turfgrass industry
Determine the client's needs and desires
Demonstrate the proper use of drafting equipment
Create a base plan
Prepare a site analysis plan
Distinguish the major areas of a residential landscape
Assess design guidelines for the public area
Organize landscape activities using goose egg plans
Develop bed patterns for a landscape
Locate trees in a landscape plan
Distinguish between an annual and a perennial
Evaluate the selection of plant materials for the landscape
Demonstrate how to draw plants on a landscape plan
Define the categories of landscape plants
Illustrate how to render a landscape plan
Differentiate between an estimate and a bid
Prepare a cost estimate for a landscape plan
Calculate common landscape measurements
Examine the segments of the landscape industry
Identify tools used in pruning woody landscape plants
Identify the skills a landscape maintenance technician should master
Identify and describe common types of turf maintenance equipment
Identify and describe common landscape installation and maintenance tools and equipment
Determine drainage/elevations using the appropriate layout and leveling devices.

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tools for task
Safety sign off sheet
Student checklist
Grading rubrics for projects
Notebook

Resources/Equipment:

Writing surface
Overhead projector
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheets
Samples of grass seed, sprigs, plugs, and sod
Bag of fertilizer
Photos of new homes without landscaping
Drafting supplies
Catalogs of flowering plants
Graph paper
Several books on landscape plants
T-square
Landscape plans
Circle template
Scale
Drawing pencils
Tracing paper
Triangle
Colored pencils or markers
Calculator
Clip-on utility lights (sometimes known as clamp or "trouble" lights) or flashlights
Samples of evergreen branches
Pruning tools
Hand tools
Linseed oil
Old paint brush
Lubricating oil
Rags
Files
Horticultural power tools

Ingels, J, (2004). Ornamental horticulture science, operations, and management. Delmar. (Ingels, 2004)

Griner, C. (2004). Floriculture designing & merchandising. Delmar. (Griner, 2004

Internet

E-unit 030006: Classifying Ornamental Plants. Danville, IL: CAERT, Inc. www.mycaert.com
Subject Matter Unit U5038: Horticultural Plant Names. Urbana: University of Illinois Information Technology and Communication Services

E-unit: Identifying, Classifying, and Selecting Turfgrass. Danville, IL: CAERT, Inc.

E-unit: Establishing and Growing Turfgrass. Danville, IL: CAERT, Inc.

E-unit: Managing Turfgrass. Danville, IL: CAERT, Inc.

E-unit: Managing Pests and Diseases in Turfgrass. Danville, IL: CAERT, Inc.

E-unit: Identifying Tools and Equipment Associated with Turfgrass. Danville, IL

E-unit: Managing Athletic Fields and Golf Courses. Danville, IL: CAERT, Inc.

E-unit 030075: Analyzing the Residential Landscape. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030076: Designing the Landscape Areas. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030077: Beginning the Design Process. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030079: Using Annuals and Perennials in the Landscape. Danville, IL CAERT, Inc. www.mycaert.com

E-unit: Choosing Plants for the Landscape. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Putting the Plan on Paper. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Pricing the Landscape Plan. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Managing the Landscape Business. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Preparing the Landscape Site. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Installing and Maintaining Irrigation Systems. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Installing Woody Landscape Plants, Groundcovers, Perennials, and Annuals. Danville, IL: CAERT, Inc.

E-unit: Installing Patios, Walks, and Decks. Danville, IL: CAERT, Inc.

E-unit: Installing Fences and Walls. Danville, IL: CAERT, Inc.

E-unit: Incorporating Lights into the Landscape. Danville, IL: CAERT, Inc.

E-unit: Incorporating Water Features into the Landscape. Danville, IL: CAERT, Inc.

E-unit: Watering, Fertilizing, and Mulching Woody Landscape Plants. Danville, IL: CAERT, Inc.

E-unit: Pruning Landscape Plants. Danville, IL: CAERT, Inc.

E-unit: Pricing Landscape Maintenance Work. Danville, IL: CAERT, Inc.

E-unit: Using Hand Tools in Landscaping. Danville, IL: CAERT, Inc.

E-unit: Using Power Tools and Small Landscape Maintenance Equipment. Danville, IL: CAERT, Inc.

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Hyperlinks:

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: L1200 - PLANT PRODUCTION (GREENHOUSE/NURSERY)

Unit Number: L1200

Dates: Spring 2016 **Hours:** 290.00

Last Edited By: Michelle Bonser (02-08-2016)

Unit Description / Objectives:

Student will know and be able to demonstrate a variety of propagation methods, different aspects of greenhouse/nursery production and management.

Tasks:

L1201 - Demonstrate proper safety and operating techniques for greenhouse/nursery tools and equipment.

L1202 - Describe the characteristics and features of various types of growing structure.

L1203 - Control and sanitize the growing environment and equipment.

L1204 - Identify and prepare different types of growing media.

L1205 - Plant, propagate or harvest various seedlings or plants.

L1206 - Describe various types and uses of plant-growth regulators and hormones.

L1207 - Properly identify and label plant material.

L1208 - Maintain greenhouse/nursery plants (watering, pruning, and fertilizing, re-potting, and disease management).

L1209 - Demonstrate methods of sexual and asexual plant propagation.

L1210 - Develop a crop schedule.

L1211 - Recognize proper operation of the environmental control systems of a growing structure.

L1212 - Receive, handle and grade standard plant material and containers.

L1213 - Prepare plant material for marketing.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Instructional Activities:

Knowledge:

Describe the components of soil
Describe the functions of the growing media
Review considerations for greenhouse frameworks
Describe the functions of the head-house
Describe greenhouse bench options
Describe methods of heating greenhouse structures
Contrast major greenhouse cooling and ventilation systems
Discuss how energy curtains are used to maintain greenhouse temperatures
Analyze greenhouse climate controls
Discuss the advantages of automated systems
Assess automated systems involved in planting
Describe production practices for potted tulips
Explain how potted daffodils are forced
Describe techniques used to force hyacinths
Describe forcing techniques used for Asiatic and Oriental lilies
Discuss production practices for amaryllis
Describe the importance and scope of the foliage plant industry
Discuss production practices used in growing foliage plants in the greenhouse
Explain practices used in caring for foliage plants in the home or office
Describe the importance and scope of the bedding plant industry
Explain production practices used in growing bedding plants
Describe career opportunities associated with greenhouse management
Discuss the importance of sexual propagation of plants
Describe the process of seed germination
Describe the factors involved in planting seeds for transplanting

Explain how to successfully direct seed outdoors
Describe leaf and leaf-bud cuttings and how they are used to propagate plants
Discern the three types of stem cuttings
Explain how root cuttings are prepared for propagation
Examine factors that determine the success of rooting of cuttings
Explain separation and division
Describe layering and identify four common forms of layering
Describe how grafting is used to propagate plants
Explain how budding is used for plant propagation
Discuss the importance of tissue culture
Explain how to prepare a business plan
Explain how computers can be useful in a horticultural business
Explain the scope and history of the nursery industry
Explain the environmental factors involved in selecting a nursery site
Describe the process of lining out nursery stock
Describe the tools and equipment used in production
Describe how to ball-and-burlap stock properly.
Discuss the advantages and disadvantages of bare root, balled, burlapped, and containerized packaging.
Describe the types of storage used for nursery stock
Describe the techniques used in the defoliation of plants before storage
Describe common tasks performed by nursery workers.
Describe the functions of nursery business management

Skill:

Appraise the components of a soilless mix
Evaluate the advantages and disadvantages of soilless medium
Determine desirable properties of growing media
Differentiate greenhouse designs
Define the types of growing media
Identify and describe greenhouse glazing materials
Identify automated systems involved in moving plants in the greenhouse
Compare automated systems involved in watering plants
Distinguish between bulbs, corms, tubers, and rhizomes
Compare forcing schedules for crocus, dwarf iris, and grape-hyacinth
Examine the factors involved in getting bedding plants started
Differentiate the types of greenhouse businesses
Recognize costs related to production
Identify skills a plant grower should master
Report on why plants are propagated asexually
Identify and explain the difference between three common methods of Grafting
Demonstrate tissue culture techniques
Define entrepreneurship and explain how it relates to horticulture
Identify the three ways of doing business
Identify the five functions of business management
Compare the different types of nurseries
Examine the economic factors involved in selecting a nursery site
Contrast the different types of nursery facilities
Demonstrate how the plant-hardiness zone map and the plant heat-zone map are used
Determine proper nursery field practices
Examine the field practice schedules for different types of plants
Categorize the common pests and problems of field nursery stock
Demonstrate the proper staking of a tree in the field
Differentiate the three types of packaging of nursery crops.
List and describe the problems that might occur to plants in storage
Demonstrate the process of grading with a caliper
Appraise the desirable work traits of nursery employees
List and describe the occupations found in a nursery business
Express ways nurseries market their stock

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tools for task
Safety sign off sheet
Student checklist
Grading rubrics for projects
Notebook
Outcome of student crops
Calipers

Resources/Equipment:

E-unit 030042: Exploring Greenhouse Structures. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030043: Controlling the Greenhouse Climate. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030044: Using Automated Systems in the Greenhouse. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030049: Growing and Forcing Spring Flowering Bulbs. Danville, IL: CAERT, Inc. www.mycaert.com Lesson: Growing and Forcing Bulbs, Corms, and Tubers

E-unit 030050: Growing Foliage Plants. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030051: Growing Bedding Plants. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030053: Managing the Greenhouse Business. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030015: Propagating Plants Sexually. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030016: Propagating Plants by Cuttings. Danville, IL: CAERT, Inc. www.mycaert.com
Subject Matter Unit U5006a: Producing Plants by Asexual Propagation. Urbana: University of Illinois Information Technology and Communication Services.

E-unit 030017: Propagating Plants by Division, Separation, and Layering. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030018: Propagating Plants by Grafting and Budding. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030019: Propagating Plants by Tissue Culture. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Establishing a Horticultural Business. Danville, IL: CAERT, Inc.

Ingels, J. (2004). Ornamental horticulture science, operations, and management. Delmar. (Ingels & 2004)

Griner, C. (2004). Floriculture designing & merchandising. Delmar. (Griner, 2004

Internet

E-unit 030006: Classifying Ornamental Plants. Danville, IL: CAERT, Inc. www.mycaert.com Subject Matter Unit U5038: Horticultural Plant Names. Urbana: University of Illinois Information Technology and Communication Services

E-unit 030071: Understanding Nursery Production Facilities. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030072: Producing Nursery Crops. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030073: Packaging Nursery Crops. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit 030074: Managing the Nursery Business. Danville, IL: CAERT, Inc. www.mycaert.com

Parker, R. O. Plant and Soil Science: Fundamentals and Applications. Clifton Park, NY: Delmar Cengage Learning, 2010.

Emmons, Robert D. Turfgrass Science and Management. Albany, NY: Delmar, 1984.

Sauter, David. Landscape Construction. Africa: Delmar Thomson Learning, 2000.

Reiley, H. Edward., and Carroll Shry L. Introductory Horticulture. Albany, NY: Delmar, 1997.

Writing surface
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheet
Computer
LCD projector
Samples of greenhouse glazing materials
Bulbs, corms, and tubers
Foliage plants for identification
Industry catalogs
Live bedding plants
Supplies and/or materials for student laboratory activities
Plant and seed samples
Seed catalogs
Plant samples
Apples or an apple tree seedling and pictures of mature apple trees
African violet plant
Graph paper
Paper play money
Nursery catalogs—both for equipment and for plant material
Plant resource books
Calipers

Monroe Career & Technical Institute
Course: Horticulture - Floriculture and Landscaping

Unit Name: L1300 - FFA

Unit Number: L1300

Dates: Spring 2016 **Hours:** 130.00

Last Edited By: Michelle Bonser (02-08-2016)

Unit Description / Objectives:

Student will know and be able to practice parliamentary procedures, participate in many levels of FFA contests, prepare for employment, demonstrate an understanding of FFA, the opportunities of FFA, and develop leadership skills.

Tasks:

L1301 - Leadership- a. Observe parliamentary procedures.

L1302 - Leadership- b. Participate in leadership contests.

L1303 - Leadership- c. Participate in Skill contests.

L1304 - Leadership- d. Complete an out-of-school project SOE in Horticulture.

L1305 - Job Search- a. Prepare a resume.

L1306 - Job Search- b. Write a letter of application.

L1307 - Job Search- c. Complete an application form for a job.

L1308 - Job Search- d. Write a follow-up letter after an interview.

L1309 - Job Search- e. Select examples of proper conduct during personal interview.

L1310 - Job Search- f. Select attitudes desired by employers during interviews.

L1311 - Job Search- g. Distinguish between employer and employee expectations.

L1312 - Job Search- h. Select information asked for on application forms.

L1313 - Determining purposes and procedures of SAE

L1314 - Planning and developing SAE programs.

L1315 - Understanding the history of the FFA

L1316 - Recognizing opportunities in FFA

L1317 - Developing leadership skills.

L1318 - Participating in community and government organizations.

Standards / Assessment Anchors

Focus Anchor/Standard #1:

- Pennsylvania Core Standards for Reading for Technical Subjects Standard 3.5

Supporting Anchor/Standards:

KEY IDEAS/DETAILS GRADES 9-10-11-12
Standard CC.3.5.9-10.A / Standard CC.3.5.11-12A Cite specific textual evidence, etc.

Standard CC.3.5.9-10 B / Standard CC.3.5.11-12 B Determine the central ideas or conclusions of a text; etc.

Standard CC.3.5.9-10.C / Standard CC.3.5.11-12.C Follow precisely a complex multistep procedure, etc.

CRAFT & STRUCTURE GRADES 9-10-11-12
Standard CC.3.5.9-10. D / Standard CC.3.5.11-12.D Determine the meaning of symbols, key terms, and other domain specific words.

Standard CC.3.5.9-10.E / Standard CC.3.5.11-12.E Analyze the structure of the relationships among concepts in a text, etc.

Standard CC.3.5.9-10.F / Standard CC.3.5.11-12.F Analyze the author's purpose in providing an explanation, describing a procedure...and Analyze the structure of the relationships among concepts in a text.

INTEGRATE KNOWLEDGE & IDEAS GRADES 9-10
Standard CC.3.5.9-10.G Translate quantitative or technical information expressed in a text into visual form (e.g. a table or chart).

Standard CC.3.5.9-10. H Assess the reasoning in a text to support the author's claim for solving a technical problem.

Standard CC.3.5.9-10. I Compare and contrast findings presented in a text to those from other sources, etc.

INTEGRATE KNOWLEDGE & IDEAS GRADES 11-12
Standard CC.3.5.11-12. G Integrate and evaluate multiple sources of information presented in diverse formats...to solve a problem.

Standard CC.3.5.11-12. H Evaluate the hypotheses, data, analysis, and conclusions in a technical text, verifying the data when possible.

Standard CC.3.5.11-12. I Synthesize information from a range of sources into a coherent understanding.

RANGE OF READING GRADES 9-10-11-12
Standard CC.3.5.9-10.J / Standard CC.3.5.11-12.J By the end of grades 9-10, AND 11- 12, read and comprehend technical texts independently and proficiently.

Focus Anchor/Standard #2:

- Pennsylvania Core Standards for Writing for Technical Subjects Standard 3.6

Supporting Anchor/Standards:

TEXT TYPES AND PURPOSE GRADES 9-10-11-12
Standard CC.3.6.9-10.A Standard CC.3.6.11-12.A Write arguments focused on discipline specific content.

Standard CC.3.6.9-10.B Standard CC.3.6.11-12.B Write informative or explanatory texts, including the narration of technical processes, etc.

PRODUCTION & DISTRIBUTION OF WRITING GRADES 9-10-11-12
Standard CC.3.6.9-10.C Standard CC.3.6.11-12 C Produce clear and coherent writing...appropriate to task, purpose, and audience.

Standard CC.3.6.9-10 D Standard CC.3.6.11-12.D Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

Standard CC.3.6.9-10.E Standard CC.3.6.11-12.E. Use technology, including the internet, to produce, publish, and update individual or shared writing products.

RESEARCH GRADES 9-10-11-12
Standard CC.3.6.9-10.F Standard CC.3.6.11-12.F Conduct short and more sustained research to answer a question or solve a problem.

Standard CC.3.6.9-10.G. Standard CC.3.6.11-12.G Gather relevant information from multiple authoritative print and digital sources, following a standard format for citation.

Standard CC.3.6.9-10.H. Standard CC.3.6.11-12.H. Draw evidence from informational texts to support analysis, reflection, and research.

RANGE OF WRITING GRADES 9-10-11-12
Standard CC.3.5.9-10.I & Standard CC.3.5.11-12.I. Write routinely over extended time frames and shorter time frames for a range of tasks, purposes and audiences...etc.

Connecting Anchor/Standard:

- Pennsylvania Core Standards for Mathematics Standard 2.0

Supporting Anchor/Standards:

NUMBERS AND OPERATIONS
Standard 2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real world or mathematical problems.

Standard 2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multistep problems.

Standard 2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Standard 2.1.HS.F.6 Extend the knowledge of arithmetic operations and apply to complex numbers

Instructional Activities:

Knowledge:

Explain how, when, and why the National FFA Organization was founded.
Describe the mission and strategies, colors, motto, parts of the emblem, and organizational structure of the National FFA Organization.
Explain the purpose of FFA's Program of Activities and describe its committee structure.
Describe how FFA develops leadership skills, personal growth, and career success.
Describe the four FFA degree areas.
Explain the various team and individual career development events.
Describe the duties and responsibilities of FFA chapter officers.
Explain the characteristics of a good FFA leader and the proper dress for all FFA members.
Explain how to plan a meeting and develop an order of business.
Describe how to set up a meeting room.
Explain the parliamentary procedure used in an FFA meeting.
Describe the various student clubs and organizations available in schools.
Explain the 4-H Youth Program.
Discuss the meaning and importance of community service.
Explain how FFA members can become involved in community improvement and development.

Skill:

Recite and explain the meaning of the FFA Creed.
Identify major state and national activities available to FFA members.
Identify the FFA proficiency awards
Identify and describe some community service organizations

Remediation:

Re-teach major concepts
Review with teacher assistance
Worksheets
Individual tutoring
Group tutoring
Peer tutoring
Review games
Create a chart
Technology integration
Computer assisted instruction
Checklists

Enrichment:

Upon completion students will move to the next task/assignment
Repeat tasks to enhance skill
Model learning of concepts for others
Teach concepts to peers
Independent study for FFA competition
FFA leadership related activities

Safety:

Student must:
Handle material in a safe and workmanlike manner
Use protective clothing and equipment
Use hand tools in a safe manner
Follow manufacturer's directions when using any product, tool, equipment, etc.
Use proper safety precautions when using /operating hand tools
Use tools and equipment in a professional work-like manner according to OSHA standards
Know and follow the established safety rules at all times

Assessment:

Worksheets
Anticipation Guides
Pre/post test
Video /DVD worksheets
Student self-assessment
Student written description of task and proper tool's for task
Student checklist
Grading rubrics for projects
Notebook
Writing surface
Overhead projector
Copies of sample test
Visuals from accompanying masters
Copies of student lab sheet
Meeting paraphernalia

Resources/Equipment:

E-unit: History of the National FFA Organization. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: The Mission, Symbols, and Creed of the FFA Organization. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Developing the Chapter

E-unit: Opportunities in the FFA. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Achievement in FFA. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Leading the FFA Chapter. Danville, IL: CAERT, Inc. www.mycaert.com

E-unit: Developing School and Community Awareness. Danville, IL: CAERT, Inc. www.mycaert.com

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Hyperlinks: