

Passaic County Technical Institute

Curriculum of Instruction

Landscape Design/Horticulture II

Grade 10

June 2011

Prepared by Michael Di Patria

I. COURSE DESCRIPTION

Landscape Design/Horticulture II is a one-year course, which builds on the basic skills and knowledge gained in Landscape Design/Horticulture I. This will be accomplished through review along with classroom and greenhouse activities. Units of study will include but not be limited to: Plant science, plant propagation, greenhouse management, integrated pest management, plant growth regulators, non-power and power landscape equipment and FFA activities. Students in Landscape Design /Horticulture II will be introduced to using plants and hardscapes in the landscape as part of their design and lab activities. The student's basic landscape design drawings will be expanded and developed for actual planting where possible. . They will plan, plant and maintain a vegetable and flower garden. Entrepreneurial skills and business interest of the students will be developed through group and individual activities including class presentations and simulated landscape situations.

Time Frame : 1 year

Suggested Grade Level : Grade 10

Prerequisite: Successful completion of Landscape Design/Horticulture I

II. OBJECTIVES

Upon completion of Landscape Design/Horticulture II, the student will be able to:

- A. List four types of growth regulators used in the landscape/horticulture industry
- B. Describe the difference between separation and division in plant propagation
- C. Explain grafting and identify three common methods
- D. Discuss the importance of integrated pest management (IMP)
- E. Describe ways to control plant pest through natural and biological means
- F. Explain the importance of good business management
- G. Discuss the role of computer technology in business
- H. Demonstrate and safely use non-power and power lawn maintenance equipment
- I. Explain the importance of proper plant selection for the landscape
- J. Explain landscaping as a process
- K. Distinguish between plan views, elevations and perspective views of landscape proposals
- L. Demonstrate proper plan view symbols for major landscape features
- M. Explain the importance of analyzing the landscape site
- N. Participate in FFA activities
- O. Demonstrate occupational and personal safety in the workplace (class/shop)

COURSE OUTLINE

Plant Propagation

- A. Describe the process and major differences of separation and division
- B. Explain five specialized plant structures used in propagation
- C. Describe propagation procedure for Rhizomes and Tubers
- D. Explain and demonstrate three common methods of grafting
- E. Discuss the importance of Tissue Culture
- F Explain how technology is used in plant propagation

Plant Growth Regulators

- A. Describe the two groups of plant growth regulators
- B. Explain the difference between synthetic growth regulators and plant hormones
- C. Describe the control of Apical Dominance by plant hormones
- D. Explain the benefits of using plant growth regulators
- E. Discuss gibberellins and anti-gibberellins
- F. Explain biostimulants

Integrated Pest Management (IPM)

- A. Explain the importance of Integrated Pest Management
- B. Describe the need for Biological and chemical-free control of plant pest
- C. Discuss natural pesticides and their impact on pest management
- D. Explain how plant selection can help in pest management

Plant Selection

- A. Describe the origins and forms of the plants used in landscapes
- B. Explain plant nomenclature
- C. Discuss how plants are sold
- D. Describe the hardiness zone map
- E. Explain physical and cultural factors to consider in plant selection
- F. Demonstrate how technology can help in plant selection for the landscape

Using Plants in the landscape

- A. Discuss how annuals, perennials and biannual flowers can work together in the landscape
- B. Explain how trees and shrubs work to provide interest, beauty and function
- C. Introduce the landscape design process
- D. Discuss the importance of a site and needs analysis
- E. Explain the basic concepts of a line and corner planting

- F. Reinforce Principles and Concepts of good landscaping and how they work within the development of the landscape plan

Landscape Design

- A. Explain the importance of landscaping and landscape planning
- B. Describe the procedures in landscape planning
- C. Describe the basic principles that lead to good design
- D. Explain the elements of design and effect
- E. Describe features of plant materials, hardscape materials and architecture that make them useful as design elements
- F. Discuss and illustrate proper design symbols for plants and hardscapes
- G. Explain plan views, elevations and perspective views of landscape proposals
- H. Discuss and illustrate proper plan view symbols for major landscape features
- I. Describe functional diagrams, preliminary diagrams and final plans

Landscape/Horticulture Business Management

- A. Explain the five functions of management
- B. Explain uses of computers in business
- C. Describe labeling, pricing, displaying and advertising of greenhouse grown plants
- D. Explain the importance of record keeping
- E. Demonstrate knowledge of safety practices in the workplace

Non-Power Tools

- A. Identify and describe basic non-power tools used in landscape/horticulture industry
- B. Demonstrate proper procedure in using non-power tools
- C. Describe safety precautions in using non-power tools

Lawn Maintenance Equipment (power)

- A. Identify basic power equipment used in lawn maintenance
- B. Demonstrate proper procedure for operating a Backpack Blower, Trimmer and commercial 36" lawn mower
- C. Explain safety precautions for gasoline and two-stroke equipment
- D. Describe the importance of inspecting the equipment prior to using
- E. Explain the importance of dressing appropriately, including personal protective equipment

Greenhouse Operation

- A. Describe the different types of irrigation systems used in a greenhouse
- B. Explain the difference between organic and inorganic fertilizers
- C. Describe the various methods of applying fertilizer

Student Organizations and Internships in Horticulture

- A. Describe common organizations for students in horticulture
- B. Explain the purpose, nature and organization of the FFA
- C. Evaluate and apply for FFA chapter

III. EVALUATION, PROFICIENCIES and NJCCS

A. Evaluation :

Students to be evaluated using the following grading system:

Tests	40%
Quizzes	20%
Projects	20%
Notebooks/Homework	10%
Class Participation	10%
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TOTAL	100%

B. Proficiencies:

Students will be able to :

- A. List four types of growth regulators used in the landscape/horticulture industry
- B. Describe the difference between separation and division in plant propagation
- C. Explain grafting and identify three common methods
- D. Discuss the importance of integrated pest management (IMP)
- E. Describe ways to control plant pest through natural and biological means
- F. Explain the importance of good business management
- G. Discuss the role of computer technology in business
- H. Demonstrate and safely use non-power and power lawn maintenance equipment
- I. Explain the importance of proper plant selection for the landscape
- J. Explain landscaping as a process
- K. Distinguish between plan views, elevations and perspective views of landscape proposal
- L. Demonstrate proper plan view symbols for major landscape features
- M. Explain the importance of analyzing the landscape site
- N. Participate in FFA activities
- O. Demonstrate occupational and personal safety in the workplace (class/shop).

C. NJCCS

The following CCS will be used throughout the course :

Standard 9.1 21st-Century Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

Standard 9.2 Personal Financial Literacy: All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.

Standard 9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Standard 9.4 Career and Technical Education: All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

IV. TEXTBOOKS and INSTRUCTIONAL MATERIALS

“Introductory Horticulture”, fifth edition - H. Edward Reiley

Carroll L. Shry, Jr.

Delmar Publishers, Albany, New York, 1995

ISBN : 0-8273-6766-X

“Introduction to Horticulture”, fourth edition - Charles B. Schroeder

Pearson Education Inc., Boston, Ma. 2009 Eddie Dean Seagle

ISBN : 978-0-13-362631-5 Lorie Felton, John M. Ruter, William T. Kelly,

Gerard Krewer

“Landscaping-Principles and Practices” , 5th edition Jack E. Ingles

Delmar Publishers, Albany, New York, 1997

ISBN : 0-8273-6735-X

V. INSTRUCTIONAL STRATEGIES

Various teaching methods are utilized in this course. In order to meet the individual needs of our students, differentiated instruction is utilized in every class. Meaningful instruction will use a variety of strategies, including but not limited to: readings and exercises from approved text(s) and related supplemental materials, hands-on practical projects, shop demonstrations by the teacher and students, cooperative group activities, teacher generated worksheets and exercises, field trips to flower shows, botanical gardens, and selected secondary schools will support classroom content. Teacher modeling of landscape situations will also be implemented. The use of specific audio-visual materials will be utilized in classroom instruction. Computer use will consist of research and project reports.

VI. SCOPE and SEQUENCE

Skills to be Learned	9	10	11	12
Contracts/Contractors/Landscape Specification	I	ID		
Greenhouse Operation	I	ID		
Horticulture Industry & the Environment	I	ID		
Hydroponics	I	ID		
Integrated Pest Management (IPM)	I	ID		
Interior Plantscape	I	ID		
Irrigation Systems	I	ID		
Landscape Maintenance	I	ID		
Landscape Business Management	I	ID		
Landscape Construction	I	ID		
Landscape Design	I	ID		
Landscape Enrichments	I	ID		
Landscape/Horticulture Careers	I	ID		
Lawn Maintenance Equipment	I	ID		
Media, Nutrients and Fertilizer	I	ID		
Non Power Tools	I	ID		
Outdoor Room Concept	I	ID		
Plant Classification, Function and Structure	I	ID		
Plant Growth Regulators	I	ID		
Plant Propagation	I	ID		
Plant Selection and the use of Plants in the Landscape	I	ID		
Pricing the Landscape	I	ID		
Student Organizations	I	ID		
Turf Grass	I	ID		
Xeriscaping	I	ID		

KEY: INTRODUCE : I DEVELOP IN DEPTH : D REINFORCE : R

VII. PACING CHART

<u>Week</u>	<u>Chapter</u>	<u>Material</u>
Week 1	Chapter 27 Student Organizations and Internships in Horticulture	Describe Organizations for Students in Horticulture
Week 2	Chapter 27 Organizations for Students in Horticulture	Explain purpose, nature and organization of the FFA. Evaluate and apply for FFA Chapter
Week 3-4	Section 2 – Unit 4 Plant Science Environmental requirements for plant growth. Stimulants, retardants, hormones	Types of plant growth regulators used in landscape/horticulture. Difference between synthetic regulators and plant hormones. Apical Dominance control.
Week 5-7	Chapter 6 Media, Nutrients, and Fertilizers	Identify growing media. Soil materials and structure. Explain fertilization and fertilizer. pH Use of gibberellins and anti-gibberellins
Week 8	Chapter 6 Media, Nutrients, and Fertilizer	Explain the benefits and use of Bio-stimulants
Week 9	Section 5 – Unit 16 Integrated Pest Management	Importance of IPM. Need for Biological control. Natural pesticides.
Week 10-11	Chapter 8 Pest Management	Explain Best Management Practices in maintaining environmental integrity. Alternate Pest control methods. Proper Plant selection and it effect on Pest Management.
Week 12	Chapter 16 – Designing Landscapes Plant Selection	Factors to consider in Plant selection- Water requirements, growth rate, color, Hardiness.
Week 13	Chapter 7 Plant Selection	Origins and forms of plants used in the landscape. Plant nomenclature

Week 14	Chapter 7 Plant Selection	Ways Plants are sold. Advantages and disadvantages of each. Understanding the Hardiness Zone map and its use in Plant selection.
Week 15-16	Chapter 7 Plant Selection	Physical and cultural factors to consider in Plant selection. Use of Technology in the Landscape industry for Plant selection.
Week 17	Winter Break	
Week 18-19	Section 7 – Units 25, 26, 27, 28, 30 Using Plants in the Landscape Annual Bedding Plants	Types of Plants. Annuals, Perennials, and Biennials. Ornamental grasses, Vines, and Bamboo. Use of Evergreen and Deciduous Trees. Foundation Plantings using Deciduous and Evergreen shrubs. Introduce the Landscape Design Process. Importance of landscaping and landscape planning. Steps in the Landscape process .Basic Principles that lead to a good design. Basic concepts of a line and corner planting
Week 20	Chapter 16 Designing Landscapes	Importance of a Site and Needs Analysis. Explain the elements of design and effect
Week 21-22	Chapter 8 The Principles of Design	Describe features of Plant Materials, Hardscape Materials and Architecture that can be incorporated into the Landscape. Illustrate proper design symbols for Plants and Hardscapes.
Week 23	Chapter 3 Graphic Materials and Techniques	Explain Plan View, Elevations, and Perspective Views of Landscape Proposals. Illustrate Proper Plan View Symbols for Major Landscape Features. Present Functional Diagrams, Preliminary Diagrams and Final Plans
Week 24	Chapter 9 Horticulture Business Management	Explain the five functions of Management. Discuss and demonstrate uses of Computers

Week 25	Chapter 9 Horticulture Business Management	Labeling, Pricing, Displaying and Advertising of greenhouse grown plants. Importance of record keeping. Workplace Safety.
Week 26-27	Chapter 23 Non Power Tools Proper Use and Maintenance	Identify basic Non Power Tools used in Landscape/Horticulture. Demonstrate proper use of Tools. Proper Safety and Maintenance Practices
Week 28	Chapter 5 Plant Propagation	Process and differences of Separation and Division. Five specialized structures used in propagation. Rhizomes and Tubers propagation procedures
Week 29	Section 3- Unit 9,10 Plant Propagation	Explain and demonstrate three common methods of Grafting. Research the importance of Tissue Culture. Discuss the role of technology Plant Propagation
Week 30	Chapter 10 Greenhouse Structures	Greenhouse designs. Discuss the importance of Interior layout. Meeting Plant requirements.
Week 31-32	Chapter 11 Growing Crops in the Greenhouse	Use of organic and inorganic fertilizers. Types of irrigation systems
Week 33	Chapter 24 Grounds Maintenance Equipment	Identify basic power equipment used in lawn maintenance. Proper clothing, Personal Protective Equipment
Week 34-35	Chapter 24 Grounds Maintenance Equipment	Safety precautions for gasoline and two-stroke equipment. Pre-start inspection. Backpack Blower- String Trimmer
Week 36	Chapter 24 Grounds Maintenance Equipment	Demonstrate proper procedure for operating a Backpack Blower, String Trimmer, 36" Commercial Lawn Mower

Landscape Design/Horticulture II
Grade 10
Student Proficiencies

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