



South Central College

VITI 1112 Botanical Viticulture

Course Outcome Summary

Course Information

Description	This course is designed to provide students with an overview of the plant kingdom and to examine grapevine form and function from a botanical perspective. Topics to be covered include the specific characteristics of plants that distinguish them from other forms of life, divisions within the plant kingdom with representative members of each, and plant classification. Plant cells, tissues, life cycles, structures and functions, especially as applied to grapevines will also be discussed, along with various aspects of plant and grapevine physiology, such as photosynthesis, respiration, nutrition, cold acclimation and hardiness, and dormancy. (Prerequisite: None)
Total Credits	4
Total Hours	80

Types of Instruction

Instruction Type	Credits/Hours
Lecture	3/48
Lab	1/32

Pre/Corequisites

None

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Describe the forms of life on earth.

Learning Objectives

List the six kingdoms of life.

Classify various forms of life into each kingdom, and explain what characteristics qualify as a classification for each kingdom.

2. Define plant taxonomy.

Learning Objectives

Identify various plant forms, connecting the specimen with a published name.

Compare and contrast the various Angiosperm Phylogeny Group (APG) systems, and discuss why APG III has the most recent plant classifications.

Diagram various plant species based upon different plant taxonomy classification systems.

3. Distinguish structures and functions of plant cells.

Learning Objectives

Diagram a plant cell's components: Nucleus, Chloroplasts, Vacuole, Cell membrane, Cell Wall, Mitochondria, Endoplasmic Reticulum and Ribosomes.

Explain the various structures within a plant cell and their functions.

4. Summarize different plant life cycles.

Learning Objectives

Outline the various parts of a flowering plant, and explain the function of each part.

Discuss the differences between haploid and diploid generations in the plant life cycle.

5. Explain grapevine structure and form.

Learning Objectives

Identify and list various parts of a grapevine including: roots, shoots and perennial wood, leaves, flowers and berries.

Point out healthy buds, primary bud loss and secondary bud loss.

Give examples of how vineyard layout can impact grapevine structure and form.

6. Describe photosynthesis and respiration.

Learning Objectives

Explain why with a woody plant, flowering affects the energy consumption of the plant.

Discuss why temperature affects a vine's ability to go through photosynthesis.

Evaluate the varying levels of water needs of vines and how that impacts respiration.

7. Summarize how sources and sinks work with grapevine growth.

Learning Objectives

Identify which sources of the grapevine hold carbon compounds and minerals.

Diagram how carbon compounds and minerals are transported from sources to sinks in the vine.

Explain how seasons affect the strength of vine sinks.

Define a sink and a source in regards to vine management.

8. Identify the vine dormant season.

Learning Objectives

Explain how leaf drop is triggered and why it happens.

Discuss how carbohydrate production and storage changes during the dormancy season.

9. Classify plant nutrients and explain their role in grapevines.

Learning Objectives

Explain how excess nitrogen can affect shoot growth and fruit quality.

Explain each nutrient's function for the growth of the grapevine.

Distinguish between different nutrient deficiencies in vine growth.

Create a plan for nutrient application.

10. Describe genetics and explain the role of genetics in hybrid grape development.

Learning Objectives

Choose grape hybrids and varieties suitable to Minnesota and the Midwest region.

Explain how hybridization affects things like plant disease, weather hardiness and fruit production.

11. Define Mendelian inheritance.

Learning Objectives

Explain Mendel's Principles of Heredity.

Discuss the re-discovery of Mendelian inheritance and the role Mendelian inheritance played in hybridization.

12. Explain plant ecology, variability and evolution.

Learning Objectives

Determine how climate affects plant variability and plant abundance.

Give examples of how other species interact with vineyards and their benefits and drawbacks.

Describe the evolution of grapevine development.

SCC Accessibility Statement

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