

Course Syllabus

AGRISCIENCE II

Sustaining Human Life



Course Code: EDL066

Agriscience II – Sustaining Human Life

Course Description

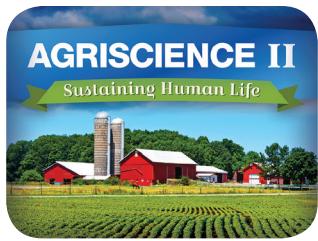
Have you ever strolled past a bright green cauliflower at the market and paused to ponder its unusual color? Ever wonder why “broccolini” is suddenly a thing? Well, if you find yourself curiously questioning these, and other, peculiar vegetables and wondering about the role of agriculture in the modern world, Agriscience II is for you. Learn how science and technology are revolutionizing our food supply and promoting innovative ways to produce healthy plant-based foods, such as developing better hybrids and growing edible plants in challenging places. Food is our most essential resource; see how plant science will change the face of eating in the 21st century and give us the knowledge to continually improve our green thumbs!

Required Materials

- Plant seeds or cuttings
- Growing media
- Growing container
- A sharp blade and rooting hormone, depending on the plant you choose
- Soil or other growing media
- Soil test kit
- 2-3 pots
- Seeds of your choice
(make sure your growing medium is appropriate for the seed you chose)
- Plant
- Pest management materials
(vary based on chosen strategy)

Table of Contents

Lesson 1: The Horticulture Industry and Working in Horticulture	3
Lesson 2: Identifying and Classifying Plants	4
Lesson 3: Plant Growth, Propagation, and Development	5
Lesson 4: Soil Science	6
Midterm Exam	7
Lesson 5: Irrigation and Watering	8
Lesson 6: Fertilization and Pest Management	9
Lesson 7: Landscape Science	10
Lesson 8: Plant Management	11
Final Exam	12



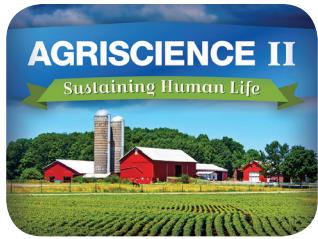
Lesson 1: The Horticulture Industry and Working in Horticulture

Lesson Summary

Do you have a thumb so green it glows? Are you happiest when surrounded by growing things? If so, you may be planning a future in horticulture or plant science. In this unit, you'll learn what horticulture is all about, from growing plants to designing garden spaces. You'll also learn more about the exciting trends in horticulture and plant science, including plant modifications and designing for sustainability. Finally, you'll learn how to stay safe working in the nursery or garden.

Learning Objectives

- Define horticulture.
- Identify different types of horticulture.
- Recognize key trends and technology relevant for plant scientists.
- Understand the basics of workplace safety for horticulturalists.



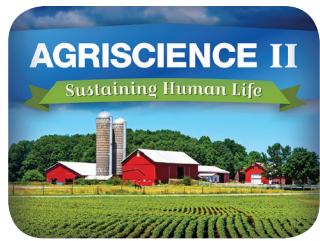
Lesson 2: Identifying and Classifying Plants

Lesson Summary

To study plants and to grow them, you need to first identify them. Identifying a plant tells you how it reproduces, where it grows best, and how much sun and water it needs. Identifying a plant also provides information about its growth pattern. In this unit, you'll learn a number of different ways to identify, classify, and categorize plants. These strategies will help you to understand plants and to choose plants for different uses commercially, in the garden, and at home.

Learning Objectives

- Classify an unidentified plant into a basic group and begin the process of identifying it.
- Explain plant taxonomy and how we scientifically group, classify, and name plants.
- Understand how different types of plants live and grow over their lifetime.
- Recognize key structural differences between different types of plants.



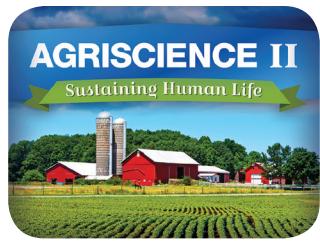
Lesson 3: Plant Growth, Propagation, and Development

Lesson Summary

To study plants, to grow plants, and even to grow the products of plants, you need to understand how plants reproduce and how they can be propagated in a laboratory or garden. You also have to understand what they need to grow, and how plants use light to provide energy. In this unit, you'll learn many different ways to propagate plants, from seeds to grafting, and you'll develop an improved understanding of how plants grow.

Learning Objectives

- Identify both sexual and asexual plant reproduction strategies.
- Explain how seeds are fertilized and how they grow.
- Recognize different means of propagating plants.
- Define the process of photosynthesis.



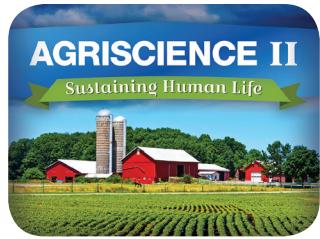
Lesson 4: Soil Science

Lesson Summary

Growing plants—in the laboratory, on the farm, in the garden, or even in a flowerpot—requires that the plants have access to a growing medium, typically some sort of soil. With only a few exceptions, you can't grow plants out of thin air. Soil science is the study of soil as a natural resource, including how it is used and managed. In this unit, you'll learn about different types of soil, how to improve soil, and why good-quality soil is essential for plant growth. You'll also learn about other types of planting media and how to use them for container gardening and other applications. With this knowledge, you'll be able to sustain vigorous and healthy plants of all types.

Learning Objectives

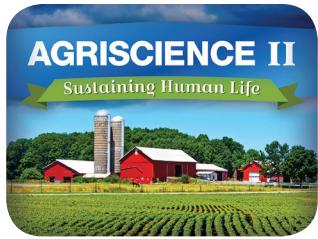
- Describe soil types and their effects on plants.
- Discuss trends and advances in soil science.
- Identify growing media and fertilizers.
- Demonstrate proper use of growing media and fertilizers.



Midterm Exam

Learning Objectives

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the first four units in this course (Note: You will be able to open this exam only one time.)



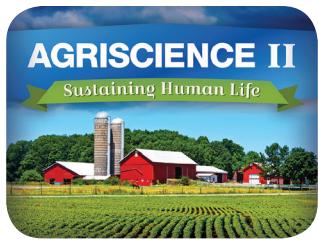
Lesson 5: Irrigation and Watering

Lesson Summary

As you've learned, plants need sunlight to grow, but they also need water. In agricultural science, plants are most often supplied with water through irrigation, or the intentional application of water to the plants, or to the ground surrounding the plants. In this unit, you'll learn how irrigation systems work and about research and discoveries in irrigation science today.

Learning Objectives

- Describe the science behind irrigation and watering systems.
- Irrigate plants using an irrigation system.
- Maintain irrigation systems.
- Explain irrigation techniques for plants and turf.



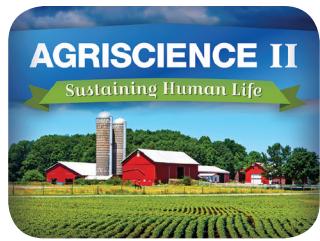
Lesson 6: Fertilization and Pest Management

Lesson Summary

To be healthy, plants have to be provided for and protected. Providing for plants means more than just healthy soil—it also requires that you learn how to apply and use fertilizer. In addition, protecting plants means that you need to know about integrated pest management in all its forms and how to use it to reduce the risks associated with insects, wildlife, and unwanted plants. You also need to understand the laws, which govern the use of these chemicals. They can be dangerous, and state and federal governments have protections in place concerning their sale, use, and labeling.

Learning Objectives

- Describe integrated pest management approaches.
- Use a pest control system.
- Apply proper fertilizer application components.
- Manage and apply fertilizer schedules.



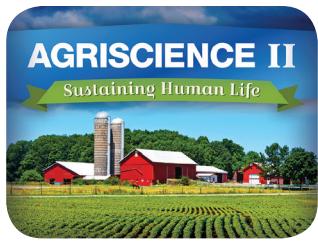
Lesson 7: Landscape Science

Lesson Summary

Landscape science and design implements many of the plant science skills you've learned throughout this course. Landscaping enables you to arrange plant materials and outdoor construction and installations in ways that are both functional and decorative. Smart landscape science enables landscaping to serve a number of additional functions, including reducing soil erosion, limiting water use, and cutting heating and cooling costs.

Learning Objectives

- Identify principles of landscape design.
- Apply best management practices in landscape design.
- Apply principles of landscape design and maintenance.
- Recognize and apply landscape science for sustainability.



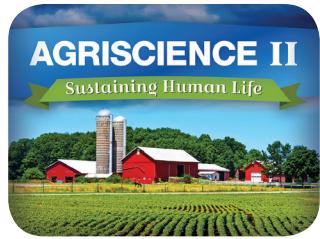
Lesson 8: Plant Management

Lesson Summary

Managing plants and planting sites is essential to keep plants alive in a wide variety of settings, from the garden to the lab. In this unit, you will look at current and future applications of the skills, information, and science you've learned in this course. The skills of agriscience are essential to support the future of our population and our planet. Scientists in plant laboratories are working to develop new plant technologies to improve production and nutrition and address key issues of climate change.

Learning Objectives

- Harvest, transport, and install plant materials.
- Manage planting sites and needs.
- Discuss emerging trends in horticulture and plant management.
- Describe future applications of plant science.



Final Exam

Learning Objectives

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from units five to eight in this course – the last four units. (Note: You will be able to open this exam only one time.)