



Overall Objectives of Native Plant Trust's Online Courses:

- Create a series of short modules (usually each 15 minutes or less), organized within units, that cover a specific topic related to plant science in an engaging, creative, and concise way
- Create modules that can be used by a variety of instructors teaching botany or basic or applied biology or environmental science throughout the region
- Create content that can easily be adapted for other regions (i.e. that emphasizes general concepts, complemented by specific examples from the New England flora that can be replaced by specific examples from other regions)
- Each module should convey the basic fascination of plants, but also give very practical, hands-on examples of why it's important to understand more about them and how such understanding can be applied in important every-day tasks
- The course is not graded, but successful completion of the course will earn 1 elective credit toward a certificate in Field Botany.

Structure of the Course:

The course is five units. The course format enables students to complete units at their own pace. All materials and assignments are accessible on the Moodle website on the first day of the course. From past course student feedback, we estimate that each unit's activities should take 3-5 hours total to complete.

This course encourages students to apply their new knowledge in the field. As a complement, field study opportunities are listed on the Society website, for which students can register separately.

This course offers several ways in which students can continually communicate with staff and with each other:

- **News Forum:** Offering course news and announcements from the Society
- **Plant Chat:** A discussion forum for sharing plant-related resources; students can post links, videos, articles, and event notices here. General questions, thoughts, and ideas about plants or this course are also welcome.
- **Help Forum:** Here, you can contact staff and your classmates for help with any aspect of the course you find difficult, including technical issues, problems interpreting assignments, etc.
- Students can always communicate with staff via email at education@nativeplanttrust.org.



Click on the titles of the activities to access them. You can use the Navigation Block (see Moodle Tutorials) to hop from activity to activity, or use links within each activity to jump to the next one or to return to the main course page.

Unit 1: Introduction and Why Plants Are Important

Unit one serves as an introduction to this course. It will give you an overview about the materials and how you can use Moodle. We also introduce you to why plants matter to all of us, as medicine, food, property value, wood, and fiber. You will also learn how plants actively respond to – and shape – their environment.

- **Introductory Video:** Why this course is unique
- **General Introduction to the Course**—How to get the most out of it, and how and why it was created
- **Assignment 1- Please Introduce Yourself** to your classmates and tell us your favorite plant
- **Beginning Quiz, Observing Plants:** To assess your baseline skills in plant observation
- **Why Plants Are Important: Lungs of the Planet.** A slideshow primer on the history of plant life on earth and how plants have changed the world
- **Plants Feed and Cure Us:** Important plants used as crops, drinks, scents, spices, and medicines
- **Assignment 2 - How Many Plants Have You Eaten Today?** Tell the Discussion Forum
- **Plants Clothe and Shelter Us.** Video slideshow on important plant fibers and an introduction to woody and herbaceous plants
- **Assignment 3 - Notice Bark of Local Trees.** Share a photo and observations with the Discussion Forum
- **Ecosystem Services Provided By Plants.** Read about this concept at: http://www.canr.msu.edu/nativeplants/ecosystem_services/
- **Plants Enhance Property Value.** Visit the National Tree Benefit Calculator and enter the tree(s) that occur on your property: <http://www.treebenefits.com/calculator/>
- **Assignment 4 - How Much Your Trees Are Worth?** Tell the Discussion Forum
- **Plants Improve Your Well-being.** Review article for your reading pleasure, with a link to [America in Bloom](#) website
- **A One-Minute Intro to Plants in Motion.** By NOVA, the PBS science show

Other resources: In drop-down menu on the top navigation bar: Go Botany and How to Use Go Botany.

Unit 2: What Are Plants?

In this unit, we will learn about what a plant is...and what it is not. What do we mean by the term "plants" anyway? How do we classify them into basic groups? Here's an introduction to identifying plants in the northeast (we'll get more practice later). And we will discuss the basic life cycle of a plant, from seed to seed.

- **Assignment 1 - What Do You Think A Plant Is?** Share your definition with the Discussion Forum
- **Assignment 2 - A Possible Working Definition of a Plant.** "A multicellular living organism of the kind exemplified by trees, shrubs, herbs, grasses, ferns, and mosses, typically growing rooted in a permanent site, absorbing water and inorganic substances through its roots, and synthesizing nutrients in its leaves by photosynthesis using the green pigment chlorophyll." Are you satisfied with that definition? Share your opinion with the Discussion Forum
- **Here's What Plants, Maybe, Actually, Are.** Video slide show on plant exceptions to the rule and a possible better definition
- **Naming and Classifying Plants I: The Vascular Plants.** Read this material and watch a 10-minute TED Talk by Rachel Sussman about the oldest living organisms, many of which are plants.
- **Assignment 3 – Your Thoughts on The World's Oldest Living Things.** Share your impressions with the Discussion Forum
- **Naming and Classifying Plants II: Plant Taxonomy.** Peruse this [document](#) from the University of Nebraska, Lincoln for a useful introduction to plant names and classification.
- **Pronouncing Pesky Plant Names:** Links to auditory and written guides to Latin pronunciation
- **Here's What Plants Are Not:** Reading and handout on evolutionary relationships among green plants, animals, fungi, and other large organismal groups
- **Two Major Groups of Plants: Gymnosperms and Spore-bearers.** Video slide show on gymnosperms, and plants (ferns and their relatives) that produce spores
- **Quick Visual Quiz on Distinguishing Ferns from Conifers.** Test your ability to recognize members of these groups
- **Assignment 4 - What's The Name of Your Favorite Plant?** Use Go Botany to look up information on your plant; a 9-minute tutorial shows you how. Share your plant with the Discussion Forum
- **Video: Dr. Jesse Bellemare** (Smith College) introduces us to a great habitat, rich mesic forest (9 minutes)
- **Assignment 5 - Classify Three Plants in Your Neighborhood,** using Go Botany's broad categories
- **Handout and Web Link: The Major Groups of Green Plants And Their Evolutionary Relationships**

Unit 3: Understanding the Life Cycles of Plants

In this unit, we'll delve deeper into the structure and physiology of plants. How do plants obtain the water and nutrients they need? We'll study plant reproduction in more detail and learn how reproductive structures such as flowers can be useful for identifying plants and understanding their evolutionary relationships.

- **Plants and Water:** 9-minute video slideshow on how plants take up, transport, and use water
- **How Plants Get the Food They Need.** 11-minute slideshow on plant nutrition and the nitrogen cycle
- **Mini-Quiz on Plants, Water, and Nutrients.** A quick quiz to assess what you learned about plants and the resources they need
- **What Plants Talk About.** 52-minute video demonstrating the complex ways in which plants interact and communicate with each other
- **Assignment 1 - Did Anything Surprise You About Plant Communication?** Share your thoughts with the Discussion Forum
- **Flowering Plants: The Life Cycle From Seed to Seed.** 7-minute animation showing how flowering plants grow and reproduce
- **Reproduction in Flowering Plants.** 9-minute slideshow exploring double-fertilization and other unique traits of angiosperms
- **How Angiosperms Took Over the World.** BBC article on Darwin's "abominable mystery:" the apparently rapid evolution of flowering plants
- **Assignment 2 - Can You Think of Any Other Reasons Why Angiosperms Have an Advantage?** Share your thoughts with the Discussion Forum
- **How Plants Provide for the Next Generation.** 9-minute slideshow on maternal effects
- **"Monocots" and "Dicots."** Read about new discoveries about two major groups of angiosperms

Unit 4: The Wonderful Plants of the Northeast

In this unit, we'll get a down-to-earth introduction to the very rich flora of the Northeast. You'll get to know about the 3,500 species of plants documented from our region, including those that are rare, and those that are invasive. What do we mean by "invasive," anyway? What are "native" plants, and why are they preferable for planting? You'll travel throughout the region to experience the diversity of habitats that occur here. Most excitingly, you'll get a first-hand introduction to some of the talented botanists who is spearheading efforts to conserve plants throughout the region.

- **Introduction to the Wonderful Plants of New England.** 9-minute slide show
- **Native Plants of New England.** 9-minute video slide show on native plants and how we define "native"



- **Assignment 1 - Is Your Favorite Plant Native or Non-Native?** Use Go Botany to find out, and post your answer to the Discussion Forum
- **Non-Native and Invasive Plants of New England.** What makes a non-native plant “invasive”? Find out by watching this 10-minute video slide show.
- **Handout: Booklet on Invasive Species.** By the Connecticut River Coastal Conservation District Web Links To Invasive Species Information in Your State
- **Assignment 2 - Do You Have Invasive Species Near You?** Use Go Botany to find out, and share with the Discussion Forum
- **Rare Plants of New England.** A 6-minute video slideshow of special rare members of our flora
- **Assignment 3 - Why Might We Care About Rare Plants?** Share your opinion with the Discussion Forum
- **A Conversation about Conservation.** 15-minute video interview with Bill Brumback, former Conservation Director of Native Plant Trust, on managing and protecting rare plant species
- **Handout: How to Become a Plant Conservation Volunteer** with Native Plant Trust
- **Assignment 4 - Describe a Rare Plant Near You.** Use Go Botany to search for information on rare species. Write about that species in the Discussion Forum
- **New England’s Special Plant Habitats.** Plants occur in reasonably predictable groups of species that are adapted to local conditions. Learn about some iconic habitats of the region in this 8-minute video slideshow. Also, Botanist Leif Richardson introduces some biodiverse natural community types in a 19-minute video (From Vermont PBS)
- **Plants Are the Habitat.** 13-minute slideshow about plant interactions with other organisms

Unit 5: Get Out There and Enjoy Plants!

In the final unit of this course, you'll learn the basics of how to observe plants closely so you can both identify them and appreciate them. Learn how to use a hand lens to magnify plant features, how to draw and take notes on plants, how to photograph their features for future reference, and how to pack a good, light-weight field kit. We encourage you to get outside and practice these skills, and perhaps you'll register for a field study the Society offers.

- **Tips For Observing Plants:** In this 5-minute video, Elizabeth points out useful features to observe about plants
- **A Handy Field Worksheet for Observing Plants:** Here is a fillable, electronic form that you can print out or fill in on your computer or mobile device in the field or at home (Word or PDF formats available)
- **Assignment 1: Take Notes on a Plant Near You.** Share your notes (preferably using the field form provided) and your identification of the plant on the Discussion Forum
- **Handout: A Basic Botany Field Kit.** Simple equipment that is useful in the field
- **Handout: Places to Buy Botany Equipment.** If you know of additional outlets for botany supplies, please share them with your classmates using the PLANT CHAT Forum

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Conserving and promoting
New England's native plants

- **Handout: Basic Tips for Photographing Plants.** Tips for taking an informative (and beautiful) photo of a plant so you can identify it later at home, by Arthur Haines
- **How to Photograph Plants.** Slideshow (no narration) covering photography basics, for your reference
- **Assignment 2: Take a Plant Photograph.** Share your photo on the Discussion Forum
- **How to Draw a Plant.** 4-minute video slideshow with tips from a scientific illustrator
- **Perhaps the Most Important Plant You'll Ever Identify.** A primer on poison ivy
- **Which Plant Is Which?** A fun quiz that reviews some of the course material