

Ecology and Engineering

PLANTLAB PROGRAM OVERVIEW

NGSS Alignment

DCI strands supported:

- LS2A - Interdependent relationships in ecosystems.
- LS2B - Cycles of matter and energy transfer in ecosystems.
- LS2C - Ecosystems dynamics, functioning and resilience.
- LS4C - Adaptations

CC-Mathematics Standards

- 5.MD - Represent and interpret data.
- 6.SP - Understanding statistical variability.
- 7.SP - Comparing populations.
- 8.SP - Investigate patterns in data.

Pre- and Post-visit resources include suggestions for to integrating **Science and Engineering practices** and **Crosscutting Concepts** into activities that align with this experience.



About the Program

Ecology is the science of natural relationships where life and earth science principles converge. The Missouri Botanical Garden's conservation teams throughout the world not only study plants and the relationships they support within their respective ecosystems, they also work to restore disrupted ecosystems around the world and educate citizens on how best to maintain them. Helping locals understand the impacts of human activities on plants, animals, soil and air equips them to make good choices as stewards of their lands. In this program, students will learn about these impacts locally as they:

- **Unpack important plant-animal relationships**, and discover how plants and pollinators rely on each other for survival.
- **Examine co-evolved structures** to understand how the relationship between plants and pollinators has impacted their form and function.
- **Discuss the benefits of native plants vs. introduced ornamentals** as landscape choices with respect to supporting the local ecology. Each student will receive native seeds to take back to school.

This program was designed to align with the PlantLab Student Scientists initiative. For more information, call 314-577-5185.

Native, Introduced, Invasive

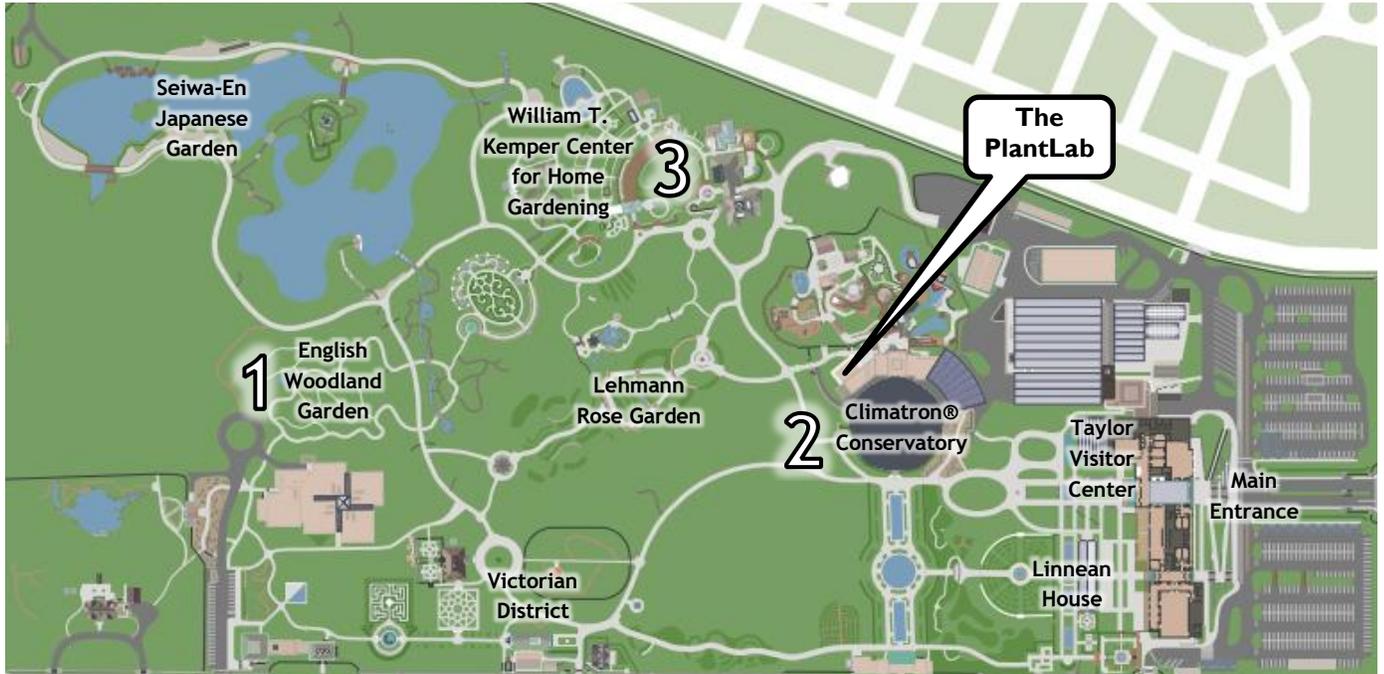
Most leading environmental agencies - including the U.S. Department of the Interior and the United Nations - agree that **invasive species** pose the largest threat to biodiversity worldwide. However, if you ask most people what makes a species 'invasive', you'll find they often aren't sure. As we train students to be the next generation of stewards of our lands and resources, we should ensure that they understand the difference between these terms.

According to the USDA, a 'native' plant or animal in the United States is a species that has been known to exist in a region since before the arrival of Europeans. Any plant or animal that was brought into an area by humans (whether intentionally or accidentally) is considered to be '**introduced**'. Not all introduced species are harmful, but some spread unchecked, displacing native species and demanding considerable resources from the environment while contributing relatively little in return. These demanding species are **invasive**, and they outcompete natives and disrupt the relationships that govern a region's ecology. Consider researching the most threatening invasives in your area, and engaging students in removal efforts.



The PlantLab

Constructed in 2016, the MBG PlantLab is a unique space designed for in-depth investigations in plant science. Here, students can participate in dissections, get up close and personal with plant structures using digital microscopy, and experience firsthand what real botanists do. Located off the Brookings Exploration Center in the Edward Jones Hall, the PlantLab is convenient to the Climatron, Temperate House, and Doris I. Schnuck Children's Garden, and the William T. Kemper Center for Home Gardening.



Other Places to Explore...

Make the most of your visit by taking your students to explore the following areas after your program:

1. **Explore the English Woodland Garden** to view a European style of garden composed primarily of plants native to the temperate forests of the Americas. Is this area cultivated garden or a tightly human managed ecosystem?
2. **The Climatron® Conservatory** - As a botanical garden, our collections comprise many foreign plants, some of which come from distant locales. Visit the Climatron to see a manufactured environment designed to help plants that are not accustomed to our seasonal changes survive year-round.
3. **The William T. Kemper Center for Home Gardening** - This facility-within-a-facility is an homage to home gardening in Missouri. Some 23 demonstration gardens, including a native rain garden, butterfly garden, and shade garden, provide a great opportunity for school groups to compare and contrast gardens that serve

Logistics for Teachers

- ☼ Each program lasts **1 hour** and serves a maximum of **30 students**.
- ☼ Up to **three programs** may be booked on the same day, pending instructor availability.
- ☼ Program fees include admission for up to six adults per 30 students. (Additional adults will be charged normal admission rates.) Please try to bring at least **one adult for every five students**.
- ☼ Currently there is no lunch space available on Garden grounds, and picnicking is prohibited. Please schedule your visit and mealtimes accordingly.
- ☼ Program availability is limited! Book early!

For more information or to book this program, please visit <https://www.missouribotanicalgarden.org/learn-discover/students-teachers/school-programs-and-field-trips> or call the School Programs office at 314-577-5185.



MISSOURI BOTANICAL GARDEN

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