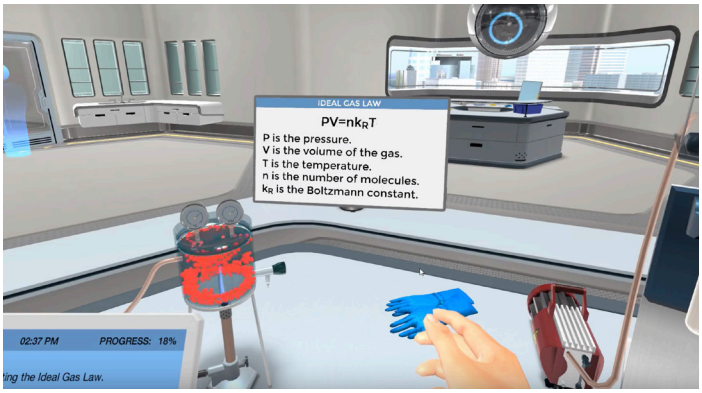
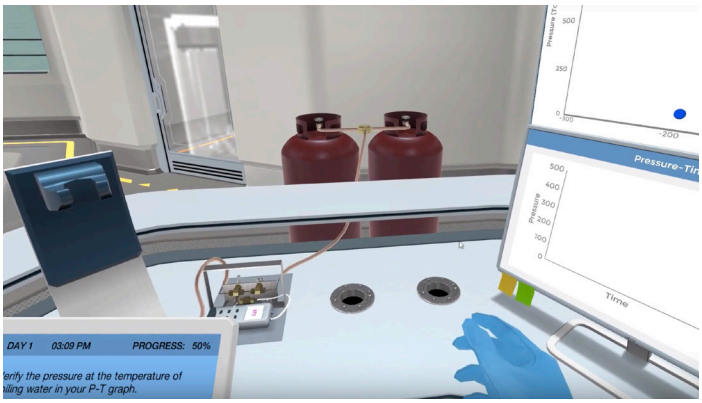
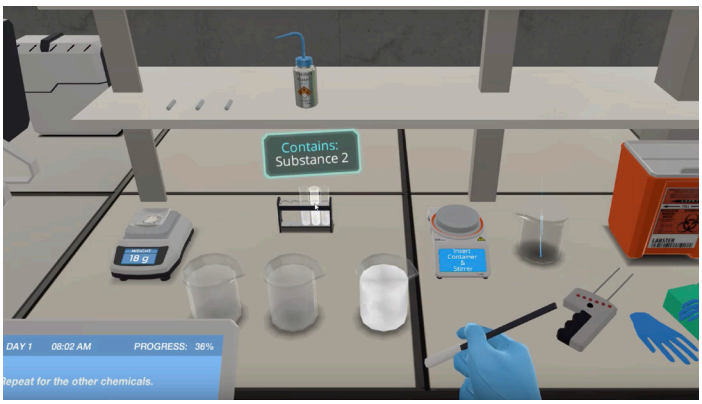
Labster Ecology Lab Simulations







Labster, a world-leading provider of virtual lab simulations, is launching an Ecology package in Spring 2019.

The simulations are designed to let students learn different concepts in Ecology by taking them to a whole new planet: Astakos IV. They will be able to apply those concepts using brand new species they cannot find on Earth and will perform experiments that could be translated to the ones conducted in real life, for example determining the effect of competition for space on the yield of a crop. Quiz questions test the students' knowledge, supporting an inquiry-based and deep-learning approach. In addition to concepts, the students will train experimental design, collect data from the alien field, and perform data analysis using interactive and new ways of visualization, and will be able to conduct experiments that take even years in a safe virtual environment where they can make mistakes, and learn at their own pace.

The most basic simulations are ideal as a self-study activity since the students will review essential ecology concepts that will prepare them to better understand the new knowledge. The more advanced simulations are designed to support the course syllabus, reinforcing concepts and giving the students an innovative tool to deepen their learning.

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University Ecology Package

The Labster Ecology University Package is a set of 10 virtual lab simulations focused on the core ecology concepts required for a successful third year for Ecology. The package has been designed in alignment to these courses, and is a combination of basic and advanced simulations.

Includes 10 simulations:

- Biodiversity
- Spatial Ecology
- Ecological Niches
- Landscape Ecology
- Foraging
- Ecosystem Dynamics
- Behavioral Thermoregulation
- Population Growth
- Competition
- Food Webs

Ready to learn more?

Bring the world of science into the classroom and enable students to bring learning home with Labster's virtual science lab content. No need for additional hardware or lab equipment; access these ecology labs on Chromebooks or any other laptops, and spark creativity in students with this innovative and interactive way to explore science.

It's a million-dollar lab, one click away.

To learn more about how you can incorporate Labster virtual labs in your teaching, visit us at www.labster.com.

Learning objectives covered in Labster's ecology simulations

Biodiversity

Learning objectives: At the end of this simulation you will be able to...

- Use a dichotomous key to identify species
- Use sampling methods to quantify species diversity in anarea

Spatial Ecology

Learning objectives: At the end of this simulation you will be able to...

- Map the distributions of species over a region and identify hotspots for biodiversity
- Relate patterns of biodiversity to abiotic or anthropogenic conditions
- Describe and explain gradients in abiotic factors in an area

Ecological Niches

Learning objectives: At the end of this simulation you will be able to...

- Quantify the multidimensional realized and fundamental niches of a species
- Measure the extent to which acclimation of a species expands a niche
- Explain how trade-offs shape the boundaries of a niche

Landscape Ecology

Learning objectives: At the end of this simulation you will be able to...

- Determine factors that affect the location of patches within a landscape
- Estimate species extinction rates using species-area and endemics-area theory
- Calculate species extinction and colonization rates in a heterogeneous landscape
- Explain the impact of spatial heterogeneity on a landscape's biodiversity

Foraging

Learning objectives: At the end of this simulation you will be able to...

- Understand the concepts of optimal foraging theory, foraging currency and daily budget
- Predict a foraging model using a model of energy gain given a tradeoff between energy and nutrients
- Correct the model with field studies identifying additional environmental factors
- Compare the behavior of risk-prone individuals in a stress situation versus controls (risk-sensitivity)

Ecosystem Dynamics

Learning objectives: At the end of this simulation you will be able to...

- Understand the importance of phosphorus in the soil
- Assess the impact of fertilization on the phosphorus cycle in a system
- Assess the importance of the different phosphorus fractions on a system

Behavioral Thermoregulation

Learning objectives: At the end of this simulation you will be able to...

- Explain changes in microclimate over small spatial scales and predict how this would influence the energy and water budgets of an organism
- Identify ways that an organism can regulate its body temperature in a given environment and discuss the costs and benefits of each strategy
- Predict and analyze the thermoregulatory behavior of an animal in a natural environment

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Population Growth

Learning objectives: At the end of this simulation you will be able to...

- Assess the population structure using data from mark-recapture to estimate the average age of death and fecundity
- Predict the growth of a population using a mathematical model

Competition

Learning objectives: At the end of this simulation you will be able to...

- Identify competition between species and quantify the strength of competition between two species
- Establish evidence of competition in an agricultural environment

Food Webs

Learning objectives: At the end of this simulation you will be able to...

- Analyze energy and nutrient flows in “grazing chain” examples
- Analyze top-down and bottom-up cascades among trophic levels of a food web
- Predict and quantify the dynamics of a community following an anthropogenic disturbance