



Oregon State University

Ecampus

Course Name: Plant Ecology

Course Number: BOT 341

Credits: 4 Credits

COURSE CREDIT:

(4) This course combines approximately 120 hours of instruction, online activities, and assignments for 4 credits.

PREREQUISITES, CO-REQUISITES AND ENFORCED PREREQUISITES:

BI 213 or BI 213H. BOT 321 is recommended.

COURSE DESCRIPTION:

This course is concerned with the study of plants in relation to their environment and the general principles and concepts of ecological science with emphasis on plant systems. We will focus on the biology of vascular plants in relation to their environment; the relationship of plant physiology and reproduction to environmental factors; competition and other species interactions; demographic of plant populations; the structure, dynamics and analysis of vegetation. Topics covered include physiological ecology (photosynthesis, water relations, nutrition), soils, biogeochemical cycles, climate change, symbiotic (beneficial and harmful) and competitive interactions, population ecology and life history, ecological statistics and biodiversity measurement, plant communities and landscape ecology. The course content consists of textbook readings, powerpoint lecture notes, self-guided field trips, SimBio virtual laboratory exercises (computer simulations), and online discussion forums through the Canvas discussion board. Student evaluation is based on weekly online quizzes, virtual lab review questions, participation in online discussion, one mid-term exam and a final exam.

CONTACT INFORMATION:

Instructor: Jeff Stone email: stonej@onid.orst.edu phone: 541-737-5260

Sample syllabi may not have the most up-to-date information. For accuracy, please check the [ECampus Schedule of Classes](#) to see the most current instructor information. You can search for contact information by name from the [OSU Home Page](#).

LEARNING RESOURCES:

Textbook: The Ecology of Plants, 2nd Ed. Jessica Gurevitch ISBN: 9780878932948

Simbio Simutext modules: Nine interactive computer simulations illustrating several important concepts and principles of ecology can be accessed from Simbiolabs: <http://simbio.com/>.

NOTE: For textbook accuracy, please always check the textbook list at the [OSU Bookstore website](#). Sample syllabi may not have the most up-to-date information.

Students can also click the 'OSU Beaver Store' link associated with the course information in the [Ecampus schedule of classes](#) for course textbook information and ordering.

COURSE SPECIFIC MEASURABLE STUDENT LEARNING OUTCOMES:

Students completing this course will be able to:

- Identify and define the key concepts and principles of plant ecology
- Describe the roles of terrestrial vegetation in biogeochemical cycles
- Categorize physiological and structural adaptations of plants to the environment, herbivory, disease etc.
- Differentiate the types of symbiotic interactions between plants and microorganisms
- Predict changes in plant communities that occur over time
- Apply the methods of vegetation analysis to measure and analyze plant communities
- Recognize global and regional patterns of plant distribution
- Recognize key research findings and the scientists who have shaped the discipline

COURSE CONTENT AND POLICIES:

CANVAS

This course will be delivered via Canvas where you will interact with your classmates and with your instructor. Within the course Canvas site you will access the learning materials, such as the syllabus, class discussions, assignments, quizzes and exams. To preview how an online course works, visit the [Ecampus Course Demo](#). For technical assistance, please visit [Ecampus Technical Help](#).

Week	General Topics	Specific Topics	Reading Assignments	Learning Activities
1	Overview of plant ecology Photosynthesis, energetics and carbon fixation	Scientific method, hypothesis testing Manipulative and observational experiments Scales of organization Synecology and autecology photosynthesis concepts and terms C3, C4, CAM: structural and physiological differences light reactions Calvin cycle compensation point leaf conductance photorespiration adaptations to variation in light intensity	EoP Chapters 1, 2 Other assigned readings/links	Lectures 1, 2 Review Quiz 1 Simbio simulation: Physiological ecology
2	water relations, transpiration; vascular anatomy adaptations to extreme environments Soils and mineral nutrition Symbiotic interactions: nitrogen fixation	water relations concepts and terms water potential transpiration and evapotranspiration water use efficiency anatomical and physiological adaptations to drought root/shoot ratio leaf anatomy conductive tissue anatomy energy balance tolerance limits nutrition concepts and terms soils: physical environment soil classification, soil orders soil pH soil water content, matric potential soils: mineral nutrition nutrient ratios, stoichiometry translocation nutrient use efficiency serpentine soils N fixation, symbiotic N fixation organisms: Rhizobium, Frankia, cyanobacteria (lichens)	EoP Chapters 3, 4 Other assigned readings/links	Lectures 3, 4 Review Quiz Simbio simulation: Nutrient cycling
3	Symbiotic interactions: mycorrhizae Biogeochemical cycles	mycorrhizae: ectomycorrhizae (EM) vs. endomycorrhizae (AM) types of mycorrhizae and their distribution mycoheterotrophic plants physiology of mycorrhizae common mycorrhizal networks Biogeochemical cycles water cycle nitrogen cycle, N fixation and denitrification other mineral cycles, P, S, Ca	EOP Chapter 14 Other assigned readings/links	Lectures 5, 6 Review Quiz Simbio simulation: Decomposition

		Primary productivity and its measurement; NDVI Actual evapotranspiration, temperature and precipitation carbon cycle decomposition, soil food webs		
4	Energy flow through ecosystems Climate zones and vegetation Biomes	climate vs. weather radiant energy balance global temperature and precipitation cycles ENSO Atmospheric circulation, Coriolis, Hadley cell Oceanic circulation Biomes global patterns of plant community types, biomes world biome types relationship between climate and biomes	EoP Chapters 17, 18 Other assigned readings/links	Lectures 7, 8 Review Quiz Midterm Exam 1 Simbio simulation: Ecosystem ecology
5	Population dynamics Population genetics	Population growth Life cycles ramets and genets life history tables population growth models plant sexual cycle sexual vs. asexual reproduction pollination and flowers fruits, seeds and dispersal (Cont. next page) types of selection: directional, stabilizing, disruptive phenotype vs. genotype tolerance and optimal growth speciation and species concepts evolutionary genetics fitness niche concept	EoP Chapters 5, 6 Other assigned readings/links	Lectures 9, 10 Review Quiz Simbio simulation: Population Growth
6	Plant growth and reproduction Life history	Growth and reproduction of individuals pollination mating systems Grimes' triangle r vs. K selection semelparity vs. iteroparity phenology	EoP Chapters 7, 8 Other assigned readings/links	Lectures 11, 12 Review Quiz Simbio simulation: Life History
7	Ecological statistics, measuring communities Competition	diversity indices richness and evenness inventory methods estimating abundance, dominance Competition	EoP Chapters 9, 10 Other assigned readings/links	Lectures 13, 14 Review Quiz Simbio simulation: Intermediate disturbance
8	Succession Communities	Succession concepts and mechanisms Primary vs. secondary succession	EoP Chapters 12, 15 Other assigned readings/links	Lectures 15, 16 Review Quiz Mid-Term 2

		Disturbance and adaptations to disturbance Communities and landscapes		Simbio simulation: Competition
9	Abundance, diversity and rarity Regional and global diversity	Patterns and causes of commonness and rarity Invasive species Diversity and productivity Diversity and disturbance Hyperdiverse communities α , β , γ diversity	EoP Chapters 13, 19 Other assigned readings/links	Lectures 17, 18 Review Quiz Simbio simulation: Biogeography
10	Landscape ecology and biogeography	island biogeography spatial scales metapopulations fragmentation conservation and restoration ecology	EoP Chapters 16 Other assigned readings/links	Lectures 19, 20
Finals				Final Exam

EVALUATION OF STUDENT PERFORMANCE:

Student performance will be based on the following tasks and assignments:

1. Weekly quizzes -32% of final grade
2. Weekly SimBio laboratory exercises - 30% of final grade
3. Class participation, online discussion - 2% of final grade
4. Mid-term exam - 16% of final grade
5. Final exam - 20% of final grade

COURSE SITE LOGIN INFORMATION

Information on how to login to your course site can be found [HERE](#).

STATEMENT REGARDING STUDENTS WITH DISABILITIES

Oregon State University is committed to student success; however, we do not require students to use accommodations nor will we provide them unless they are requested by the student. The student, as a legal adult, is responsible to request appropriate accommodations. The student must take the lead in applying to Disability Access Services (DAS) and submit requests for accommodations each term through DAS Online. OSU students apply to DAS and request accommodations at our [Getting Started with DAS](#) page.

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

Additionally, Canvas, the learning management system through which this course is offered, provides a [vendor statement](#) certifying how the platform is accessible to students with disabilities.

ACADEMIC INTEGRITY AND STUDENT CONDUCT (OSU POLICY)

Students are expected to be honest and ethical in their academic work. Intentional acts of academic dishonesty such as cheating or plagiarism may be penalized by imposing an “F” grade in the course.

Student conduct is governed by the universities policies, as explained in the Office of the Dean of Student Life: Student Conduct and Community Standards. In an academic community, students and faculty, and staff each have responsibility for maintaining an appropriate learning environment, whether online or in the classroom. Students, faculty, and staff have the responsibility to treat each other with understanding, dignity, and respect.

Students are expected to conduct themselves in the course (e.g. on discussion boards, email postings, etc.) in compliance with the university's regulations regarding civility. Students will be expected to treat all others with the same respect as they would want afforded to themselves. Disrespectful behavior (such as harassing behavior, personal insults, inappropriate language) or disruptive behaviors are unacceptable and can result in sanctions as defined by Student Conduct and Community Standards.

For more info on these topics please see:

- [Statement of Expectations for Student Conduct](#)
- [Student Conduct and Community Standards - Offenses](#)
- [Policy On Disruptive Behavior](#)

PLAGIARISM

You are expected to submit your own work in all your assignments, postings to the discussion board, and other communications, and to clearly give credit to the work of others when you use it. Academic dishonesty will result in a grade of “F.”

- [Statement of Expectations for Student Conduct](#)
- [Avoiding Academic Dishonesty](#)

TECHNICAL ASSISTANCE

If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email osuhelpdesk@oregonstate.edu or visit the [OSU Computer Helpdesk](#) online.

- [COURSE DEMO](#)
- [GETTING STARTED](#)

TUTORING

For information about possible tutoring for this course, please visit our Ecampus [NetTutor](#) page. Other resources include:

- [Writing Center](#)
- [Online Writing Lab](#)

STUDENT EVALUATION OF TEACHING

The online Student Evaluation of Teaching form will be available in week 9 and close at the end of finals week. Students will be sent instructions via ONID by the Office of Academic Programs, Assessment, and Accreditation. Students will log in to “Student Online Services” to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted. Course evaluation results are very important and are used to help improve courses and the learning experience of future students. Results from questions are tabulated anonymously and go directly to instructors and unit heads/supervisors. Unless a comment is “signed,” which will associate a name with a comment, student comments on the open-ended questions are anonymous and forwarded to each instructor. “Signed” comments are forwarded to the unit head/supervisor.

REFUND POLICY INFORMATION

Please see the [Ecampus website](#) for policy information on refunds and late fees.