

# BOTANY (BOTANY)

## **BOTANY 100 – SURVEY OF BOTANY**

3 credits.

Major emphasis on the roles of plants and microbes in past and present global ecology, and the past and present uses of plants and microbes by humans, including emerging applications of biotechnology. Lectures and short lab/discussions. Enroll Info: None

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2019

## **BOTANY/PL PATH 123 – PLANTS, PARASITES, AND PEOPLE**

3 credits.

The course will explore the interaction between society and plant-associated microbes. Topics include: the Irish potato famine, pesticides in current agriculture, role of economics and consumer preference in crop disease management and the release of genetically engineered organisms. Enroll Info: None

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Summer 2019

## **BOTANY/BIOLOGY 130 – GENERAL BOTANY**

5 credits.

Introduction to the basic principles and concepts of the biology of plants. an integrative approach stressing evolutionary sequences and the relationship between structure and function at succeeding levels of organization: molecule, cell, organism, population, community. Correlated lectures, laboratories, and discussions. Enroll Info: Open to Fr; not open to stdts who have taken BOTANY 100 or Botany/ZOOLOGY/BIOLOGY/BOTANY 151-152. HS or coll chem crse recommended

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2019

## **BOTANY/BIOLOGY/ZOOLOGY 151 – INTRODUCTORY BIOLOGY**

5 credits.

First semester of a two semester course designed for majors in biological sciences. Topics include: cell structure and function, cellular metabolism (enzymes, respiration, photosynthesis), information flow (DNA, RNA, protein), principles of genetics and selected topics in Animal Physiology. HS chem or concurrent registration in college chemistry strongly advised. Enroll Info: Not recommended for students with credit already in Zoo/Bio 101, 102 or Botany/Bio 130

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2019

## **BOTANY/BIOLOGY/ZOOLOGY 152 – INTRODUCTORY BIOLOGY**

5 credits.

Second semester of a two semester course designed for majors in biological sciences. Continuation of 151. Topics include: selected topics in plant physiology, a survey of the five major kingdoms of organisms, speciation and evolutionary theory, and ecology at multiple levels of the biological hierarchy. Enroll Info: Biology/Botany/ZOOLOGY/BIOLOGY/BOTANY 151. Not recommended for students with credit already in Zoology/BIOLOGY/ZOOLOGY 101,102 or Botany/BIOLOGY/BOTANY 130

**Requisites:** ZOOLOGY/BIOLOGY/BOTANY 151

**Course Designation:** Gen Ed - Communication Part B

Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Spring 2019

## **BOTANY 211 – SCIENCE IN A CHANGED LANDSCAPE: WISCONSIN**

2 credits.

Aims to expose you to the changing uses of Wisconsin landscapes: as the home of native peoples; as a source of fur, lead and timber; as part of the new nation of the United States; and as a modern, vibrant collection of communities focused on enterprises as diverse as agriculture and education. We will ask: what roles did science play in shaping the landscape? What roles should it have played? What roles does science play in current land use? We will not be afraid to tackle controversy (genetically modified crops, the endangered species act, water use, global change), but we will remain committed to listening to, absorbing and respecting the diversity of experiences we may bring to the classroom. Enroll Info: None

**Requisites:** Sophomore standing and declared in honors program

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Honors - Honors Only Courses (H)

**Repeatable for Credit:** No

**Last Taught:** Spring 2019

**BOTANY 240 – PLANTS AND HUMANS**

3 credits.

Plant parts and demonstrations of their utility to humans, origins of domesticated plants, modifications of plants by humans, ecosystem services owed to plants, and reasons to sustain plant diversity. Enroll Info: None

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY/F&W ECOL 250 – FORESTS AND HUMANS: FROM THE MIDWEST TO MADAGASCAR**

2 credits.

Provides an overview of the geography, ecology, and economic importance of the world's forest biomes. Learn how climate influences vegetation and, in-turn, how forests impact global climate. Meet scientists working to understand the astounding biodiversity and ecological complexity of forest ecosystems, and how these ecosystems support human life. Discuss the threats to forest ecosystems around the world, and hear from the people trying to protect them. Emphasizes the forest resources and services upon which humans depend, and how we can maintain these resources into the future. Analyze the idea of "sustainability" when it comes to forest management, hear alternative viewpoints about what this word means, and discuss potential trade-offs and conflicts. Look at the many real-world programs in place at the global, national, and local level to sustainably manage forests. Enroll Info: None

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Summer 2019**BOTANY/ENVIR ST/ZOOLOGY 260 – INTRODUCTORY ECOLOGY**

3 credits.

For nonbiology students: the relationships of organisms and the environment. Population dynamics and community organization, human-environment relationships, action programs. Enroll Info: Open to Freshmen. Does not count toward Botany or Zoology major

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Summer 2019**BOTANY 265 – RAINFORESTS AND CORAL REEFS**

3 credits.

Are you awed by the amazing biodiversity found in rainforests and coral reefs? Want an opportunity to see these ecosystems first hand and decide if a career in tropical biology or international conservation is for you? This course focuses on the ecology of the world's most biodiverse ecosystems, and their global importance. Combining lecture with online discussions and case studies, you'll learn the physical, chemical, and biological processes that make rainforests and coral reefs function, and the history of human dependence upon these ecosystems. This course will help you understand why both of these ecosystems currently are threatened and what actions can and must be taken to protect them. An optional 10-day, 2 credit field expedition to a rainforest and/or coral reef site in Central or South America will be offered over winter break (BIOLOGY 399). Enroll Info: None

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Elementary

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY 299 – DIRECTED STUDY IN BOTANY**

1-3 credits.

Elementary level directed study/independent research. The purpose of this course to introduce undergraduate students to research questions and, facilitate their learning in the field of botany by providing them with guidance and mentorship in a research environment. Enroll Info: None

**Requisites:** Consent of instructor**Course Designation:** Level - Elementary

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Summer 2019**BOTANY 300 – PLANT ANATOMY**

4 credits.

Plant structure and development of seed plants, primarily of flowering plants. Emphasis is placed on structure in relation to function and on the plant body as a structural and functional entity; lecture and lab. Enroll Info: A 5 cr intro crse in botany

**Requisites:** Sophomore standing; not open to special students**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2018

**BOTANY 305 – PLANT MORPHOLOGY AND EVOLUTION**

4 credits.

A broad survey of the diversity of plants in the context of their evolutionary history. Similarities and differences in structure and reproduction among extant bryophytes, lycopods, ferns, gymnosperms, and flowering plants are emphasized along with the study of fossils representing extinct plant lineages. Enroll Info: Introductory course in botany

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY 330 – ALGAE**

3 credits.

Introduction to ecology, evolution, systematics, taxonomy, physiology, biochemistry, cell biology, and molecular biology of freshwater, terrestrial and marine algae. Lecture and lab. Lab emphasis on techniques for identification, culture, analysis of growth and reproduction, and community composition assessment. Enroll Info: 5-cr intro botany crse or cons inst

**Requisites:** Sophomore standing; not open to special students**Course Designation:** Gen Ed - Communication Part B

Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY/PL PATH 332 – FUNGI**

4 credits.

Growth, development, variability and dispersal of saprophytic, parasitic, and symbiotic fungi, with a consideration of their ecological and economic significance. Enroll Info: A 5 cr intro crse in botany

**Requisites:** Sophomore standing; not open to special students**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY/PL PATH 333 – BIOLOGY OF THE FUNGI**

2 credits.

Growth, development, variability and dispersal of saprophytic, parasitic, and symbiotic fungi, with a consideration of their biological, ecological and economic significance. Enroll Info: None

**Requisites:** BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 151 and ZOOLOGY/BIOLOGY/BOTANY 152 or BIOCORE 381 AND 382 or graduate/professional standing. Not open to students with credit for BOTANY/PL PATH 332**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY/AN SCI/MICROBIO 335 – THE MICROBIOME OF PLANTS, ANIMALS, AND HUMANS**

3 credits.

Examination of the structure and function of microbial communities that live inside and on host organisms (plants, animals, and humans). Introduction to general concepts of the microbiome and microbiota, and their relationship to host nutrition, health, and disease. Enroll Info: None

**Requisites:** MICROBIO 303**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY/GEOG 338 – ENVIRONMENTAL BIOGEOGRAPHY**

3 credits.

This course will explore how physical and biological factors affect the distribution of terrestrial biomes, ecosystem types, and biodiversity; as well as the role of disturbance and recent human activities on differences in past and modern day species distributions. Enroll Info: GEOG/ENVIR ST 120, 127 or consent of instructor

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2018

**BOTANY/AGRONOMY/HORT 339 – PLANT BIOTECHNOLOGY: PRINCIPLES AND TECHNIQUES I**

4 credits.

Theoretical and practical training in plant biotechnology including molecular biology, protein biochemistry and basic bioinformatic techniques used in fundamental and applied research on plants. Valuable hands-on training to those interested in careers in biotechnology. Enroll Info: None

**Requisites:** (ZOOLOGY/BIOLOGY/BOTANY 152 or ZOOLOGY/BIOLOGY 102) and (CHEM 104, 109, or 116) or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

**BOTANY/AGRONOMY/HORT 340 – PLANT CELL CULTURE AND GENETIC ENGINEERING**

4 credits.

Theoretical and practical training in plant cell and tissue culture, and plant genetic engineering. Includes overview of current techniques, biosafety and regulatory requirements, and experimental design and analysis used in fundamental and applied research on plants. Valuable hands-on training to those interested in careers in biotechnology. Enroll Info: None

**Requisites:** (BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY/BOTANY 152, or ZOOLOGY/BIOLOGY 102) and (CHEM 104, 109, or 116) or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2019

**BOTANY/AGRONOMY/SOIL SCI 370 – GRASSLAND ECOLOGY**

3 credits.

Understand factors driving global, continental, regional, and local distribution of grasslands. Discuss how management affects provision of grassland ecosystem goods and services. Compare and contrast plant community and ecosystem dynamics in native prairie and intensively managed pastures. Enroll Info: None

**Requisites:** PL PATH/BOTANY 123, BOTANY/BIOLOGY 130, SOIL SCI/ ENVIR ST 101, SOILSCI 132, ZOOLOGY/BIOLOGY/BOTANY 151, BIOCORE 381, BOTANY 100, or AGRONOMY 100, or graduate/professional standing

**Course Designation:** Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2018

**BOTANY 400 – PLANT SYSTEMATICS**

4 credits.

Plant systematics; the integration of taxonomy (identification, nomenclature, classification emphasizing flowering plants), evolution (speciation, reproductive biology, adaptation, convergence, biogeography), and phylogenetics (phenetics, cladistics, morphology and molecules). Lab emphasis on representative families and genera of flowering plants in Wisconsin, use of keys and manuals, plant collection. Recommended for botany majors; lecture and lab. Enroll Info: A 5 cr intro crse in botany

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2018

**BOTANY 401 – VASCULAR FLORA OF WISCONSIN**

4 credits.

Taxonomic survey of the vascular plants of Wisconsin, with emphasis on the angio-sperms. Lecture, lab and field work. Enroll Info: A 5 cr intro col crse in bot or equiv

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2018

**BOTANY/F&W ECOL 402 – DENDROLOGY**

2 credits.

Identification, ranges, uses, and some ecological characteristics of evergreen and deciduous woody plants, both native and cultivated; lab and field work. Enroll Info: A 5 cr intro college crse in bot or equiv

**Requisites:** Sophomore standing; not open to special students

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Summer 2019

**BOTANY 403 – FIELD COLLECTIONS AND IDENTIFICATION**

1-4 credits.

Students consult the instructor in the spring or summer for equipment and directions for making a plant collection in summer or fall. Enroll Info: Bot 400 or 401. Open only to students who have made collections during the summer or will be making collections in early fall

**Requisites:** Consent of instructor**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2016**BOTANY/ANTHRO/ZOOLOGY 410 – EVOLUTIONARY BIOLOGY**

3 credits.

Evolutionary biology, emphasizing how modern scientists study evolution. Topics include: nature and mechanisms of microevolution, macroevolution, adaptation, speciation; systematics and taxonomy; quantitative genetics and measurement of natural selection; phylogenetic analyses of behavior, physiology, morphology, biochemistry; current controversies in evolution. Enroll Info: An elem course in zool or botany So st; Genetics/Botany/Zool 160 or 466 recommended

**Requisites:** Sophomore standing and ZOOLOGY/BIOLOGY/BOTANY 151, BOTANY/BIOLOGY 130, ZOOLOGY/BIOLOGY 101, BIOCORE 301, or BIOCORE 381**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Summer 2019**BOTANY 422 – PLANT GEOGRAPHY**

3 credits.

Biogeography of plants. Relationship to climate and geology; paleobiogeography, vicariance and island biogeography; history and distribution of floras of North America and Wisconsin; lecture and demo lab; open to advanced students in the natural sciences. Enroll Info: A crse in plant taxonomy is highly recommended

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY/ZOOLOGY 450 – MIDWESTERN ECOLOGICAL ISSUES: A CASE STUDY APPROACH**

2 credits.

This web course explores how ecological principles can be used to address contemporary environmental issues such as water quality, invasive species, and population growth. Emphasis on midwestern issues, practical approaches, the role of history, and geographic context. Enroll Info: Intro biology crse, interest in solving problems

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Summer 2019**BOTANY/F&W ECOL 455 – THE VEGETATION OF WISCONSIN**

4 credits.

Ecology of Wisconsin plant communities: floristic composition, community structure; relationship to history, climate, soil, and geology; response to human perturbation. Lecture and lab. Enroll Info: BOTANY 100, or BOTANY/BIOLOGY 130, or Botany/ZOOLOGY/BIOLOGY/BOTANY 151-152, or Biocore 313

**Requisites:** Sophomore standing or special student classification**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY/F&W ECOL/ZOOLOGY 460 – GENERAL ECOLOGY**

4 credits.

Ecology of individual organisms, populations, communities, ecosystems, landscapes, and the biosphere. The interaction of organisms with each other and their physical environment. These relationships are studied, often in quantitative terms, in both field and laboratory settings; lecture and lab. Enroll Info: Intro course in botany zoology, or Bot/Zoo 151-152, or Biocore 301 or 333; for biol sci majors only

**Requisites:** None**Course Designation:** Gen Ed - Quantitative Reasoning Part B Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Summer 2019

**BOTANY/ENTOM/ZOOLOGY 473 – PLANT-INSECT INTERACTIONS**

3 credits.

Multiple ways in which arthropods exploit plants, plant traits that deter or augment insects, environmental mediation of these interactions, effects on population dynamics, community ecology and co-evolution, and implications to natural resource management, environmental quality, and sustainable development. Enroll Info: One of the following: Bot/For/Zoo 460, Ent/PI Path/For 500, PI Path/Bot 505, Forestry 550, or ENTOM 342

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2018**BOTANY/AMER IND/ANTHRO 474 – ETHNOBOTANY**

3-4 credits.

Study of the interactions between human cultures and plants. Topics include: traditional resource management and agriculture; crop domestication, evolution, and conservation; archaeobotany; indigenous knowledge; folk taxonomy; plants in symbolism and religion; dietary patterns; phytochemistry; global movement of plants and peoples. Enroll Info: A five credit course in botany or biology (e.g., BOTANY/ BIOLOGY 130, BIOLOGY/BOTANY/ZOOLOGY 151) or cons inst

**Requisites:** None**Course Designation:** Ethnic St - Counts toward Ethnic Studies requirement

Breadth - Either Biological Science or Social Science

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Summer 2019**BOTANY 499 – INTERMEDIATE DIRECTED RESEARCH**

1-3 credits.

Undergraduate students may research questions and facilitate their learning in the field of botany by providing them with guidance and mentorship in a research environment. Enroll Info: None

**Requisites:** Consent of instructor**Course Designation:** Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2019**BOTANY 500 – PLANT PHYSIOLOGY**

3-4 credits.

An in-depth look at plant growth, development, respiration, photosynthesis, mineral nutrition, and water relations. For junior, senior and graduate students; not for those who have taken Biocore. In the laboratory, experimental approaches will be used to demonstrate principles described in lecture. 3-credit option (lecture only) available with consent of instructor. Enroll Info: Intro botany or biology sequence required; organic chem recomm. Undergrads must enroll for 4 cr (lec lab); Grads may enroll for 3 cr (lec only) or 4 cr

**Requisites:** None**Course Designation:** Gen Ed - Quantitative Reasoning Part B

Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY/ENTOM/PL PATH 505 – PLANT-MICROBE INTERACTIONS: MOLECULAR AND ECOLOGICAL ASPECTS**

3 credits.

Molecular and ecological aspects of the interactions between plants and microorganisms. This course explores many of the themes, from genetic to integrative, of modern biology, and illustrates how study of plant-microbe interactions contributes to understanding of fundamental plant science. Enroll Info: An upper level crse in microbiol (e.g. Bact 303); biochem (e.g. BIOCHEM 501); genetics (e.g. GENETICS 466) or cons inst

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY 563 – PHYLOGENETIC ANALYSIS OF MOLECULAR DATA**

3 credits.

A course in the theory and practice of phylogenetic inference from DNA sequence data. Enroll Info: A crse in genetics/evolution/systematics a crse in stats/probability, or cons inst

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2018

**BOTANY 575 – SPECIAL TOPICS**

1-3 credits.

Topics of interest to undergraduates, taught as the need arises. Enroll Info: None

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2019**BOTANY/BIOCHEM 621 – PLANT BIOCHEMISTRY**

3 credits.

Biochemistry of photosynthesis, respiration, cell walls, and other metabolic and biosynthetic processes in plants. Enroll Info: Biochem BIOCHEM 501 or 507

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2017**BOTANY/HORT/SOIL SCI 626 – MINERAL NUTRITION OF PLANTS**

3 credits.

Essential and beneficial elements, solutions and soil as nutrient sources, rhizosphere chemistry, nutritional physiology, ion uptake and translocation, functions of elements, nutrient interactions, genetics of plant nutrition. Enroll Info: None

**Requisites:** BOTANY 500 or graduate/professional standing**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2017**BOTANY/GENETICS/ZOOLOGY 645 – MODELING IN POPULATION GENETICS AND EVOLUTION**

3 credits.

Introduction to mathematical techniques and approaches for predicting evolutionary change within populations. Concentrates on classic population genetic models and results, including selection on one and several loci; mutation; non-random mating; drift. Evaluation based on periodic problem sets and independent projects. Enroll Info: Intro evolution, intro genetics, calculus, or cons inst

**Requisites:** None**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Fall 2010**BOTANY/ENVIR ST/F&W ECOL/ZOOLOGY 651 – CONSERVATION BIOLOGY**

3 credits.

Application of ecological principles and human dimensions to the conservation of biological diversity. Topics: biodiversity science; conservation planning; population ecology; habitat loss, species exploitation, invasive species, pollution; human attitudes and activities as they affect the biosphere; approaches to monitoring interventions. Enroll Info: An ecology crse (eg, Botany/ZOOLOGY/BOTANY/F&W ECOL 460)

**Requisites:** None**Course Designation:** Gen Ed - Quantitative Reasoning Part B

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Summer 2019**BOTANY/GENETICS/M M & I/MICROBIO/PL PATH 655 – BIOLOGY AND GENETICS OF FUNGI**

3 credits.

Fungal genetics, genomics, and physiology using plant pathogenic fungi and the genetic models *Aspergillus nidulans* and *Neurospora crassa* as model systems to explore the current knowledge of fungal genetics and plant/fungal interactions. Enrollment open to graduate students, but undergraduates welcome to contact instructor for permission.

All students should have some prior coursework in genetics (such as GENETICS 466 or 467) and microbiology (such as MICROBIO 303). It is also recommended that students take PL PATH 300 332 prior to this course. Enroll Info: Graduate or professional standing

**Requisites:** None**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY/LAND ARC 670 – ADAPTIVE RESTORATION LAB**

2 credits.

Field experience in restoration as an adaptive process involving field experimentation; baseline data collection on restoration sites; design of experiments to advance restoration science; quantitative evaluation of restoration outcomes. Analysis and interpretation of data; development of a team report. Enroll Info: a crse in ecology a crse in stats, or cons inst

**Requisites:** None**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Fall 2015

**BOTANY/F&W ECOL/ZOOLOGY 672 – HISTORICAL ECOLOGY**

2 credits.

Historical Ecology is an area of ecology that considers the importance of past events for current ecosystems. Concepts and applications are emphasized. Multidisciplinary emphasis, for seniors and graduate students in biological sciences, social studies, and humanities. Discussion format. Enroll Info: Graduate or senior standing and consent of instructor

**Requisites:** None**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No**Last Taught:** Spring 2018**BOTANY 681 – SENIOR HONORS THESIS**

3 credits.

Enroll Info: None

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Honors - Honors Only Courses (H)

**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY 682 – SENIOR HONORS THESIS**

3 credits.

Enroll Info: None

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Honors - Honors Only Courses (H)

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY 691 – SENIOR THESIS**

2-3 credits.

Introduction to botanical research; if possible, plans for the thesis program should be made by the close of the junior year. Enroll Info: None

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Summer 2019**BOTANY 692 – SENIOR THESIS**

2-3 credits.

Continuation of 691. Enroll Info: None

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

**Repeatable for Credit:** No**Last Taught:** Spring 2019**BOTANY 698 – DIRECTED STUDY**

1-4 credits.

Enroll Info: Jr or Sr st. Graded on a Cr/N basis; requires cons inst

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2017**BOTANY 699 – DIRECTED STUDY**

1-4 credits.

Enroll Info: Jr or Sr st. Graded on a lettered basis; requires cons inst

**Requisites:** Consent of instructor**Course Designation:** Level - Advanced

L&amp;S Credit - Counts as Liberal Arts and Science credit in L&amp;S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2019**BOTANY/ZOOLOGY 725 – ECOSYSTEM CONCEPTS**

3 credits.

Scope and objectives of ecosystem ecology; roles of theory, long-term studies, comparative studies, and large-scale experiments; scaling problems; ecosystem services and ecological economics; adaptive ecosystem assessment and management. Enroll Info: Grad st. Experience in modeling, programming, or stats

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2017**BOTANY 801 – ADVANCED PLANT COMMUNITY ECOLOGY**

4 credits.

Ecological determinants of plant community structure, dynamics, and diversity from an evolutionary perspective. Relations of vegetation types, physiognomy and phenology to plant adaptation and constraints.

Gradient analysis, succession, nutrient cycling, plant-herbivore interactions, species richness. (Includes field trip to Great Smoky Mountains.) Enroll Info: Bot 455, 460, or Biocore 333, and intro calculus

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2017



**BOTANY 802 – PHYSIOLOGICAL PLANT ECOLOGY**

3 credits.

Gas exchange at the individual plant and community level, energy balance and water relations, nutrient cycling, biomechanical adaptations; growth analysis; adaptations to sun and shade, primary productivity models, physiological ecology of selected plant communities (arctic/ alpine, boreal, chaparral, desert, tropical, aquatic). Lecture and lab. Enroll Info: A crse in ecology or cons inst

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2018**BOTANY/ENTOM/GENETICS/ZOOLOGY 820 – FOUNDATIONS OF EVOLUTION**

2 credits.

Through reading and analysis of the primary literature, this course will explore some of the most important themes and debates that have permeated evolutionary biology over the last 50 years. Students will read key papers related to each controversial topic, will debate the pros and cons of competing viewpoints, and will reflect on the relevance of the issues to contemporary evolutionary biology. Students will also write a paper that analyzes one topic in more detail. This course is intended for graduate students who plan to specialize in evolutionary biology, broadly construed. Enroll Info: None

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY/BIOCHEM/GENETICS 840 – REGULATORY MECHANISMS IN PLANT DEVELOPMENT**

3 credits.

Molecular mechanisms whereby endogenous and environmental regulatory factors control development; emphasis on stimulus perception and primary events in the signal chain leading to modulated gene expression and cellular development; lecture. Enroll Info: BIOCHEM 501 or 601 BOTANY 500 or Biocore 301 323

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Fall 2018**BOTANY 858 – SPECIAL TOPICS IN PLANT PHYSIOLOGY**

1-3 credits.

Subjects vary. Lecture. Enroll Info: None

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2018**BOTANY 860 – PLANT CELL BIOLOGY**

2 credits.

Structure/function relationships at the cellular level. Topics include the biogenesis of organelles, vesicle traffic, ion transport and signalling processes, and organization of the cytoskeleton and cell wall. Enroll Info: BOTANY 500 or BIOCHEM 501 or 601

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2018**BOTANY/F&W ECOL/ZOOLOGY 879 – ADVANCED LANDSCAPE ECOLOGY**

3 credits.

Landscape ecology emphasizes spatial patterning—its development and importance for ecological processes—and often focuses on large regions. Concepts, methods, and applications of landscape ecology will be learned through lectures, readings, exercises in quantitative approaches, and an independent project. Enroll Info: None

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** No**Last Taught:** Spring 2018**BOTANY/ATM OCN/CIV ENGR/ENVIR ST/GEOSCI/ZOOLOGY 911 – LIMNOLOGY AND MARINE SCIENCE SEMINAR**

1 credit.

Sections in various fields of zoological research. Enroll Info: Grad st in limnology marine sci grad prgm or cons inst

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2019**BOTANY 920 – SEMINAR IN ALGOLOGY: FRESH WATER ALGAE**

1 credit.

Enroll Info: None

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2015**BOTANY/PL PATH 930 – SEMINAR-MYCOLOGY**

1 credit.

Enroll Info: None

**Requisites:** Graduate/professional standing**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement**Repeatable for Credit:** Yes, unlimited number of completions**Last Taught:** Spring 2019

**BOTANY 940 – SEMINAR IN PLANT SYSTEMATICS AND EVOLUTION**

1 credit.

Enroll Info: None

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2018

**BOTANY 941 – PLANT TAXONOMY JOURNAL REVIEW**

1 credit.

Enroll Info: None

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2018

**BOTANY 950 – SEMINAR-PLANT ECOLOGY**

1 credit.

Enroll Info: None

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2018

**BOTANY 951 – PLANT ECOLOGY JOURNAL REVIEW**

1 credit.

Enroll Info: Grad st in plant ecol or cons inst

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2017

**BOTANY/AGRONOMY/ATM OCN/ENTOM/ENVIR ST/F&W ECOL/GEOG/ZOOLOGY 953 – INTRODUCTION TO ECOLOGY RESEARCH AT UW-MADISON**

1-2 credits.

Introduces new graduate students to the diversity of ecologists across the UW-Madison campus. Includes discussions of key topics in professional development, research presentations by faculty members, and discussions of assigned papers with senior graduate students. Enroll Info: None

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2018

**BOTANY 960 – SEMINAR-PLANT PHYSIOLOGY**

1 credit.

Enroll Info: Grad st

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2019

**BOTANY/ATM OCN/ENVIR ST/F&W ECOL/GEOG/GEOSCI/ZOOLOGY 980 – EARTH SYSTEM SCIENCE SEMINAR**

1 credit.

Topics in earth system science. Emphasis on the coupling between atmospheric, oceanic and land surface systems, involving physical geochemical and biological processes, and including interactions with human systems. Enroll Info: None

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2016

**BOTANY 990 – RESEARCH-PHYCOLOGY**

1-12 credits.

Enroll Info: None

**Requisites:** Consent of instructor

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2019

**BOTANY 993 – RESEARCH: FUNGAL BIOLOGY**

1-12 credits.

Enroll Info: None

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2019

**BOTANY 994 – RESEARCH-PLANT SYSTEMATICS**

1-12 credits.

Enroll Info: None

**Requisites:** Consent of instructor

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2019

**BOTANY 995 – RESEARCH-PLANT ECOLOGY**

1-12 credits.

Enroll Info: None

**Requisites:** Consent of instructor

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2019

**BOTANY 996 – RESEARCH-PLANT PHYSIOLOGY**

1-12 credits.

Enroll Info: None

**Requisites:** Consent of instructor

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2019

**BOTANY 999 – INDEPENDENT WORK**

1-3 credits.

Enroll Info: None

**Requisites:** Consent of instructor

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2011