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.

**Requisites:** Open to Fr

**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 2017

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.

**Requisites:** Open to Fr

**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:** Fall 2017

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. HS or coll chem crse recommended.

**Requisites:** Open to Fr; not open to stdts who have taken BOTANY 100 or Botany/ZOOLOGY/BIOLOGY/BOTANY 151-152.

**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:** Fall 2017

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.

**Requisites:** Not recommended for students with credit already in Zoo/Bio 101, 102 or Botany/Bio 130

**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:** Fall 2017

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. Not recommended for students with credit already in Zoology/BIOLOGY/ZOOLOGY 101,102 or Botany/BIOLOGY/BOTANY 130.

**Requisites:** Biology/Botany/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:** Fall 2017

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.

**Requisites:** Open to Freshmen

**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:** Fall 2017

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. Does not count toward Botany or Zoology major

**Requisites:** Open to Freshmen.

**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:** Fall 2017
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).

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: Fall 2017

BOTANY 299 — DIRECTED STUDY IN BOTANY
1-3 credits.

Elementary level directed study/independent research. The purpose of this course is 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.

Requisites: Consent of instructor
Course Designation: Level: Elementary
L&S Credit: Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

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.

Requisites: A 5 cr intro crse in botany
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 2017

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.

Requisites: Introductory course in botany
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 2017

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.

Requisites: 5-cr intro botany crse or cons inst
Course Designation: Gen Ed - Communication Part B
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 2017

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.

Requisites: A 5 cr intro crse in botany
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 2017
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.
Requisites: GEOG/ENVIR ST 120, 127 or consent of instructor
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 2017

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.
Requisites: Bot/Zoo 152 or equiv CHEM 104 or equiv
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.
Requisites: BOTANY/BIOLOGY 130 or Botany/Zoology/BIOLOGY/BOTANY/ZOOLOGY 152 or ZOOLOGY/BIOLOGY 102,and Chemistry 104, 109, or 116
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 2017

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.
Requisites: A 5 cr intro crse in botany
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 2017

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.
Requisites: A 5 cr intro col crse in bot or equiv
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 2017

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.
Requisites: A 5 cr intro college crse in bot or equiv
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 2017
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. Open only to students who have made collections during the summer or will be making collections in early fall.

Requisites: Bot 400 or 401.

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeateable 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.

Requisites: An elem course in zool or botany So st; Genetics/Botany/Zool 160 or 466 recommended
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
Repeateable for Credit: No
Last Taught: Fall 2016

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.

Requisites: A crse in plant taxonomy is highly recommended
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
Repeateable for Credit: No
Last Taught: Spring 2017

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.

Requisites: Intro biology crse, interest in solving problems
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
Repeateable for Credit: No
Last Taught: Summer 2017

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.

Requisites: BOTANY 100, or BOTANY/BIOLOGY 130, or Botany/ZOOLOGY/BIOLOGY/BOTANY 151-152, or Biocore 313
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
Repeateable for Credit: No
Last Taught: Fall 2017

BOTANY/ZOOLOGY 459 — ECOLOGICAL TECHNIQUES FOR FIELD MONITORING
1-2 credits.

Field techniques to inventory and census plant and animal species and ecological processes and how to assemble these into useful databases. Emphasis on 'keystone' and invading exotic species that strongly affect community dynamics. Aimed at science teachers interested in participating in a monitoring network. g. BOTANY/ZOOLOGY 450, 460), interest in monitoring, cons inst
Requisites: A crse in ecology (e.
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeateable for Credit: No
Last Taught: Summer 2006
**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.

**Requisites:** Intro course in botany zoology, or Bot/Zoo 151-152, or Biocore 301 or 333; for biol sci majors only

**Course Designation:** Gen Ed - Quantitative Reasoning Part B

**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 2017

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**BOTANY 468 — PATTERNS IN BIOLOGICAL DESIGN: AN INTRODUCTION TO SYSTEMS BIOLOGY**

3 credits.

Holistic systems and biological design. Intuitive verbal models not mathematical techniques. Topics: scale problems; architecture of biological form; models for control, growth, and transport; general systems philosophy, theory of models, levels of organization, continuous versus catastrophic change; biological paradigms. Any intro botany crse; Math 101

**Requisites:** So st; computer experience recommended.

**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

**Repeatable for Credit:** No

**Last Taught:** Spring 2009

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**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.

**Requisites:** One of the following: Bot/For/Zoo 460, Ent/Pl Path/For 500, PI Path/Bot 505, Forestry 550, or ENTOM 342

**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 2016

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**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. g., BOTANY/BIOLOGY 130, BIOLOGY/BOTANY/ZOOLOGY 151) or cons inst

**Requisites:** A five credit course in botany or biology (e.

**Course Designation:** Ethnic St - Counts toward Ethnic Studies requirement

**Breadth - Either Biological Science or Social Science**

**Level - Intermediate**

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

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

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**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. Undergrads must enroll for 4 cr (lec lab); Grads may enroll for 3 cr (lec only) or 4 cr

**Requisites:** Intro botany or biology sequence required; organic chem reccomm.

**Course Designation:** Gen Ed - Quantitative Reasoning Part B

**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 2017

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**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. g. Bact 303); biochem (e.g. BIOCHEM 501); genetics (e.g. GENETICS 466) or cons inst

**Requisites:** An upper level crse in microbiol (e.

**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 2017
BOTANY/GENETICS/HORT 561 — INTRODUCTORY CYTOGENETICS
2-3 credits.
Mitosis, meiosis, variations in chromosome structure and number; cytological aspects of hybridity and apomixis; chromosomes as they affect breeding behavior.
Requisites: Genetics, Botany, Zoology 466 or cons inst
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
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 2015

BOTANY 563 — PHYLOGENETIC ANALYSIS OF MOLECULAR DATA
3 credits.
A course in the theory and practice of phylogenetic inference from DNA sequence data.
Requisites: A crse in genetics/evolution/systematics a crse in stats/probability, or cons inst
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
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 2016

BOTANY 575 — SPECIAL TOPICS
1-3 credits.
Topics of interest to undergraduates, taught as the need arises.
Requisites: Cons inst
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
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

BOTANY/BIOCHEM 621 — PLANT BIOCHEMISTRY
3 credits.
Biochemistry of photosynthesis, respiration, cell walls, and other metabolic and biosynthetic processes in plants.
Requisites: Biochem BIOCHEM 501 or 507
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
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 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.
Requisites: Botany 350 or cons inst
Course Designation: Level - Advanced
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/GENETICS/MD GENET 629 — EVOLUTIONARY GENETICS
3 credits.
Basic principles of phylogenetics, population genetics and quantitative genetics including the construction of gene trees, forces affecting the amount and distribution of genetic variation in populations, and the inheritance and evolution of multifactorial characters. Knowledge of intro calc stats or cons inst
Requisites: GENETICS 466 or Biocore 301 302 or equiv.
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
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 2015

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.
Requisites: Intro evolution, intro genetics, calculus, or cons inst
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&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.
Requisites: An ecology crse (eg, Botany/ZOOLOGY/BOTANY/ F&W ECOL 460)
Course Designation: Gen Ed - Quantitative Reasoning Part B
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/GENETICS/M M & I/MICROBIO/PL PATH 655 — BIOLOGY AND GENETICS OF FILAMENTOUS FUNGI
3-4 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.
Requisites: Cons inst; PL PATH 300 332 recommended; GENETICS 466 or equiv; general microbiol crse
Course Designation: Level - Advanced
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 2016

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.
Requisites: a crse in ecology a crse in stats, or cons inst
Course Designation: Level - Advanced
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 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.
Requisites: Graduate or senior standing and consent of instructor
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
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 2016

BOTANY 681 — SENIOR HONORS THESIS
3 credits.

Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Honors - Honors Only Courses (H)
Repeatable for Credit: No
Last Taught: Fall 2017

BOTANY 682 — SENIOR HONORS THESIS
3 credits.

Requisites: Consent of instructor
Course Designation: Level - Advanced
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 2017

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.
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Fall 2017

BOTANY 692 — SENIOR THESIS
2-3 credits.

Continuation of 691.
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2017

BOTANY 698 — DIRECTED STUDY
1-4 credits.

Graded on a Cr/N basis; requires cons inst
Requisites: Jr or Sr st.
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&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.

Graded on a lettered basis; requires cons inst
Requisites: Jr or Sr st.
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017
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. Experience in modeling, programming, or stats
Requisites: Grad st.
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.)
Requisites: Bot 455, 460, or Biocore 333, and intro calculus
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.
Requisites: A crse in ecology or cons inst
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2016

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.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

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.
Requisites: BIOCHEM 501 or 601 BOTANY 500 or Biocore 301 323
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2016

BOTANY 858 — SPECIAL TOPICS IN PLANT PHYSIOLOGY
1-3 credits.

Subjects vary. Lecture.
Requisites: Graduate or 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 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.
Requisites: BOTANY 500 or BIOCHEM 501 or 601
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2016

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.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2016

BOTANY/ATM OCN/CIV ENGR/ENVIR ST/GEOSCI/ZOOLOGY 911 — LIMNOLOGY AND MARINE SCIENCE SEMINAR
1 credit.

Sections in various fields of zoological research.
Requisites: Grad st in limnology marine sci grad prgm or cons inst
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017
BOTANY 920 — SEMINAR IN ALGOLOGY: FRESH WATER ALGAE
1 credit.
Requisites: Graduate or 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.
Requisites: Graduate or 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 940 — SEMINAR IN PLANT SYSTEMATICS AND EVOLUTION
1 credit.
Requisites: Graduate or 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 941 — PLANT TAXONOMY JOURNAL REVIEW
1 credit.
Requisites: Graduate or 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 950 — SEMINAR-PLANT ECOLOGY
1 credit.
Requisites: Graduate or 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 951 — PLANT ECOLOGY JOURNAL REVIEW
1 credit.
Requisites: Grad st in plant ecol or cons inst
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

BOTANY 990 — RESEARCH-PHYCOCOLY
1-12 credits.
Requisites: Consent of instructor
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/GEOSCI/ZOOLOGY 953 — INTRODUCTION TO ECOLOGY RESEARCH AT UW-MADISON
1-2 credits.
This seminar course will introduce new graduate students to the diversity of ecologists across the UW-Madison campus. Course meetings will include discussions of key topics in professional development, research presentations by faculty members, and discussions of assigned papers with senior graduate students.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

BOTANY 960 — SEMINAR-PLANT PHYSIOLOGY
1 credit.
Requisites: Grad st
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2017

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.
Requisites: Graduate or 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 993 — RESEARCH: FUNGAL BIOLOGY
1-12 credits.
Requisites: Graduate or 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 994 — RESEARCH-PLANT SYSTEMATICS
1-12 credits.

Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

BOTANY 995 — RESEARCH-PLANT ECOLOGY
1-12 credits.

Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

BOTANY 996 — RESEARCH-PLANT PHYSIOLOGY
1-12 credits.

Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

BOTANY 999 — INDEPENDENT WORK
1-3 credits.

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