

Plant Biology—PLB

- 416 Experiments in Plant Biotechnology, Physiology and Molecular Biology**
Fall. 4(2-5) RB: (PLB 414 or PLB 415) and completion of Tier I writing requirement. SA: BOT 416

Experiments illustrating principles of plant physiology and molecular biology. Advanced techniques such as agrobacterium mediated gene transfer, DNA cloning, enzyme linked immunoassays (ELISA), protein and DNA electrophoresis.

- 418 Plant Systematics**
Spring, Summer. 3(2-3) Spring: Given only at W.K. Kellogg Biological Station. P:M: (PLB 105 or BS 110 or LBS 144 or LBS 148H) SA: BOT 418

Classification and evolution of higher plants, with emphasis on identification, characteristics of plant families, and systematic theory and practice.

- 419 Advanced Earth System Science**
Spring. 3(2-2) Interdepartmental with Entomology; Geological Sciences; Zoology; Sociology. Administered by Department of Entomology. P:M: (ENT 319)

Systems science theory applied to analysis of the biological, geological, physical, and social causes and consequences of global changes. Issues of sustaining the Earth system.

- 423 Wetland Plants and Algae**
Fall. 4(2-4) P:M: (PLB 105 or BS 110 or LBS 144 or LBS 148H) SA: BOT 423

Identification, ecology and community relations of algae and aquatic vascular plants common to the Great Lakes area. Algae and aquatic plants as indicators of environmental change. Field trips required.

- 424 Algal Biology**
Fall of even years. Summer of odd years. 4(2-4) Summer: KBS. Interdepartmental with Zoology. P:M: (BS 110 or LBS 144 or LBS 148H) and completion of Tier I writing requirement. RB: (ZOL 355 and ZOL 355L) or (PLB 441) SA: BOT 424

Algal taxonomy, systematics, physiology, ecology, and environmental assessment. Lab focus on identification of freshwater algal genera collected from regional habitats. Field trips required.

- 431 Comparative Limnology**
Summer. 4(2-6) Summer: Given only at W.K. Kellogg Biological Station. Interdepartmental with Zoology; Fisheries and Wildlife. Administered by Department of Zoology. P:M: (CEM 141 or CEM 151) and (ZOL 355) Not open to students with credit in FW 472.

Physical, chemical, and biological aspects of lakes and streams. Introduction to freshwater biology, and population and community ecology.

- 434 Plant Structure and Function**
Fall of odd years. 4(2-4) P:M: (BS 110 and BS 111) or (PLB 105 and PLB 106) or (LBS 144 and LBS 145) or (LBS 148H and LBS 149H) SA: BOT 434

Plant anatomy from a structural and functional perspective. Physiological, developmental, and ecological significance of cell types, tissue types, and meristems of vegetative and reproductive plant parts.

- 440 Field Ecology and Evolution**
Summer. 4 credits. Summer: Given only at W.K. Kellogg Biological Station. Interdepartmental with Zoology. Administered by Department of Zoology. P:M: (ZOL 355)

Solving conceptual and practical research problems in ecology and evolution under field conditions.

- 441 Plant Ecology**
Fall. 3(3-0) P:M: (BS 110 or LBS 144 or PLB 105 or LBS 148H or ZOL 355) and completion of Tier I writing requirement. SA: BOT 441

Ecology of plants and their communities. Effects of biotic and climatological factors influencing global distribution of plant communities. Community structure and function, microclimatology, ecophysiology, and adaptation.

- 445 Evolution**
Fall. 3(3-0) Interdepartmental with Zoology. Administered by Department of Zoology. P:M: (ZOL 341) and completion of Tier I writing requirement. R: Not open to freshmen. SA: ZOL 345

Processes of evolutionary change in animals, plants. Microbes. Population genetics, microevolution, speciation, adaptive radiation, macroevolution. Origin of Homo sapiens.

- 485 Tropical Biology**
Spring. 3(3-0) Interdepartmental with Zoology; Entomology. Administered by Department of Zoology. P:M: (ZOL 355) R: Open only to juniors or seniors.

Tropical biota emphasizing evolutionary and ecological principles compared across tropical ecosystems.

- 490 Directed Studies**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: Completion of Tier I writing requirement. RB: One year of college biology. R: Approval of department. SA: BOT 490

Directed study of published literature in an area of plant biology.

- 490H Honors Directed Studies**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: Completion of Tier I writing requirement. RB: One year of college biology. R: Approval of department. SA: BOT 490H

Directed study of published literature in an area of plant biology.

- 495 Botanical Garden Internship**
Fall, Spring, Summer. 2 to 8 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Approval of department. SA: BOT 495

Activities, functions and organization of botanical gardens. Principles of live plant curation.

- 498 Undergraduate Research**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P:M: (BS 110 and BS 111) or (PLB 105 and PLB 106) or (LBS 144 and LBS 145) or (LBS 148H and LBS 149H) and completion of Tier I writing requirement. R: Approval of department. SA: BOT 498

Laboratory and/or field research in an area of plant biology.

- 499 Senior Seminar**
Spring. 2(2-0) A student may earn a maximum of 4 credits in all enrollments for this course. P:M: (PLB 498) and completion of Tier I writing requirement. SA: BOT 499

A capstone experience that focuses on current developments and issues in plant biology. Scientific writing and oral presentation.

PLANT PATHOLOGY PLP

Department of Plant Pathology College of Agriculture and Natural Resources

- 101 Current Issues and Frontiers in Plant Pathology**
Fall. 1(1-0)
Basic principles of plant disease and plant pathogens. Current topics and future opportunities in the discipline of plant pathology.

- 205 Pests, Society and Environment**
Fall, Spring. 3(3-0) Interdepartmental with Entomology. Administered by Department of Entomology.
Nature of pests and their impact on society. Principles of integrated pest management in relation to environmental quality and sustainable development.

- 362 Management of Turfgrass Pests**
Fall. 4(3-2) Interdepartmental with Crop and Soil Sciences; Entomology. Administered by Department of Crop and Soil Sciences. P:M: (CSS 232)
Chemical, biological, and cultural methods of managing weeds, diseases, and insect pests of turfgrass. Environmental considerations in pest management.

- 402 Biology of Fungi**
Fall. 3(2-3) Interdepartmental with Plant Biology. Administered by Department of Plant Biology. P:M: (BS 110 or BS 111 or PLB 105 or LBS 145 or LBS 148H or LBS 149H) SA: BOT 402
Major groups of fungi: characteristics, habitats and diversity. Significance of fungi in nature and their economic importance.

- 405 Plant Pathology**
Spring. 3(2-3) P:M: (BS 110 and BS 111) or (PLB 105 and PLB 106) or (LBS 144 and LBS 145) or (LBS 148H and LBS 149H) and completion of Tier I writing requirement. SA: BOT 405 Not open to students with credit in BOT 407.
Plant diseases and the organisms that cause them. Principles of disease management including application of chemicals, plant breeding, biological control, and genetic engineering.

- 407 Diseases and Insects of Forest and Shade Trees**
Spring. 4(3-3) Interdepartmental with Entomology; Plant Biology. P:M: (PLB 105 or BS 110 or LBS 144 or LBS 148H) and (PLB 218 or FOR 204 or HRT 211) and completion of Tier I writing requirement. SA: BOT 407
Diseases, insects, and environmental problems affecting trees in forests, parks, suburbs, and nurseries. Methods of control.

- 490 Independent Study**
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
Independent study of plant pathology on a laboratory, field or library research program of special interest to the student.

491 Selected Topics in Plant Pathology
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: (PLP 405 or PLP 407)

Selected topics in plant pathology of current interest and importance.

492 Seminar
Spring. 2(2-0) P:M: (PLP 498) and completion of Tier I writing requirement. RB: (PLP 405)

Capstone course. Experience in scientific writing, oral presentations, professional preparation, and current developments in plant pathology.

493 Professional Internship in Plant Pathology

Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors or seniors in the Plant Pathology major. Approval of department, application required. A student may earn a maximum of 6 credits for any or all of these courses: ABM 493, AEE 493, ANR 493, ANS 493, CSS 493, EEP 493, FIM 493, FSC 493, FW 493, HRT 493, PKG 493, PLP 493, PRR 493, and RD 493.

Supervised professional experiences in agencies and businesses related to plant pathology.

498 Undergraduate Research
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. P:M: Completion of Tier I writing requirement. R: Approval of department

Faculty supervised laboratory. Field research in plant pathology.

POLITICAL SCIENCE PLS

Department of Political Science College of Social Science

100 Introduction to American National Government
Fall, Spring, Summer. 3(3-0)

The policymaking process in national government, with emphasis on political participation, the presidency, Congress, Supreme Court, bureaucracy, and civil rights and civil liberties.

140 Government and Politics of the World
Fall, Spring, Summer. 3(3-0)

Comparative analysis of political systems in first, second, and third-world countries. Alternative methods for comparative cross-cultural analyses of political systems.

160 Introduction to International Relations
Fall, Spring, Summer. 3(3-0) Not open to students with credit in MC 220 or MC 221.

Dynamics of conflict and cooperation. Processes of foreign policy decision making. Major international economic issues. Basic future trends. Primary analytical approaches for studying world politics.

170 Introduction to Political Philosophy
Fall, Spring, Summer. 3(3-0)

Basic questions of political philosophy as considered from ancient to modern times. Primary focus on the origins, defense, and radical critiques of modern liberal democracy.

200 Introduction to Political Science
Fall, Spring, Summer. 4(4-0)

The science of politics. Theory construction, model building, empirical testing, and inductive inference. Examples from American, international and comparative politics.

201 Introduction to Methods of Political Analysis

Fall, Spring, Summer. 4(4-0) P:M: (PLS 200 or MC 201)

Philosophy of social science. Principles of research design, measurement, hypothesis testing, measures of association, cross tabulations, and regression analysis.

301 American State Government
Spring. 3(3-0)

Structure and processes of American state government. Interstate differences. Constitutions, elections, political parties, interest groups, and intergovernmental relations. Policy focus on education, welfare, and criminal justice.

302 Urban Politics
Fall. 3(3-0)

Structure and processes of American urban politics. Relationship of cities to U.S. federal system. Interstate variations. Policy focus on public education, crime, social welfare, and economic development.

305 Environmental Politics
Fall. 3(3-0)

The impact of political and legal institutions on U.S. environmental policy. Public opinion, environmental interest groups, and the environmental movement. The politics of air and water pollution, toxic wastes, public lands, risk assessment, and environmental justice.

310 Public Bureaucracy in the Policy Process
Fall, Spring. 3(3-0)

Role of public bureaucracy in the U.S. Theories of administrative behavior and the impact of hierarchy on policymaking. Relations with the president, Congress, interest groups, and the public. Administrative functions, responsiveness, and ethics.

313 Public Policy Analysis
Fall, Spring, Summer. 3(3-0) Not open to students with credit in MC 444.

Political and economic concepts for evaluating the consequences of government decision making. Issues of problem identification, policy adoption, and implementation affecting program evaluation.

320 The American Judicial Process
Fall, Spring. 3(3-0) R: Not open to freshmen or sophomores.

Analysis of the structure and functions of judicial systems. Organization, administration, and politics of judicial bureaucracies. Roles of judges, juries, counsel, litigants, and interest groups in the adjudication process.

321 American Constitutional Law
Fall, Spring. 3(3-0) R: Not open to freshmen or sophomores.

U.S. Supreme Court policy making and its effect on issues of current importance, including First Amendment freedoms, due process, race relations, sex discrimination, and privacy.

322 Comparative Legal Systems
Spring, Summer. 3(3-0)

Cross-national study of common law and civil law systems. Judicial review and selection of judges. Models of judicial decision-making. High court-low court relations. Role of courts in society.

324 American Legislative Process
Spring. 3(3-0)

The design of Congress. Rules, structures, and procedures affecting policy making. Impact of regular elections on legislative behavior.

325 American Executive Process
Fall. 3(3-0) P:M: (PLS 100)

Role of the president in the U.S. political system. Constitutional questions, presidential selection, presidential power, interbranch relations, and presidential policy making.

331 Political Parties and Interest Groups
Spring of even years. 3(3-0)

Origins, structure, and activities of political parties. Role of parties and interest groups in elections and in government. Internal politics of parties and of private associations.

333 Political Socialization and Public Opinion
Fall, Spring. 3(3-0)

Role of public opinion in political systems and its impact on the political process. Group differences, political socialization, development and change of political attitudes and behavior patterns. Methods of studying public opinion.

334 Campaigns and Elections
Fall, Spring. 3(3-0)

The nominating process. Recruitment of candidates and the formation of electoral coalitions. Analysis of election results. Trends in electoral support for officeholders and parties.

342 Comparative Political Economy
Spring. 3(3-0) P:M: (EC 201 or EC 202)

Democratic politics and the linkages among political, social, and economic conceptions of equality in developed and developing countries.

344 Politics in the Third World
Fall, Spring. 3(3-0)

Politics of modernization, democratic and authoritarian regimes, and class and ethnicity in developing countries.

351 African Politics
Fall. 3(3-0)

Political institutions and governmental processes in Sub-Saharan Africa.

352 Latin American Politics
Spring. 3(3-0)

The political process in Latin America from a comparative perspective. Development, democratization and the role of democratic institutions in the political life.

353 Politics of Japan
Spring. 3(3-0)

Political institutions and political processes in Japan. Principal schools of thought on Japanese politics. Parties and elections, bureaucratic power, judicial politics, and industrial policy.

354 Politics of Asia
Fall of even years. Spring of even years. 3(3-0)

Political institutions, political actors, and policy-making processes in selected Asian countries.

356 West European Politics
Fall, Summer. 3(3-0)

Governmental institutions and processes, political socialization, and political culture in Western Europe, including Great Britain.