

428. Packaging Development
Fall, Spring. 4(3-2) PKG 427, CPS 110, Seniors.

Development of packages to meet present-day requirements of protection and merchandising.

429. Packaging Economics
Winter. 3(3-0) PKG 422, EC 200, AFA 201 or approval of school.

Examination of economic issues in packaging as they relate to policies of the firm and of government. Relationships between economic policy and social issues.

430. Packaging Machinery
Spring. 4(4-0) PKG 422 or approval of school.

The components for automated packaging lines, and auxiliary materials handling equipment, including consideration of design, selection, specification and operation of machinery for the package-making and package-filling operations. One-day field trip required.

440. Special Topics
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits if different topics are taken. Juniors or approval of school.

463. Seminar
Fall. 2(0-4) Senior Majors.

Discussions on current packaging problems.

801. Packaging Systems
Fall. 4(3-3)

Analysis of various existing packaging systems; problem solving exercises.

810. Advanced Packaging Materials
Spring. 3(2-2) PKG 427 or approval of department.

Physical and chemical properties of packaging materials. Relationship between properties of materials and performance of packages.

820. Permeability and Shelf Life
Winter. 4(3-3) PKG 422, MTH 113, CPS 110 or approval of school.

Comprehensive study of the relationship of the storage life of packaged food and agricultural products and the gas, moisture, and vapor permeability of packages in various environments. Computer aided package design.

822. Seminar
Fall. 1(1-0) Approval of department.

Discussions of recent advances in packaging and reports by graduate students and faculty on research problems. Field trips required.

834. Special Investigations in Packaging
Fall, Winter, Spring, Summer. Variable credit.

840. Selected Topics
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits if different topics are taken. Approval of department.

899. Master's Thesis Research
Fall, Winter, Spring, Summer. Variable credit. Approval of school.

PARK AND RECREATION RESOURCES PRR

College of Agriculture and Natural Resources

300. Wilderness Survival
Fall, Winter, Spring, Summer. 4(3-0)

Outdoor skills for utilization of plant and animal materials to provide shelter, fire, signals, water and food in the outdoors. Psychology and attitudes conducive to wilderness survival and appreciation. Field trip required.

301. Wilderness Survival (TV)
Fall, Winter, Spring, Summer. 3(3-0)

Credit may not be earned in both PRR 300 and PRR 301.

A television lecture course dealing with the principles and attitudes necessary to promote survival in a wilderness setting.

302. Environmental Attitudes and Concepts
Fall. 3(3-0)

Beliefs and attitudes toward land by primitive man and ancient civilizations. Effects of Muir, Thoreau, and others on man/land relationships. Industrialism and environmental quality. Current environmental controversy. Field trip required.

304. Designs for Recreation: Nature and Man
Fall, Spring. 3(3-0) Approval of department.

Design strategies are used to demonstrate relationships between characteristics of the environment and man's use of it. Integration of work, leisure, and recreation uses within environmental potentials and limits is emphasized.

344. Leisure and Recreation Resources
Fall, Spring. 3(3-0)

Leisure in relation to park and recreation resources. History and philosophy, significance in modern society, and impact on urban and natural resource developments.

351. Environmental Interpretation I: Principles
Fall, Winter. 3(3-0)

Philosophy, needs, types, and uses of information services in private, municipal, county, state and federal park and recreation areas. The role of the park interpreter (naturalist).

440. Park and Recreation Administration
Winter, Spring. 4(4-0)

Park and recreation organization, administration and policy at municipal, county, and regional level. Field trip required.

442. State and Federal Recreation Resource Policy
Winter. 3(3-0)

Origin, development and significance of public policy in recreation resource development in the United States with emphasis at state and federal levels. Field trip required.

444. Park and Recreation Area Design
Fall, Winter. 4(2-4) PRR 304, HRT 211 or HRT 212, or BOT 318 or approval of department.

Planning and design principles of space, scale, and circulation applied to the use of park and recreation areas and facilities. Field trip required.

445. Comprehensive Recreation Planning
Fall, Winter. 4(4-0) EC 200, PRR 344 or approval of department.

Comprehensive planning techniques for recreation resources at national, state, and local levels. Supply-demand analysis, forecasting, impact assessment, survey methods and citizen input for recreation system planning.

446. Park Area Operations
Winter, Spring. 3(3-0) Approval of department.

Problems in operations and maintenance of park and recreation areas and facilities. Personnel practices, budgeting, and maintenance schedules. Selection and adaptability of maintenance equipment. Field trip required.

447. Recreation Planning Projects
Fall, Spring. 4(1-6) PRR 444, PRR 445, PRR 446 or approval of department.

Accumulative research, planning and evaluation of recreation resources. Supervised project requiring synthesization of recreation planning and design criteria as selected by student and approved by instructor. Field trip required.

448. Field Studies in Park Administration
Fall. 3 credits. Approval of department.

Investigation and analysis of outstanding park and recreation programs. Visits to areas under local, state, and federal jurisdiction. Evaluation of administrative practices, area management, and operation policies. Conducted as a traveling class with agency assistance.

449. Recreation Land Management
Winter. 3(3-0) Not open to majors.

Fundamentals of outdoor recreation resource management. Planning, development, and administration of programs and facilities.

450. Natural Resource Administration
Fall. 4(4-0) Seniors; not open to forestry majors. Interdepartmental with Agriculture and Natural Resources and the departments of Fisheries and Wildlife, Forestry, and Resource Development. Administered by the Department of Forestry.

Concepts and methods of administering wild-land properties. The legal, economic and social environment. Benefit-cost analysis of management changes. Unit organization, personnel management and accounting. Presents a systems view of administration.

451. Environmental Interpretation II: Methods and Devices
Spring. 4(3-1) PRR 351.

Methodology and equipment used in information transmission in natural, historic, and scenic areas. Site selection and development criteria for natural resource interpretation.

452. Sky Interpretation
Spring 3(2-2) PRR 351 or approval of department.

Observations of celestial objects and phenomena; past and present concepts of the sky; and procedures and materials for interpreting the sky.

Descriptions – Park and Recreation Resources

of Courses

- 455. Natural Resource Economics**
Fall. 4(4-0) Approval of department. Interdepartmental with Agriculture and Natural Resources and the departments of Fisheries and Wildlife, Forestry, and Resource Development. Administered by the Department of Forestry.
Basic economic and political principles and techniques that govern the production and consumption of forest land products, including basic forest valuation procedures.
- 470. Commercial Recreation Enterprises**
Fall. 4(4-0) EC 201; AFA 202 or approval of department.
The planning, design, impact, and natural resource base of privately-owned outdoor recreation businesses.
- 471. Recreation Products Consumption**
Winter. 4(4-0) PRR 470 recommended; EC 201, AFA 202, or approval of department.
Recreation, economic and personality theories of consumption. Specific recreation product industry case studies.
- 480. Supervised Study**
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 10 credits. Approval of department.
Seminars on current problems. Supervised readings. Individual undergraduate research on selected topics.
- 484. Senior Proseminar**
Winter. 1(1-0) Senior majors.
Seminars on current professional problems and literature.
- 801. Dimensions of Recreation and Leisure**
Fall. 3(3-0) PRR 344 or approval of department.
Concepts of recreation and leisure in the United States and their implications for professional development. Extensive reading into concepts, definitions, values, educational components and historic roots of recreation and leisure.
- 840. Recreation Economics**
Spring. 4(4-0) FOR 809 or approval of instructor. Interdepartmental with the departments of Forestry and Resource Development.
Application of economic analysis to recreation resource problems including measurement of demand and supply, valuation of recreation resources, determination of economic impact, economic decision making and policy considerations.
- 842. Park and Recreation Policy**
Winter. 3(3-0) Interdepartmental with the Department of Resource Development.
Recreation, leisure and work concepts. Determination of needs for recreation facilities. Factors affecting public and private allocation of resources for provision of needed facilities.
- 844. Recreation Research Methods**
Winter. 4(4-0) Approval of department.
Relate recreation research to broader context of social scientific investigation and to the nature and philosophy of social scientific research. Examine the theoretical and methodological approaches in recreation research.
- 846. Urban and Regional Recreation Resource Planning**
Fall. 4(4-0) Approval of department.
Evaluation and application of recreation planning techniques at urban and regional levels. Analysis of programs, policies, land areas, facilities, and populations as they pertain to leisure service delivery systems.
- 848. Recreation Resource Law**
Spring. 3(3-0)
Legal basis for public recreation. Methods of acquiring recreational resources, including contracts and condemnation procedures. Administrative problems, including zoning, liability, civil rights and law enforcement. Study of cases and statutes.
- 850. Development of Water Recreation Resources**
Winter. 3(3-0) Approval of department.
Administration, research, design, and construction of water recreation facilities. Policy issues, use conflict, and fiscal planning reviewed in light of interagency relationship and legislative mandate.
- 871. Selected Topics**
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
Selected topics in recreation resource planning, administration, management, policy, and research.
- 880. Special Problems**
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 10 credits. Approval of department.
Advanced work for non-thesis projects or advanced individual study in recreation: policy, land use, planning, systems administration and management, economics, recreation forestry, commercial recreation enterprises, recreation and social problems, environmental interpretation, travel and touring, spatial analysis, leisure concepts, research.
- 899. Master's Thesis Research**
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
- 999. Doctoral Dissertation Research**
Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 36 credits. Approval of department.
- 408. Clinical Pathology**
Fall, Spring. 3(3-0) or 5(3-4) Approval of department.
Immunohematology, urinalysis, and topics in blood chemistry.
- 502. Human Pathology I**
Winter. 2 to 5 credits. Admission to a college of medicine or approval of department. ANT 560 for College of Osteopathic Medicine students.
Pathologic processes and specific disease syndromes with emphasis on clinical applications. Concepts of disease and pathologic process in selected common diseases or conditions for the beginning medical student with a limited knowledge of anatomy, physiology and biochemistry.
- 503. Human Pathology II**
Spring. 3(3-0) PTH 502.
An introductory study of neuropathology in which vocabulary and concepts of neuromuscular diseases are systematically reviewed. Self-instructional option available.
- 504. Human Pathology III**
Fall. 3(2-2) PTH 503 or approval of department.
A continuation of PTH 503. Diseases of the cardiovascular system, including stress effects, arteriosclerosis and disorders of autonomic and endocrine regulation. Laboratory sessions include the study of histologic sections.
- 505. Human Pathology IV**
Winter. 3(2-2) PTH 504 or approval of department.
A continuation of PTH 504. The systems include: lung, kidney, male genitourinary and bone and joints. In the laboratory sections, gross and microscopic changes in diseased tissues are studied and correlated with lecture material. Separate lab sessions covering pulmonary function tests, acid-base balance and urinalysis are included.
- 506. Human Pathology V**
Spring. 3(2-2) PTH 505 or approval of department.
A continuation of PTH 505. The systems include gastrointestinal tract (including liver and pancreas), female reproductive tract and breast.
- 520. Biology of Blood Diseases Laboratory**
Spring. 1(0-3) Enrollment in a college of medicine or a graduate program in a biological science; MED 520 concurrently.
Laboratory experience correlating basic science and clinical concepts of hematology.
- 550. Veterinary Pathology**
Spring. 5(3-4) Third-term Veterinary Medicine students or approval of department.
Principles of pathology, including causes of disease, disturbances of cell growth and metabolism, necrosis, circulatory changes, inflammation and neoplasia.
- 552. Veterinary Clinical Pathology**
Winter. 4(3-3) Fifth-term Veterinary Medicine students or approval of department.
Technical aspects, principles and interpretation of selected laboratory procedures in hematology, chemistry, cytology and related areas.