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
or approval of school.
Examination of economic issues in packaging as
they relate to policies of the firm and of govern­
ment. 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, in­
cluding consideration of design, selection, spec­
ification 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 ap­
proval of school.

463. Seminar
Fall. 20(4) Senior Majors.
Discussions on current packaging problems.

801. Packaging Systems
Fall. 4(3-2)
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 package.

820. Permeability and Shelf Life
Winter. 4(3-2) 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 per­
meability of packages in various environments.
Computer aided package design.

822. Seminar
Fall. 2(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. Vari­
able credit.

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

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

PARK AND RECREATION
RESOURCES

College of Agriculture and Natural
Resources

300. Wilderness Survival
Fall, Winter, Spring, Summer. 4(3-0)
Outdoor skills for utilization of plant and animal
resources to provide shelter, fire, signals, water
and food in the outdoors. Psychology and atti­
itudes 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 coarse 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. Cur­
rent environmental controversy. Field trip re­
quired.

304. Designs for Recreation: Nature
and Man
Fall, Spring. 3(3-0) Approval of de­
partment.
Design strategies are used to demonstrate rela­
tionships between characteristics of the envi­
ronment and man's use of it. Integration of work,
leisure, and recreation uses within environmental
potential and limits is emphasized.

344. Leisure and Recreation
Resources
Fall, Spring. 3(3-0)
Leisure in relation to park and recreation re­
sources. History and philosophy, significance in
modern society, and impact on urban and natu­
ral resource developments.

351. Environmental Interpretation I:
Principles
Fall, Winter. 3(3-0)
Philosophy, needs, types, and uses of informa­
tion 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.
455. Natural Resource Economics
   Fall. (4-4) 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(0-0) Senior majors.
   Seminars on current professional problems and literature.

501. Dimensions of Recreation and Leisure
   Fall. 3(3-0) PRR 544 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.

546. 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.

548. Recreation Resource Law
   Summer. 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.

580. 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 5 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.

999. Doctoral Dissertation Research
   Fall, Winter, Spring, Summer. Variable credit. Approval of department.
   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. 3 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 processes 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(3-4) 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 502. 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 materials. 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 system 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. 3(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.

PATHOLOGY

Colleges of Human Medicine
College of Osteopathic Medicine
College of Veterinary Medicine

404. General Pathology
   Fall, Spring. 5(3-6) ANT 420, Junior Medical Technology majors, or Approval of department.

407. Clinical Pathology
   Winter, Summer. 3(3-0) or 5(3-4) Approval of department.
   Theory and techniques in hematology and coagulation.