Descriptions — Packaging of Courses

PACKAGING PKG

College of Agriculture and Natural Resources

210. Principles of Packaging
Fall, Winter, Spring, Summer. 3(3-0)
A general course in packaging principles covering the growth and development of the field, and the technological and motivational problems involved in present day packaging. Consideration will be given to the basic functions of the package and their relation to the needs and wants of our society.

321. Technical Principles for Packaging
Fall, Winter, Spring. 4(3-2) PKG 210, PHY 237, PHY 335 or approval of school.
Relationships between package systems and distribution environments. Testing, evaluating and predicting package performance under various environmental influences.

330. Package Printing
Winter. 3(3-0) PKG 321 or approval of school.
Basic printing processes used for packaging materials. Advantages, disadvantages and identification of these printing methods.

331. Plastic and Glass Packaging
Fall, Winter, Spring. 4(3-2) PKG 321, CEM 143, CEM 161 or approval of school.
Physical and chemical properties of plastics and glass and their relationship to selection, design, manufacture, performance and evaluation of container systems.

332. Paper and Metal Packaging
Fall, Winter, Spring. 4(3-2) PKG 321, CEM 143, CEM 161 or approval of school.
Physical and chemical properties, manufacture, conversion and use of wood, paper, paperboard, metals, metal foils and related components. Design, use and evaluation of packages made from these materials.

340. Packaging and the Environment
Winter. 3(3-0)
Broad study of the effects of packaging on environmental quality including solid waste management, air and water quality, laws, economics, energy considerations, resource conservation and environmental ethics.

423. Dynamics of Packaging
Fall, Winter, Spring. 4(3-2) PKG 331, PKG 332, PHY 239 or approval of school.
A study of the protective function of the packaging systems in relation to their environment and shock and vibration isolation methods. A one-day field trip is required.

424. Packaging Problems
Fall, Winter, Spring. Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. PKG 331, PKG 332, 3.50 grade-point average, approval of school. Development of solutions to specific packaging problems.

425. Packaging Process Analysis
Fall, Winter, Spring. 4(3-2) PKG 331, PKG 332.
The integrated study of the operation, structure and control of packaging and package-making processes. A one-day field trip is required.

428. Packaging Development
Fall, Winter, Spring. 4(3-2) PKG 423, PKG 425, Seniors.
Development of packages to meet present-day requirements of protection and merchandising.

429. Packaging Economics
Winter. 3(3-0) PKG 331, PKG 332, EC 202, ACC 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. Elements of Packaging Machinery
Spring. 4(4-0) PKG 331, PKG 332 or approval of school.

435. Distribution Packaging
Fall, Winter, Spring. 3(3-0) EC 202, PKG 331, PKG 332, Juniors or approval of school.
Interrelationships between packaging and other segments of the distribution system. Market related issues in packaging: materials handling, transportation, and inventory control.

438. Pharmaceutical Packaging
Winter. 4(3-2) PKG 331, PKG 332.
Special requirements for packaging pharmaceuticals and medical devices. Evaluations of package systems and packaging procedures that meet these requirements.

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

448. Design of Shipping Containers
Spring. 2(2-1) PKG 423.
Students design, build and test a shipping package system for an industrial product. Lectures by industry personnel on specific shipping container systems not discussed in other packaging courses. Approved through Winter 1989.

450. Packaging Laws and Regulations
Spring. 3(3-0) PKG 331, PKG 332 or approval of school.

455. Food Packaging
Fall. 4(3-2) PKG 331, PKG 332 or approval of school.
Food packaging systems and their relationship to specific products, processes, regulations and equipment.

463. Seminar
Fall. 3(0-4) Senior Majors.
Discussions on current packaging problems.

467. Packaging Decision Systems
Fall, Winter, Spring. 3(2-2) PKG 331, PKG 332, CPS 115, EC 202.
Structure and use of decision systems for management, specification, production and testing. Use of microcomputers to support decisions.

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 331, PKG 332 or approval of school.
Physical and chemical properties of packaging materials. Relationship between properties of materials and performance of packages.

820. Permeability and Shelf Life
Winter. 4(3-2) PKG 331, PKG 332, MTH 113, CPS 115 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.

823. Advanced Packaging Dynamics
Spring. 3(2-2) PKG 423 or approval of school.

834. Special Investigations in Packaging
Fall, Winter, Spring. 1 to 4 credits. May reenroll for a maximum of 8 credits. Approval of school.

840. Selected Topics
Fall, Winter, Spring. 1 to 4 credits. May reenroll for a maximum of 15 credits if different topics are taken. Approval of department.

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

PARK AND RECREATION RESOURCES PRR

College of Agriculture and Natural Resources

200. Leisure and Society
Fall, Winter, Spring. 3(3-0)
Leisure and recreation as part of daily life. Leisure as a social, psychological and economic force in American culture.

210. Our National Parks
Fall, Spring. 3(3-0) Not open to majors.

213. Leisure and Recreation Resources (PRR 344.) Fall, Winter, 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.
215. Recreation Programming and Leadership (PRR 201) Fall, Winter. 4(3-2)
Recreation leadership and programming. Recreation program service settings, design and conduct of programs to serve different clientele groups.

302. Environmental Attitudes and Concepts Fall. 3(3-0)
History of development of attitudes and values about the environment in western civilization. Wilderness, environmentalism, environmental quality, economic development, conservation. Environmental perception and environment-behavior relationships.

304. Recreation Planning and Design Fall, Spring. 3(3-0) Approval of department.
Basic planning and design concepts applied to recreation areas, facilities, and programs. Planning process, public involvement, population and resource analysis, aesthetic and functional considerations in park design.

310. Camp Counseling and Administration Spring. 3(3-0) Consent of instructor.
Camp counseling techniques, leadership roles and responsibilities, campcraft skills, programming camp activities, organization and administration of youth camps.

315. Recreation Program Management (PRR 213) Winter, Spring. 4(3-3) PRR 215
Application of recreation programming and leadership concepts to program planning, management, and evaluation. Development of recreation programs utilizing leisure education format and small group process.

351. Park Interpretation and Visitor Information Services I: Principles Fall, Winter. 3(3-0) Consent of instructor.
Communication principles applied to park and recreation resource interpretation and other information services. Principles of audience analysis, brochure and exhibit design, public relations, natural/cultural interpretation, visitor information centers.

362. Recreation for Special Populations Fall, Spring. 3(3-0) PRR 215.
Therapeutic recreation, recreation services for special populations. Physical, social, and psychological disabilities as they relate to leisure services. Field trip required.

384. Junior Proseminar (PRR 484) Fall, Spring. 1(1-0) Juniors.
Seminar on current professional problems and literature.

403. Fieldwork in Park and Recreation Fall, Winter, Spring. 1 to 8 credits. May enroll for a maximum of 8 credits. Approval of department.
Fieldwork course in which student acts as a leader under supervision in community park and recreation programs.

422. Leisure Theory and Philosophy Fall, Spring. 3(3-0) PRR 213 or approval of department.
Classical and modern leisure theories and philosophies. Personal and societal attitudes toward leisure, work, and recreation. Changing values, leisure and culture, future perspectives.

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.

442A. Park and Recreation Resource Policy (PRR 442) Spring. 3(3-0) PRR 213 or approval of department. May not receive credit for both PRR 442A and PRR 442B.
History and significance of recreation resource policy in the planning process. Case studies of recreation policy development.

442B. Leisure Services Policy (PRR 442) Spring. 3(3-0) PRR 315 or PRR 362. May not receive credit for both PRR 442A and PRR 442B.
History and significance of recreation policy affecting leisure services and special populations in the U.S. Studies of recreation policy development. Professional certification.

444. Park and Recreation Area Design Winter. 4(2-4) PRR 364 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. 4(4-0) PRR 304 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 and Recreation Area Operations Winter. 3(3-0) Approval of department.
Operations and maintenance of park and recreation areas and facilities. Preparation and implementation of maintenance plans, standards, scheduling, budget estimating. Selection and operation of maintenance equipment, supplies, and materials.

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 Spring. 4(4-0) Seniors. Interdepartmental with Agriculture and Natural Resources and the department of Fisheries and Wildlife, Forestry, and Resource Development. Administered by the Department of Forestry.

451. Park Interpretation and Visitor Information Services II: Methods Spring. 4(4-0) PRR 351.
Methods used in information services for park and recreation areas. Audiovisual programs, exhibit technology, interpretation issues, interpretive planning and programming development. Field trip required.

455. Natural Resource Economics Fall. 4(3-2) ECO 200 or ECO 201. 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 institutional principles and techniques that govern the production and consumption of renewable natural resources. Natural resource evaluation, project analysis, and distributional considerations.

466. Natural Resource Planning Winter. 3(2-2) FOR 455 or R D 417 or approval of department. Interdepartmental with the departments of Forestry and Resource Development. Administered by the Department of Forestry.
Natural resource planning concepts and techniques applicable to area-level and subarea-level planning. Case studies in comprehensive, multiple resource public planning and single resource private planning.

467. Therapeutic Recreation Principles Fall. 3(3-0) PRR 362.
Planning, implementation, and evaluation of therapeutic recreation services. Individual disabilities, review of health care models and related therapies. Field trip required.

468. Therapeutic Recreation Techniques Winter. 3(2-2) PRR 467.
Instructional, intervention, and interaction techniques in therapeutic recreation. Treatment planning, terminology, documentation, and leisure counseling. Field trip required.

470. Commercial Recreation Enterprises Fall. 4(4-0) ECO 201; ACC 230 or approval of department.
Management methods and problems in commercial recreation enterprises with an emphasis on small business.

471. Recreation Products Consumption Winter. 4(4-0) ECO 201; ACC 230 or ACC 220; or approval of department.
Recreation, economic and personality theories of consumption. Specific recreation products industry case studies.

480. Supervised Study Fall. Winter, Spring. Summer. 1 to 4 credits. May enroll for a maximum of 30 credits. Approval of department.
Seminars on current problems. Supervised readings. Individual undergraduate research on selected topics.

801. Dimensions of Recreation and Leisure Fall. 3(3-0) 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.
Applications 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 consideration.
842. Park and Recreation Policy
Winter. 3(3-0) Interdepartmental with
the Department of Resource Development.
Recreation, leisure and work concepts. Determina-
tion 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 depart-
ment.
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 plan-
ning techniques at urban and regional levels.
Analysis of programs, policies, land areas, facil-
ties, 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 con-
tracts and condemnation procedures. Administra-
tion of public parks, including zoning, liability,
civil rights and law enforcement. Study of cases
and statutes.

871. Selected Topics
Fall, Winter, Spring, Summer. 1 to 4
credits. May reenroll for a maximum of 12 cred-
its. Approval of department.
Selected topics in recreation resource planning,
administration, management, policy, and
research.

880. Special Problems
Fall, Winter, Spring, Summer. 1 to 4
credits. May reenroll for a maximum of 10 cred-
its. Approval of department.
Independent study in recreation, leisure, recrea-
tion travel, and tourism.

889. Applied Professional Project
Fall, Winter, Spring, Summer. 4
credits. May reenroll for a maximum of 4 cred-
its. PRR approval of department.
Master's degree Plan B research paper.

899. Master's Thesis Research
Fall, Winter, Spring, Summer. Varia-
ble credit. Approval of department.

999. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. Varia-
ble credit. Approval of department.

PATHOLOGY

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

410. General Pathology
Spring, 3(3-0) ANT 420; PSL 432; M T
410 or concurrently. Interdepartmental with
and administered by Medical Technology.
Features of lethal and sublethal cell injury and
inflammation and repair processes. Definition of
the major causes of pathologic change with a
consideration of specific associated diseases.

411. Basic Histopathology
Spring, 2(1-2) ANT 420, PSL 432; M T
410 or concurrently. Interdepartmental with
and administered by Medical Technology.
Microscopic examination of cell injury and
death, inflammation and tissue repair. Patholo-
gic tissue changes in diseases resulting from
degenerative changes, abnormal metabolism,
neoplasia, immunologic processes, infection,
mechanical trauma and malnutrition.

501. Introduction to Human Pathology
Spring, 3(1-2) Admission to the College of
Human Medicine and ANT 543; or approval of
department.
Pathologic processes and specific disease syn-
dromes with emphasis on clinical applications.
Concepts of disease. Pathologic processes in
selected common diseases or conditions.

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 syn-
dromes 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 knowl-
edge of anatomy, physiology and biochemistry.

503. Human Pathology II
Winter. 4(3-2) PTH 501.

504. Human Pathology III
Spring. 4(3-2) PTH 501.

505. Human Pathology IV
Spring. 2(2-0) PTH 501.

525. Neuropathology Problem Solving
Exercises
Fall, Winter, Spring, Summer. 2(0-4)
Medical student or approval of instructor.
Independent study of 4 neuropathology prob-
lem solving exercises, including clinical history
and brain specimens.

540. Introduction to Laboratory
Medicine
Spring, 2(0-4) Summer. 2 credits. ANT
500, BCH 501, PTH 502.
Introduction to laboratory medicine leading to
proficiency in patient evaluation and diagnosis
through understanding of common pathologies
and basic laboratory procedures in blood, urine
and feces analyses.

550. Veterinary Pathology
Fall. 3(3-0) Second year Veterinary
Medicine students or approval of department.
Principles of pathology, including causes of
disease, disturbances of cell growth and metabo-
lism, necrosis, circulatory changes, inflamma-
tion 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 hematolo-
gy, chemistry, cytology and related areas.

590. Special Problems in Pathology
Fall, Winter, Spring, Summer. 1 to 12
credits. May reenroll for a maximum of 12 cred-
its if different topics are taken. Admission to a
professional program in the College of Osteo-
pathic Medicine or Human Medicine; approval of
department.
Each student will work under direction of a fac-
ulty member on an experimental, theoretical or
applied problem in pathology.

592. Special Problems in Veterinary
Pathology
Fall, Winter, Spring, Summer. 1 to 6
credits. May reenroll for a maximum of 12 cred-
its. Admission to the professional program in the
College of Veterinary Medicine.
Each student will work under direction of a fac-
ulty member on an experimental, theoretical or
applied problem in pathology.

608. Pathology Clerkship
Fall, Winter, Spring, Summer. 3 to 17
credits. May reenroll for a maximum of 17 cred-
its. Grade P in all courses offered in terms 1
through 8.
Anatomic and clinical pathology, with emphasis
on clinical-pathological correlations. Conduc-
ted in the pathology departments of affil-
iated hospitals.

609. Laboratory Medicine Clerkship
Fall, Winter, Spring, Summer. 1 to 6
credits. May reenroll for a maximum of 12 cred-
its. Grade P in all courses in terms 1 through 8.
Current laboratory procedures. Correlation of
data from patients with clinical disease, to
morphologic abnormalities and altered pathophysiology.

621. Histopathology Clerkship
Winter. 3 credits. Completion of 9
terms of professional program, approval of
department.
Supervised instruction in the examination and
interpretation of histologic lesions caused by ani-
mal diseases.

651. Veterinary Clinical Pathology
Clerkship
Fall, Summer. 4 credits. Satisfactory
completion of term 8 of the professional veteri-
inary curriculum, approval of department.
Concepts in laboratory interpretation and diag-
nosis.

652. Veterinary Necropsy Clerkship
Fall, Winter, Spring. 4 credits. Satis-
factory completion of term 8 of the professional
veterinary curriculum, approval of department.
Supervised necropsy and interpretation of find-
ings.