555. Systems Biology - Respiratory Science
Summer. 8 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 531, PTH 502.
A multidisciplinary approach to the respiratory system providing functional integration of basic science and clinical information.

556. Systems Biology - Urinary System
Fall. 7 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 531, PTH 502.
A multidisciplinary approach to the urinary system providing functional integration of basic science and clinical information.

557. Systems Biology - Gastrointestinal System
A multidisciplinary approach to functional integration of basic science and clinical information.

558. Systems Biology - Growth and Development
Fall. 5 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PTH 502.
A multidisciplinary approach to growth and development within the field of pediatrics providing functional integration of biological, behavioral and clinical sciences.

559. Systems Biology - Reproductive System
Fall. 7 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PTH 502.
A multidisciplinary approach to the male and female reproductive system providing functional integration of basic science and clinical information (includes obstetrics and gynecology).

560. Systems Biology - Musculoskeletal System
A multidisciplinary approach to the musculoskeletal system providing functional integration of basic science and clinical information.

561. The Osteopathic Examination I
Winter. 1(0-4) OST 515 or approval of instructor.
Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory diagnosis and osteopathic manipulative treatment in ambulatory clinics.

562. The Osteopathic Examination II
Spring. 1(0-4) OST 515 or approval of instructor.
Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory diagnosis and osteopathic manipulative treatment in ambulatory clinics.

563. Packages PKG

564. Packaging Process Analysis
Fall, Winter, Spring. 4(2-2) PKG 422.
The integrated study of the operation, structure and control of packaging and package-making processes. A one-day field trip is required.

565. Packaging Economics
Winter. 3(3-0) PKG 422, 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.

566. 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.

567. Distribution Packaging
Fall, Winter, Summer. 3(3-0) EC 202, PKG 422, 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.

568. Pharmaceutical Packaging
Winter. 3(3-0) PKG 427.
Special requirements for packaging pharmaceuticals and medical devices. Package forms and procedures that meet these requirements. Labeling, regulatory requirements, and effect of sterilization on packages.

569. Special Topics
Fall. Winter, Spring, Summer. 1 to 4 credits. May be repeated to a maximum of 32 credits. Approval of department.
Each student will work under direction of a faculty member on an experimental, theoretical or applied problem.

6010. Subspecialty Clerkship: Child Psychiatry
Fall, Winter, Spring, Summer. 4 to 16 credits. PSC 608, Interdepartmental with and administered by the Department of Psychiatry.
Subspecialties in psychiatry in clinical settings with child patients and their families.

610. The Osteopathic Examination I
Winter. 1(0-4) OST 533 or approval of instructor.

611. The Osteopathic Examination II
Spring. 1(0-4) OST 515 or approval of instructor.
Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory diagnosis and osteopathic manipulative treatment in ambulatory clinics.

612. The Osteopathic Examination III
Fall, Summer. 1(0-4) OST 615 or approval of instructor.
Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory diagnosis and osteopathic manipulative treatment in the hospital setting.

613. Principles of Packaging
Fall, Winter, Spring. 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.

614. Technical Principles for Packaging
Fall, Winter, Spring. 3(3-0) PKG 210, CEM 414, PHY 237 or approval of department.
Relationships between package systems and distribution environments. Testing, evaluating and predicting package performance under various environmental influences.

615. Package Printing
Winter. 3(3-0) PKG 320 or approval of school.
Basic printing processes used for packaging materials. Advantages, disadvantages and identification of these printing methods.

616. Plastic and Glass Packaging
Fall, Winter, Spring. 4(3-0) PKG 321 or approval of department.
Physical and chemical properties of plastics and glass and their relationship to selection, design, manufacture, performance and evaluation of container systems.

617. Paper and Metal Packaging
Fall, Winter, Spring. 4(3-0) PKG 321 or approval of department.
Physical and chemical properties, manufacture, conversion and use of wood, paper, cardboard, metal, metal foils and related components. Design, use and evaluation of packages made from these materials.

618. 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.

619. Dynamics of Packaging
Fall, Winter, Spring. 4(3-3) PKG 422 or approval of department.
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.

620. Packaging Problems
Fall, Winter, Spring. 1 to 3 credits. May be repeated to a maximum of 9 credits. PKG 422, 2.50 grade point average and approval of school.
Development of solutions to specific packaging problems.

621. Resources

622. 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 432, 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.

834. Special Investigations in Packaging  
Fall, Winter, Spring, Summer. 1 to 4 credits. May enroll for a maximum of 9 credits. Approval of school.

840. Selected Topics  
Fall, Winter, Spring, Summer. 1 to 4 credits. May enroll 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 — Descriptions of Courses

College of Agriculture and Natural Resources

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

213. Leisure and Recreation Resources  (PRR 344)  
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.

215. Recreation Programming and Leadership  (PRR 201)  
Fall, Winter. 3(3-0)  
Recreation leadership and programming. Recreation program service settings, design and conduct of programs to serve different clientele groups.

300. Wilderness Survival  
Fall, Winter, Spring, Summer. 3(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.

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  (HPR 306)  
Fall, Spring. 3(3-0)  
Camp counseling techniques, leadership roles and responsibilities, campcraft skills, programming, camp activities, organization and administration of youth camps.

315. Recreation Program Management  (PRR 313)  
Winter, Spring, 4(3-2) PRR 215.  
Application of recreation programming and leadership principles 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)  
Communication principles applied to park and recreation resource interpretation and other information services. Principles of audiovisual analysis, brochure and exhibit design, public relations, natural-cultural interpretation, visitor information centers.

362. Recreation for Special Populations  (HPR 362)  
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)  
Seminars on current professional problems and literature.

403. Fieldwork in Park and Recreation  
Fall, Winter. 3(3-0)  
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  (HPR 422)  
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. 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 United States. Policy process, case studies of recreation policy development.

448B. Leisure Services Policy  
(PRR 448)  
Spring. 3(3-0) PRR 314 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(4-0) PRR 304 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.

448. Field Studies in Park and Recreation Administration  
Fall. 3 credits. Approval of department.  
Analysis of park, recreation, and tourism areas and facilities. Visits to local, state, federal and commercial recreation facilities. Conducted off campus with agency assistance. Field trip required.

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  
Winter. 4(4-0)  
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.  