555. Systems Biology - Respiratory  
A multidisciplinary approach to the respiratory system providing functional integration of basic science and clinical information.

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

557. Systems Biology - Gastrointestinal  
A multidisciplinary approach to the gastrointestinal system providing 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, development, and aging within (but not limited to) the field of pediatrics and gerontology providing functional integration of basic science and clinical information.

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

590. Special Problems  
Fall, Winter, Spring, Summer. 1 to 8 credits. May be repeated for 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.

600. Ambulatory Care  
Fall, Winter, Spring, Summer. 24 credits. Grade P in all courses offered in Terms 1-4 or approval of department.  
A multidisciplinary approach to clinical settings to the ambulatory patient to achieve proficiency in motor skills, aptitudes, comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.

614. The Osteopathic Examination I  
Winter. 10(4-0) OST 503 or approval of instructor.  

615. The Osteopathic Examination II  
Spring, Summer. 1(0-4) OST 514 or approval of instructor.  
Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory diagnosis and osteopathic manipulative treatment in ambulatory clinics.

616. The Osteopathic Examination III  
Fall, Summer. 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 the hospital setting.

Packaging - Descriptions of Courses

425. Packaging Process Analysis  
Fall, Winter, Spring. 4(4-0) PKG 422.  
The integrated study of the operation structure and control of the packaging and package-making process. A one-day field trip is required.

427. Packaging Materials and Systems Laboratory  
Fall, Winter, Spring. 4(2-4) PKG 320, PKG 422 or approval of school.  

428. Packaging Development  
Fall, Winter, 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. Relationship 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.

435. Distribution Packaging  
Fall, Winter, Spring. 3(3-0) EC 200, 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.

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

450. Packaging Laws and Regulations  
Spring, 3-3(0) PKG 422 or approval of school.  

455. Food Packaging  
Fall. 4(3-2) PKG 427 or approval of school.  
Food packaging systems and their relationship to specific products, processes, regulations and equipment.

463. Seminar  
Fall. 2(0-4) 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 packages.

820. **Permeability and Shelf Life**  
*Winter, 4(3-3) PKG 428, 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, 1 to 4 credits. May reenroll for a maximum of 8 credits. Approval of school.*

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, Variable credit. Approval of school.*

### PARK AND RECREATION RESOURCES PRR

#### College of Agriculture and Natural Resources

201. **Social Recreation and Game Leadership**  
*(HPR 201.) Fall, 3(2-3) Approval of department.*  
Methods, materials, and practice in conducting party programs, indoor games, and celebrations for large and small groups. Games using special equipment commonly employed in resorts and community centers.

300. **Wilderness Survival**  
*Fall, Winter, Spring, 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.

301. **Wilderness Survival (TV)**  
*Fall, Winter, Spring, 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.

### Descriptions – Packaging of Courses

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**  
*(HPR 300.) Spring, 3(2-3)*  

313. **Recreation and Youth Organization Programs**  
*(HPR 303.) Winter, 4(4-0) Sophomores.*  
Development and conduct of special recreation events in community and youth organization programs including civic and youth centers, agency operation, adult and senior citizen activities.

342. **Introduction to Therapeutic Recreation**  
*(HPR 362.) Fall, 3(0-3) Recreation major or approval of department.*  
Philosophical and theoretical foundations of therapeutic recreation, overview of populations, type and nature of settings and services and information related to concepts of delivery and resources available.

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).

362. **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.

370. **Playground and Day Camp Administration**  
*(HPR 370.) Winter, Spring, 3(3-0) Approval of department.*  
Organization and administration of playground and day camp programs, equipment and areas, supplies and maintenance; staff selection and training; policies, records and legal responsibilities.

400. **Camp Administration**  
*(HPR 400.) Fall, 3(3-0) PRR 310 or approval of department.*  
Organization and administration of public, semipublic, and private camps; their program requirements and standards. Equipment, camp sites, budgets, and staff.

410. **Organization and Administration of Community Recreation**  
*(HPR 401.) Winter, Spring, 3(3-0) PRR 370, PRR 423, HPE 404.*  

422. **The Theory and Philosophy of Recreation**  
*(HPR 422.) Fall, Winter, Spring, 3(3-0)*  
Philosophy and psychology of play. Types of play program, program building, the play teacher.

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.

444. **Park and Recreation Area Design**  
*Fall, Winter, 4(4-4) PRR 304, HRT 211 or HRT 213, or BOT 310 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.

455. **Comprehensive Recreation Planning**  
*Fall, Winter, 4(4-4) EC 200, PRR 344 and 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.

460. **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.