

**Descriptions — Osteopathic Medicine
of
Courses**

551. Introduction to Laboratory Medicine
Winter. 2 credits. ANT 560, 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 analysis.

552. Systems Biology - Integumentary
Summer. 2 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

A multidisciplinary approach to the integumentary system providing a functional integration of basic science and clinical information.

553. Systems Biology - Nervous System
Fall. 10 credits. ANT 563, PSL 500A, PTH 502, BCH 502, PHM 521, MPH 521.

A multidisciplinary approach to the nervous system providing a functional integration of basic science and clinical information.

554. Systems Biology - Cardiovascular
Spring. 15 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

A multidisciplinary approach to the cardiovascular system providing functional integration of basic science and clinical information.

555. Systems Biology - Respiratory
Summer. 8 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

A multidisciplinary approach to the respiratory system providing functional integration of basic science and clinical information.

556. Systems Biology - Urinary
Summer. 7 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 521, PTH 502.

A multidisciplinary approach to the urinary system providing functional integration of basic science and clinical information.

557. Systems Biology - Gastrointestinal
Winter. 13 credits. ANT 560, ANT 565, PSL 500A, MPH 521, BCH 502, PHM 520, PTH 502.

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 and development within the field of pediatrics providing functional integration of biological, behavioral and clinical sciences.

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
Fall. 6 credits. ANT 560, ANT 565; PSL 500A; MPH 521; BCH 502; PHM 521; PTH 502.

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 reenroll 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 1-8 or approval of department.

A multidisciplinary approach in 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, Spring. 1(0-4) OST 533 or approval of instructor.

Emphasizes continuing development of palpatory diagnostic skills, neuromusculoskeletal patient assessment, selection and utilization of appropriate osteopathic manipulative treatment.

615. The Osteopathic Examination II
Spring, Summer. 1(0-4) OST 614 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 615 or approval of instructor.

Introductory clinical course in the application of neuromusculoskeletal assessment, palpatory diagnosis and osteopathic manipulative treatment in the hospital setting.

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.

320. Packaging Materials
Fall, Winter, Spring. 4(4-0) PKG 210, PHY 237, CEM 141A or CEM 141B, CEM 161, CEM 143.

Common packaging materials including wood, paper, paperboard, plastics, metal foils and sheets, glass, adhesives, cushioning media; their basic properties in relation to performance of package.

330. 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.

340. Packaging and the Environment
Winter. 4(4-0)

Broad study of the effects of packaging on environmental quality, including solid waste, air and water quality, laws, economics, energy considerations and resources conservation.

422. Packaging Systems
Fall, Winter, Spring. 4(4-0) PKG 320 or approval of school.

Design, use and evaluation of packages and packaging systems.

423. Dynamics of Packaging
Fall, Winter, Spring. 4(3-3) PKG 422 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 422. 2.50 grade-point average and approval of school.

Development of solutions to specific packaging problems.

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.

Methods of measuring properties of packaging materials. Design, manufacture and performance testing of complete packages. Techniques for evaluating test results. Value of various test methods.

428. Packaging Development
Fall, Winter, Spring. 4(3-2) PKG 427, CPS 115, 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.

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.

438. Pharmaceutical Packaging
Winter. 3(3-0) PKG 427.

Special requirements for packaging pharmaceuticals and medical devices. Packageforms and procedures that meet these requirements. Labeling, regulatory requirements, and effect of sterilization on packages.

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.

448. Design of Shipping Containers
Spring. 2(1-2) PKG 423.

Students design, build and test a shipping package system for an industrial product. Lectures by industry personnel on specific shipping containers not discussed in other packaging courses.

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

History and development of packaging laws and regulations. Relationships among law, government regulation and commercial regulation. Effect of current laws and regulations on packaging. Personal liability of the packaging professional.

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(3-3)
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 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 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, Summer. Variable credit. Approval of school.

PARK AND RECREATION RESOURCES PRR

College of Agriculture and Natural Resources

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.

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)

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 300.) 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(4-0) 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 audience 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) Juniors.
Seminars on current professional problems and literature.

403. Fieldwork in Park and Recreation
Fall, Winter, Spring. 1 to 8 credits. May reenroll 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, 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 United States. Policy process, case studies of recreation policy development.

442B. Leisure Services Policy
(442.) 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(2-4) 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.