

Descriptions — Osteopathic Medicine of Courses

545. Integrative Clinical Correlations V
Spring, 1(0-2)
P: OST 544. R: Approval of college.
 Application of systems biology information, problem-solving, and clinical skills in an integrated clinical case format. Case presentations by students and faculty.

546. Integrative Clinical Correlations VI
Summer, 1(0-2)
P: OST 545. R: Approval of college.
 Application of systems biology information, problem-solving, and clinical skills in an integrated clinical case format. Case presentations by students and faculty.

551. Issues in Minority Health
Fall, Spring, Summer, 3(3-0)
R: Open only to graduate and graduate-professional students in the Colleges of Osteopathic Medicine, Human Medicine, and Nursing or approval of college.
 Patterns of health and illness in minority populations.
SA: CMS 515

590. Special Problems
Fall, Spring, Summer, 1 to 24 credits. A student may earn a maximum of 60 credits in all enrollments for this course.
R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
 Individual study directed by a faculty member on an experimental, theoretical, or applied problem.

OSTEOPATHIC MEDICINE OM

**Department of Osteopathic Medicine
 College of Osteopathic Medicine**

512. Biostatistics and Epidemiology
Summer, 2(2-0)
R: Open only to graduate and graduate-professional students in the Colleges of Osteopathic Medicine, Human Medicine, and Nursing or approval of department.
 Medical literature to illustrate statistical reasoning and research design. Emphasis on analysis rather than computation. Prospective or retrospective studies. Sensitivity, specificity, and predictive values. Epidemiologic terminology.
SA: CMS 512

590. Special Problems
Fall, Spring, Summer, 1 to 24 credits. A student may earn a maximum of 48 credits in all enrollments for this course.
R: Open only to graduate-professional students in the College of Osteopathic Medicine. Approval of department.
 Each student works under faculty direction on an experimental, theoretical, or applied problem.

620. Directed Studies
Fall, Spring, Summer, 1 to 30 credits. A student may earn a maximum of 48 credits in all enrollments for this course.
R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II.
 Individual or group work on special problems in medicine.

651. Obstetrics and Gynecology Clerkship
Fall, Spring, Summer, 1 to 9 credits. A student may earn a maximum of 9 credits in all enrollments for this course.
R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II.
 Obstetric patient evaluation and management: motor skills, aptitudes, evaluation of postpartum patient and management of gynecologic problems.

653. Surgery Clerkship
Fall, Spring, Summer, 1 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.

R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II.
 Surgical diagnosis, management, and treatment. Structure developed to achieve proficiency in motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, therapy.

654. Anesthesiology Clerkship
Fall, Spring, Summer, 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.

R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II.
 Motor skills, concepts and principles, patient evaluation, management and therapy.

656. Orthopedic Clerkship
Fall, Spring, Summer, 1 to 20 credits. A student may earn a maximum of 30 credits in all enrollments for this course.

R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II.
 Program developed to achieve proficiency in motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, and therapy.

658. Otorhinolaryngology Clerkship
Fall, Spring, Summer, 1 to 20 credits. A student may earn a maximum of 30 credits in all enrollments for this course.

R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II.
 Develop proficiency in motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, and therapy.

PACKAGING PKG

**School of Packaging
 College of Agriculture and
 Natural Resources**

101. Principles of Packaging
Fall, Spring, Summer, 3(3-0)
 Packaging systems, materials and forms and their relationship to the needs and wants of society.
SA: PKG 210

310. Technical Principles and Dynamics for Packaging
Fall, Spring, 4(3-2)
P: MTH 124 or MTH 132; PHY 232. R: Open only to Packaging students.
 Testing, evaluating, and predicting package performance under various environmental conditions. Methods of protection against shock, vibration, and other environmental hazards.

320. Plastic and Glass Packaging
Fall, Spring, 4(3-2)
P: CEM 143, PKG 310. R: Open only to Packaging students.
 Physical and chemical properties of plastic and glass and their relationship to selection, design, manufacture, performance and evaluation of packages.

325. Paper and Metal Packaging
Fall, Spring, 4(3-2)
P: CEM 143, PKG 310. R: Open only to Packaging students.
 Physical and chemical properties, manufacture, conversion and use of wood, paper, paperboard, metal foils and related components. Design, use and evaluation of packages.

330. Package Printing
Fall, 3(3-0)
P: PKG 310. R: Open only to Packaging students.
 Methods of printing packages including copy preparation, design, electronic imaging, aesthetics, camera use, and effects of package materials. Production of printed packages including quality control, economics, and environmental considerations.

370. Packaging and the Environment
Spring, 3(3-0)
P: CEM 141; completion of Tier I writing requirement. R: Not open to freshmen and sophomores.
 Effects of packaging on environmental quality. Solid waste. Air and water quality. Laws, economics and energy. Resource use and conservation.

415. Packaging Decision Systems
Fall, Spring, 3(2-2)
P: MTH 110 or MTH 116; CPS 100 or CPS 130 or CPS 131. R: Open only to majors in Packaging.
 Application of computers to analyze and solve problems in the management, specification, production, and testing of packaging systems.

432. Packaging Processes
Fall, Spring, 4(3-2)
P: PKG 320, PKG 325. R: Open only to Packaging students.
 Integrated study of machines, organization and control of packaging processes. Application of pneumatics, hydraulics and electricity. Interrelationship of product, packaging and machinery.

440. Automation in Packaging
Fall, 3(2-2)
P: MTH 124. R: Not open to freshmen and sophomores.
 Automated systems: configurations, components, sensors, drive mechanisms, and control systems. Robotic safety. Material handling, line inspection, vision systems, automated storage and retrieval systems. Economics. Field trips required.

452. Pharmaceutical Packaging
Fall, 4(3-2)
P: PKG 320 or PKG 325.
 Special requirements for packaging pharmaceuticals and medical devices. Evaluation of package systems and packaging procedures.

455. Food Packaging
Spring, 3(3-1)
P: PKG 320, PKG 325. R: Open only to Packaging majors.
 Food package systems related to specific products and processes. Product composition: problems and packaging solutions, shelf life considerations, and packaging lines.

460. Distribution Packaging and Performance Testing
Spring, 3(2-2)
P: PKG 310. R: Open only to Packaging majors.
 Interrelationships between packaging and distribution systems. Transportation, material handling, warehousing. Logistics and management systems. Performance testing and industry practices. Package container design and testing.

475. Packaging Economics
 Fall. 3(3-0)
 P: EC 201 or EC 202.
 Economic issues in packaging as they relate to policies of the firm and of government. Relationships between economic policy and societal issues.

480. Packaging Laws and Regulations
 Spring. 3(3-0)
 P: PKG 320 or PKG 325. R: Open only to Packaging majors.
 History and development of packaging laws and regulations. Relationships among law, government regulation and commercial regulation. Effect of current laws and regulations on packaging.

485. Packaging Systems Development
 Fall, Spring. 3(3-1)
 P: PKG 432. R: Open only to seniors or graduate students in Packaging.
 Package development including selection, design and implementation of package systems for protection, distribution, merchandising, use and disposal.

490. Directed Studies in Packaging
 Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
 P: PKG 320, PKG 325. R: Open only to Packaging majors. Approval of department; application required.
 Development of solutions to specific packaging problems. Supervised individual study.

491. Special Topics
 Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
 Selected topics of current interest.

492. Senior Seminar
 Fall, Spring. 1(2-0)
 R: Open only to seniors in Packaging.
 Seminar on current packaging issues, business organization and operations, and accepted practices in a corporate environment.

805. Advanced Packaging Dynamics
 Spring. 3(2-2)
 P: PKG 310.
 Shock and vibration. Distribution hazards and product fragility. Cushion performance and package design. Environmental measurement and simulation.

815. Permeability and Shelf Life
 Spring. 3(2-2)
 P: MTH 124 or MTH 132; PKG 320; PKG 325.
 Relationship between the storage life of packaged food and pharmaceutical products and the gas, moisture, and organic vapor permeability of packages in various environments.

817. Instruments for Analysis of Packaging Materials
 Fall of even-numbered years. 4(3-2)
 P: PKG 320, PKG 325.
 Analytical methods for packaging including spectrophotometry and chromatography. Material identification and characterization. Migration and permeation measurements.

825. Polymeric Packaging Materials
 Fall. 4(3-2)
 P: PKG 320.
 Physical and chemical properties of polymeric materials and structures used in packaging. Relationship of properties to performance.

875. Stability and Recyclability of Packaging Materials
 Fall of odd-numbered years. 3(3-0)
 P: PKG 320, PKG 325.
 Interactions between packaging materials and environments: corrosion, degradation, stabilization, and recycling. Impacts of packaging disposal.

890. Independent Study in Packaging
 Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 4 credits in all enrollments for this course.
 R: Open only to graduate students in Packaging. Approval of department; application required.
 Special investigations of unique packaging problems.

891. Selected Topics
 Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
 R: Open only to graduate students in Packaging.
 Selected topics of interest to graduate packaging students.

899. Master's Thesis Research
 Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
 R: Open only to Master's students in Packaging.

PARK AND RECREATION RESOURCES PRR

Department of Park, Recreation and Tourism Resources College of Agriculture and Natural Resources

100. Recreation in Michigan Natural Resources
 Spring. 3(3-0)
 The scope and status of Michigan natural resources used for recreation. Historical and philosophical foundations of management and policy. Analysis of contemporary environmental and recreational policy issues.

200. Leisure and Society
 Fall, Spring, Summer. 3(3-0)
 Leisure and recreation as part of daily life. Leisure as a social, psychological, political, economic and cultural force in the United States.

210. Our National Parks and Recreation Lands
 Fall, Spring, Summer. 3(3-0)
 Scope and history of federal recreation lands. Comparisons of national parks to other federal lands. Recreation land management in other nations. Future federal land management options.

213. Introduction to Parks, Recreation, and Leisure
 Fall, Spring, Summer. 3(3-0)
 The scope and management of recreation services and resources. Historical and philosophical foundations. Influence of recreation behavior on state, national, international, economic, political and social institutions.

215. Recreation Program Management
 Fall, Spring. 4(3-2)
 Programming and leadership principles for planning, management, and evaluation. Program design and conduct to service different clientele, using leisure education, program development, and small group processes. Field trips required.

293. Field Work in Park and Recreation Resources
 Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.
 P: PRR 213, PRR 215. R: Open only to students in Park and Recreation Resources. Approval of department.
 Professional field experience in a park or recreation setting.

300B. Coaching Sports for Athletes with Disabilities
 Spring of even-numbered years. 2(2-0) Interdepartmental with Physical Education and Exercise Science. Administered by Physical Education and Exercise Science.
 Rules, strategies, and training. Developing and evaluating player skills. Planning, conducting, and evaluating sport practices. Health and safety concerns.

302. Environmental Attitudes and Concepts
 Fall. 3(3-0)
 P: One ISS course or one PSY course or one SOC course. R: Not open to freshmen.
 History of attitudes and values associated with the environment, wilderness, environmentalism, environmental quality, conservation, and preservation. Perceptions and assessment of modern environmental problems.

320. Human Behavior in Park and Recreation Settings
 Spring. 3(3-0)
 P: One PSY course or one SOC course.
 Antecedents, intervening conditions, and outcomes of human behavior in park, recreation, and leisure settings. Interactions between recreation behavior and the natural environment. Problem solving in recreation.

351. Recreation and Natural Resources Communication
 Fall. 3(2-2)
 P: PRR 213. R: Not open to freshmen.
 Principles of communication for recreation and natural resource audiences. Application to various forms of interpretive media including verbal, graphic, and written. Field trips required.

362. Recreation for Special Populations
 Spring. 3(3-0)
 P: PRR 213. R: Not open to freshmen.
 Therapeutic recreation services emphasizing handicapped and geriatric characteristics. Chemical dependency issues. Leisure lifestyle issues. Philosophical foundations and service models. Integration, normalization, inclusion, and empowerment concepts.

370. Administration and Operation of Parks and Recreation Systems
 Fall. 4(4-0)
 P: PRR 215, PRR 351. R: Not open to freshmen and sophomores.
 Policy, administration, and operations at municipal, county, and regional levels. Policy and administrative development of systems. Preparation and implementation of operation and maintenance plans and schedules.

371. Management of Park and Recreation Agencies and Organizations
 Spring. 4(4-0)
 P: ACC 230, PRR 213, PRR 215. R: Not open to freshmen and sophomores.
 Management and operating concepts and methods. Revenues and cost management, service marketing, staffing and supervision.