

Descriptions—Osteopathic Medicine of Courses

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.

602. Primary Care Ambulatory Clerkship

Fall, Spring, Summer. 1 to 36 credits. A student may earn a maximum of 36 credits in all enrollments for this course. Interdepartmental with Internal Medicine; Osteopathic Surgical Specialties; Pediatrics; Psychiatry; and Family and Community Medicine. P: Successful completion of the preclerkship requirements in College of Osteopathic Medicine Units I and II.

A 24-week ambulatory care continuity experience involving 12 weeks in a multidisciplinary environment (family medicine, pediatrics, and internal medicine), 6 weeks in family medicine and 6 weeks in specialty areas (internal medicine, surgery, and obstetrics and gynecology). Didactic sessions are scheduled concurrently.

OSTEOPATHIC SURGICAL SPECIALITIES

OSS

Department of Osteopathic Surgical Specialities 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, OM 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.

SA: OM 590

602. Primary Care Ambulatory Clerkship

Fall, Spring, Summer. 1 to 36 credits. A student may earn a maximum of 36 credits in all enrollments for this course. Interdepartmental with Osteopathic Medicine; Internal Medicine; Pediatrics; Psychiatry; Family and Community Medicine. Administered by Osteopathic Medicine. P: Successful completion of the preclerkship requirements in College of Osteopathic Medicine Units I and II.

A 24-week ambulatory care continuity experience involving 12 weeks in a multidisciplinary environment (family medicine, pediatrics, and internal medicine), 6 weeks in family medicine and 6 weeks in specialty areas (internal medicine, surgery, and obstetrics and gynecology). Didactic sessions are scheduled concurrently.

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.

SA: OM 620

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.

SA: OM 651

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.

SA: OM 653

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.

SA: OM 654

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.

SA: OM 656

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.

SA: OM 658

OFFICE OF THE PROVOST

PRO

Office of the Provost

101. Freshman Seminar

Fall, Spring. 0(1-0) A student may earn a maximum of 2 credits in all enrollments for this course. R: Open only to freshmen. Approval of department.

Introduction to the academic life of the University. Special topics proposed by faculty to engage the interests of new students.

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

221. Packaging with Glass and Metal

Fall, Spring. 3(3-0) P: PKG 101 or concurrently, CEM 141, PHY 231.

Physical and chemical properties of glass and metals and their applications to packaging.

SA: PKG 320, PKG 325

322. Packaging with Paper and Paperboard

Fall, Spring. 4(3-2) P: PKG 101, CEM 143. PKG 221 or concurrently. STT 200 or STT 201 or STT 315. R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

Physical and chemical properties, manufacture, conversion, and use of wood, paper, paperboard, and related components in packaging. Design, use, and evaluation of packages.

SA: PKG 325

323. Packaging with Plastics

Fall, Spring. 4(3-2) P: (PKG 101 and CEM 143 and MTH 124 and PKG 221 or concurrently) and (STT 200 or STT 201 or STT 315) R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

Physical and chemical properties of plastics and their relationship to selection, design, manufacture, performance, and evaluation of packages.

SA: PKG 320

330. Package Printing

Fall. 3(3-0) P: PKG 221. R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

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.

410. Distribution Packaging Dynamics

Fall, Spring. 3(3-0) P: PKG 322, PKG 323 R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

Identification and measurement of hazards in physical distribution. Methods of protection against climate, shock, vibration, and compression.

SA: PKG 310

415. Packaging Decision Systems

Fall, Spring. 3(2-2) P: MTH 116; CSE 101 or CSE 131. R: Open only to sophomores or juniors or seniors or graduate students in the School of 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 322 and PKG 323) and (PHY 232 or LBS 267) R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

Integrated study of packaging and production operations, quality control, and organization and control of machines. Interrelationship of products, packaging, machinery layout and efficiency, and quality issues.

440. Robotics and Automotive Packaging

Fall. 3(3-0) P: (MTH 124)

Robotic systems: configurations, components, drive mechanisms, control and feedback, safety. Line inspection, vision systems, guided vehicle and storage retrieval systems, reusable and expendable packaging, container cleaning and identification and economics.

452. Medical Packaging

Fall. 4(3-2) P: PKG 322 or PKG 323.

Special requirements for packaging pharmaceuticals and medical devices. Evaluation of package systems and packaging procedures.

455. Food Packaging

Spring. 3(3-1) P: PKG 322, PKG 323. R: Open only to sophomores or juniors or seniors or graduate students in the Packaging major.

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 410. R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

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 322 or PKG 323. R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

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 Development (W)

Fall, Spring. 4(4-0) P: PKG 410, PKG 415, PKG 432. R: Open only to seniors or graduate students in a Packaging major. Completion of Tier I writing requirement.

Package development including selection, design and implementation of package systems for protection, distribution, merchandising, use and disposal.

490. Directed Studies in Packaging Problems

Fall, Spring, Summer. 1 to 3 credits A student may earn a maximum of 6 credits in all enrollments for this course. P: PKG 322, PKG 323. R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging. 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.

493. Professional Internship in Packaging

Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: (PKG 322 and PKG 323) R: Approval of school; application required. A student may earn a maximum of 6 credits in the following courses: AEE 493, ANR 493, ANS 493, FW 493, PKG 493, PRM 493, PRR 493, and RD 493.

Supervised professional experience in the field of packaging offered through corporations and other businesses throughout the U.S.

805. Advanced Packaging Dynamics

Spring. 3(2-2) P: PKG 410.

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 322, PKG 323.

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 years. 4(3-2) P: PKG 322, PKG 323.

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 323.

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 years. 3(3-0) P: PKG 322, PKG 323.

Interactions between packaging materials and environments: corrosion, degradation, stabilization, and recycling. Impacts of packaging disposal.

888. Master's Project

Fall, Spring, Summer. 2 credits. R: Open only to master's students in the School of Packaging. Approval of school, application required.

Master's degree Plan B project. Completion of a project related to packaging issues.

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.

985. Analytical Solutions to Packaging Design

Spring of even years. 3(3-0) P: PKG 825 R: Open only to graduate students in the College of Agriculture and Natural Resources or College of Engineering or College of Natural Science. Approval of department; application required.

Analytical and quantitative techniques for packaging design and evaluation.

Descriptions—Packaging of Courses

990. Independent Study in Packaging
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to Ph.D. students in the School of Packaging. Approval of department; application required.
Special investigations of unique packaging problems.

992. Packaging Seminar
Fall. 1(2-0) A student may earn a maximum of 3 credits in all enrollments for this course. R: Open only to graduate students in packaging.
Presentations of detailed studies on specialized aspects of packaging.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 50 credits in all enrollments for this course. R: Open only to Doctoral students in packaging.

PARK, RECREATION AND TOURISM 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 clienteles, 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.

295. Field Study in Park, Recreation and Tourism Resources Delivery Systems
Spring. 2 credits. P: (PRR 213 and PRR 215) R: Open only to sophomores or juniors or seniors. Approval of department; application required.
Field course illustrating public, non-profit, and commercial recreation delivery systems. Interrelationships of recreation with natural resources, cultural resources, facilities, and communities. Partnerships and competition among providers. Field trips required.

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

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 (W)
Fall. 3(2-2) P: PRR 213. R: Not open to freshmen. Completion of Tier I writing requirement.
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.

369. Introduction to Zoo and Aquarium Science
Spring. 3(3-0) Interdepartmental with Landscape Architecture; Fisheries and Wildlife; Zoology; and Veterinary Medicine. Administered by Zoology. P: (BS 110 or LBS 144 or LBS 148H)
Fundamentals of zoo and aquarium operations including research, interpretation, design, nutrition, captive breeding, conservation, ethics and management.

370. Administration and Operation of Park and Recreation Systems
Fall. 3(3-0) P: PRR 213, PRR 215. R: Not open to freshmen and sophomores.
Policy, administration, and operations of park, recreation and tourism organizations.

371. Management of Park and Recreation Agencies and Organizations
Spring. 3(3-0) P: PRR 213, PRR 215. R: Not open to freshmen and sophomores.
Management concepts and methods. Budgeting, service marketing, and strategic planning in park, recreation and tourism organizations.

393. Professional Seminar
Fall, Spring. 1(1-0) P: PRR 293. R: Open only to majors in Park and Recreation Resources.
Linkage of field work and internship. Integration of course work with professional practice.

410. International Studies in Tourism, Parks and Recreation
Fall, Spring, Summer. 3(3-0) Fall: Latin America, Europe. Spring: Latin America, Europe. Summer: Latin America, Europe, Africa, Australia. A student may earn a maximum of 6 credits in all enrollments for this course. R: Not open to freshmen and sophomores. Approval of department; application required.
Influence of tourism, parks and recreation on social, economic and political systems. Management of cultural, historical and natural resources as they relate to tourism, parks and recreation.

419. Applications of Geographic Information Systems to Natural Resources Management
Spring. 4(2-4) Interdepartmental with Fisheries and Wildlife; Forestry; Geography; Resource Development; and Biosystems Engineering. Administered by Fisheries and Wildlife. P: (GEO 221)
The application of geographic information systems, remote sensing, and global positioning systems to integrated planning and management for fish, wildlife, and related resources.

443. Parks and Recreation Planning and Design Concepts
Spring. 4(2-4) P: PRR 351. R: Not open to freshmen and sophomores.
Planning models and design analysis, synthesis, and communication and recreation and tourism subsystem and supply analysis.

449. Management of Natural Resource Based Recreation
Fall. 3(3-0) R: Not open to freshmen and sophomores.
The history of natural resource recreation management in the U.S. Techniques for dispersed and developed recreation management. Security of facilities, visitors, and personnel.