OSTEOPATHIC MEDICINE

College of Osteopathic Medicine

501. Clinical Skills I Fall, 3(1-4)
R: Graduate-professional students in College of Osteopathic Medicine
Introduction to osteopathic physical examination. QP: OST 5390, ST 531

502. Clinical Skills II Spring, 3(1-4)
P: OST 501; Graduate-professional students in College of Osteopathic Medicine.
Continuation of OST 501. QP: OST 531

504. Doctor-Patient Relationship I Fall, 1(0-2)
R: Graduate-professional students in College of Osteopathic Medicine.
Basic principles of interpersonal communication related to physician interaction with patients. QP: OST 5390, ST 531

505. Doctor-Patient Relationship II Spring, 1(0-2)
P: OST 504; Graduate-professional students in College of Osteopathic Medicine.
Skills of interviewing patients for the purposes of gathering information, giving information, and patient motivation. QP: OST 5310, ST 532

511. Systems Biology: Neuromusculoskeletal I Summer, 7/5-6
R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the peripheral neuromusculoskeletal system. Integration of basic science and clinical information with osteopathic manual medicine.

512. Systems Biology: Neuromusculoskeletal II Fall, 7/6-4
P: OST 511; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the neuromusculoskeletal system. Emphasis on the central nervous system. Integration of basic science and clinical information with osteopathic manual medicine. QP: OST 560, OST 553, OST 614, OST 615, OST 616

513. Systems Biology: Neuromusculoskeletal III Fall, 7/5-4
P: OST 512; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
Multidisciplinary approach to the neuromusculoskeletal system. Emphasis on ophthalmology, rheumatology, and orthopedics. Integration of basic science and clinical information with osteopathic manual medicine. QP: OST 560, OST 553, OST 614, OST 616

516. Systems Biology: Behavior I Fall, 3(0-6)
P: OST 511, PTH 563; R: Open only to graduate-professional students in College of Osteopathic Medicine.
A multidisciplinary approach to behavior. Focus on neural structures, development, stress, behavioral and cultural medicine, and medical ethics. QA: PSC 520

517. Systems Biology: Behavior II Spring, 3(0-6)
P: OST 516; R: Open only to graduate-professional students in College of Osteopathic Medicine.
A multidisciplinary approach to behavior. Focus on psychopathology, chronic illness and disability, health policy and terminal care. QP: PSC 520 QA: PSC 521, PED 580

518. Systems Biology: Behavior III Summer, 2(0-3)
P: OST 517; R: Open only to graduate-professional students in College of Osteopathic Medicine.
A multidisciplinary approach to behavior. Focus on substance abuse and child abuse. QA: CMS 515

521. Systems Biology: Hematopoietic Fall, 2(0-4)
P: ANT 551, ANT 563, BCH 521, MPH 522, PTH 542; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the hematopoietic system. Emphasis on hematopoiesis, clotting, and hematopoietic pathologies. Integration of clinical and basic science information. QA: PTH 540, Ost 554

522. Systems Biology: Gastrointestinal Fall, 6(0-9)
P: ANT 551, ANT 562, BCH 521, MPH 522, PTH 563, PSL 501, PTH 542; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the gastrointestinal system emphasizing normal structure and function, and pathologies. Integration of basic science and clinical information. QP: ANT 560, ANT 555, PSL 500A, MPH 521, BCH 509, PTH 520, PTH 502 QA: OST 557

523. Systems Biology: Genitourinary Summer, 6(5-0)
P: ANT 551, ANT 562, BCH 521, MPH 522, PTH 563, PSL 501, PTH 542; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the genitourinary system emphasizing normal structure and function, and pathologies. Integration of basic science and clinical information. QP: ANT 560, ANT 555, PSL 500A, MPH 521, BCH 509, PTH 520, PTH 502 QA: OST 557

524. Systems Biology: Cardiovascular Spring, 7(6-2)
P: ANT 551, ANT 553, BCH 551, MPH 522, PTH 542; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the cardiovascular system emphasizing normal structure and function, and pathologies. Integration of basic science and clinical information. QA: OST 554

525. Systems Biology: Respiratory Spring, 8(4-2)
P: ANT 551, BCH 521, MPH 522, PTH 542, PSL 501; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the respiratory system emphasizing normal structure and function, and pathologies. Integration of basic science and clinical information. QA: ANT 565, PSL 500A, MPH 521, BCH 509, PHT 502, RAD 525 QA: OST 555

536. Systems Biology: Integumentary Summer, 2(0-6)
P: ANT 551, ANT 562, BCH 521, MPH 522, PTH 542; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the integumentary system. Emphasis on diagnosis and treatment of integumentary pathologies. Integration of basic science and clinical information. QP: ANT 550, ANT 555, PSL 500A, MPH 521, BCH 502, PTH 502 QA: OST 555

537. Systems Biology: Female Reproductive Summer, 6(5-0)
P: ANT 551, ANT 562, BCH 521, MPH 522, PTH 542, PSL 501; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to the female reproductive system emphasizing normal structure and function, and pathologies. Integration of basic science and clinical information in obstetrics and gynecology. QP: ANT 550, ANT 555, PSL 500A, MPH 521, BCH 509, PTH 502 QA: OST 559

539. Systems Biology: Endocrinology Fall, 2(3-0)
P: PSL 501; R: Open only to graduate-professional students in College of Osteopathic Medicine. Approval of college.
A multidisciplinary approach to endocrinology. Emphasis on normal endocrine function and the principles of diagnosis and treatment of endocrine disorders. Integration of basic science and clinical information. QA: OST 530

541. Integrative Clinical Correlations I Fall, 1(0-2)
R: Graduate-professional students in College of Osteopathic Medicine.
Application of basic science information, problem-solving, and clinical skills in an integrated clinical case format. Case presentations by students and faculty.

542. Integrative Clinical Correlations II Spring, 1(0-2)
P: OST 541; R: Application of basic science information, problem-solving, and clinical skills in an integrated clinical case format. Case presentations by students and faculty.

543. Integrative Clinical Correlations III Summer, 1(0-2)
P: OST 542; R: Application of basic science information, problem-solving, and clinical skills in an integrated clinical case format. Case presentations by students and faculty.

544. Integrative Clinical Correlations IV Fall, 1(0-2)
P: OST 543; 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.

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.
590. Special Problems
Fall, Spring, Summer. 1 to 4 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.
QA: OST 590

PACKAGING
PKG

School of Packaging
College of Agriculture and Natural Resources

210. Principles of Packaging
Fall, Spring. 3(3.0)
Packaging systems, materials and forms and their relationship to the needs and wants of society.
QP: PKG 210

310. Technical Principles and Dynamics for Packaging
Fall, Spring. 3(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.
QP: PHY 239, MTH 112 or MTH 122 QA: PKG 321, PKG 423

320. Plastic and Glass Packaging
Fall, Spring. 3(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.
QP: PKG 321, CEM 143 QA: PKG 331

325. Paper and Metal Packaging
Fall, Spring. 3(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.
QP: PKG 321, CEM 143 QA: PKG 332

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.
QP: PKG 321 QA: PKG 330

370. Packaging and the Environment
Spring. 3(3-0)
P: CEM 111 completion of Tier I writing requirement. R: Not open to freshmen and sophomores.
QP: CEM 141 QA: PKG 340

415. Packaging Decision Systems
Fall, Spring. 3(3-2)
P: MTH 110 or MTH 115; CPS 160 or CPS 180 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.
QA: PKG 467

432. Packaging Processes
Fall, Spring. 3(3-2)
P: PKG 320, PKG 325. R: Open only to Packaging students.
QP: PKG 331, PKG 332 QA: PKG 430, PKG 425

440. Automation in Packaging
Fall. 3(3-2)
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. Economies. Field trips required.
QP: MTH 112 QA: PKG 465

452. Pharmaceutical Packaging
Fall. 3(3-2)
P: PKG 320 or PKG 325, R: Open only to Packaging majors.
Special requirements for packaging pharmaceuticals and medical devices. Evaluation of packaging systems and packaging procedures.
QP: PKG 351 or PKG 392 QA: PKG 455

455. Food Packaging
Spring. 3(3-1)
P: PKG 350, 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.
QP: PKG 331, PKG 392 QA: PKG 455

460. Distribution Packaging and Performance Testing
Spring. 3(3-2)
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.
QP: PKG 321, PKG 423 QA: PKG 435, PKG 433

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 economics of packaging and metal issues.
QP: EC 201 or EC 202 QA: PKG 429

490. 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.
QP: PKG 331 or PKG 392 QA: PKG 450

495. Packaging Systems Development
Fall, Spring. 3(3-1)
P: PKG 432. R: Open only to seniors or graduate students in Packaging.
Packaging development including selection, design and implementation of package systems for protection, distribution, merchandising, use and disposal.
QP: PKG 429, PKG 425 QA: PKG 428

499. 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.
QP: PKG 331, PKG 392 QA: PKG 424

500. Advanced Packaging Dynamics
Spring. 3(3-2)
P: PKG 310.
QP: PKG 423 QA: PKG 823

815. Permeability and Shelf Life
Spring. 3(3-2)
P: MTH 124 or MTH 132; PKG 320, PKG 325. R: Relationships between the storage life of packaged food and pharmaceutical products and the gas, moisture, and organic vapor permeability of packages in various environments.
QP: PKG 331, PKG 332, MTH 112 QA: PKG 820

817. Instruments for Analysis of Packaging Materials
Fall of even-numbered years. 3(3-2)
P: PKG 320, PKG 325.
QP: PKG 331, PKG 332 QA: PKG 830

825. Polymeric Packaging Materials
Fall. 3(3-2)
P: PKG 320.
Physical and chemical properties of polymeric materials and structures used in packaging. Relationship of properties to performance.
QP: PKG 331 QA: PKG 810

987. 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.
QP: PKG 331, PKG 332

989. Independent Study in Packaging
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.
P: Open only to graduate students in Packaging. Approval of department; application required. Special investigations of unique packaging problems.
QA: PKG 834

989. Selected Topics
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
P: Open only to graduate students in Packaging. Selected topics of interest to graduate packaging students.
QA: PKG 840

989. Master's Thesis Research
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 59 credits in all enrollments for this course.
P: Open only to Master's students in Packaging.
QA: PKG 899

PARK AND RECREATION RESOURCES
PRR

College of Agriculture and Natural Resources

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.
QA: PRR 200

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.
QA: PRR 210