640. Advanced Comprehensive Care
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. Interdepartmental with Human Medicine, Pediatrics and Human Development, Medicine, and Family Practice. Administered by Human Medicine.
P: FMP 608, PHD 600, MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Clinical experience in community-oriented primary care. Emphasis on urban and rural underserved populations.

OSTEOPATHIC MEDICINE OST

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.

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

504. Doctor/Patient Relationship I
Fall. 1(0-2)
R: Graduate-professional students in College of Osteopathic Medicine.
Basics of interpersonal communication related to physician interaction with patients.

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

511. Systems Biology: Neuromusculoskeletal I
Summer. 7(5-4)
P: ANT 551, ANT 552, OST 501, OST 502, PSL 501. 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. 6(4-4)
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.

513. Systems Biology: Neuromusculoskeletal III
Spring. 5(3-4)
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.

516. Systems Biology: Behavior I
Fall. 3(3-0)
P: OST 511, PHM 563. R: Open only to graduate-professional students in College of Osteopathic Medicine.
A multidisciplinary approach to behavior. Focus on normal human development, behavioral and cultural medicine, and medical ethics.

517. Systems Biology: Behavior II
Spring. 2(2-0)
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.

518. Systems Biology: Behavior III
Summer. 2(2-0)
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.

521. Systems Biology: Hematopoietic
Fall. 2(2-0)
P: ANT 551, ANT 563; BCH 521, MIC 522, PHM 563, 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.

522. Systems Biology: Gastrointestinal
Fall. 6(6-0)
P: ANT 551, ANT 562, BCH 521, MIC 522, PHM 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.

523. Systems Biology: Genitourinary
Summer. 5(5-0)
P: ANT 551, ANT 562, MIC 522, PHM 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 urinary system. Emphasis on normal structure and function, and pathologies, of the urinary and male reproductive systems. Integration of basic science and clinical information.

524. Systems Biology: Cardiovascular
Spring. 7(6-2)
P: ANT 551, ANT 553, BCH 551; MIC 522, PHM 563, PSL 551, 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.

525. Systems Biology: Respiratory
Spring. 5(4-2)
P: ANT 551, BCH 521, MIC 522, PHM 563, 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.

526. Systems Biology: Integumentary
Summer. 2(2-0)
P: ANT 551, ANT 562, MIC 522, PHM 563, 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.

527. Systems Biology: Female Reproductive
Summer. 5(5-0)
P: ANT 551, ANT 562, BCH 521, MIC 522, PHM 563, 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.

528. Systems Biology: Growth and Development
Summer. 3(3-0)
P: ANT 551, ANT 562, BCH 521, MIC 522, PHM 563, PSL 501; C: OST 546. R: Open only to graduate-professional students in College of Osteopathic Medicine.
A multidisciplinary approach to growth and development. Emphasis on normal structure and function, and pathologies. Integration of basic science and clinical information.

529. Systems Biology: Endocrinology
Fall. 2(2-0)
P: PSL 501; ANT 553; BCH 551. 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.

535. Principles of Gerontology for Medical Practice
Spring. 3(3-0)
R: Open only to graduate-professional students in the Colleges of Osteopathic and Human Medicine or approval of department.
Lectures, readings, tapes, small group seminars, and home visits related to normal aging epidemiology. Major chronic diseases and other issues of geriatric care.
SA: CMS 522

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(9-2)
P: OST 541.
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.
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.

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.