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

543. Integrative Clinical Correlations III
Summer. 1 credit.
P: OST 542.
Application of basic science information, problem-solving, and clinical skills in an integrated clinical case format. Course presentations by students and faculty.

544. Integrative Clinical Correlations IV
Fall. 1 credit.
P: OST 543. R: Approval of college.
Application of systems biology information, problem-solving, and clinical skills in an integrated clinical case format. Course presentations by students and faculty.

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

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

551. Issues in Minority Health
Fall, Spring, Summer. 3(0-3)
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 the College of Osteopathic Medicine. Approval of college.
Individual study directed by a faculty member on an experimental, theoretical, or applied problem.

OSTEOPATHIC SURGICAL SPECIALTIES

Department of Osteopathic Surgical Specialties
College of Osteopathic Medicine

512. Biostatistics and Epidemiology
Summer. 2(0-2)
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 60 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.

PACKAGING

521. 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 232, PKG 225

532. Packaging with Paper and Paperboard
Fall, Spring. 4(3-2)
P: PKG 101, CEM 145. 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 236

SA: PKG 230

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. SA: PKG 230

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.

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, CFS 101 or CPS 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.

452. Packaging Processes
Fall, Spring. 4(3-2)
P: PKG 322, PKG 323. R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging.

School of Packaging

101. Principles of Packaging
Fall, Spring. 3(3-0)
Packaging systems, materials and forms and their relationship to the needs and wants of society. SA: PKG 210
440. Automation in Packaging
Fall, Spring. 3(2-2)
P: MTH 124.
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.

455. Food Packaging
Spring, 3(3-1)
P: PKG 322 or PKG 323.
Special requirements for packaging pharmaceuticals and medical devices. Evaluation of package systems or P: MTH 124. Special requirements for packaging pharmaceuticals and medical devices. Evaluation of package systems or 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.

460. Distribution Packaging and Performance Testing
Spring, 3(2-2)
P: PKG 410. R: Open only to seniors or graduate students in the School of Packaging. Food packaging systems related to specific products and processes. Product composition; problems and packaging solutions. Shelf life considerations, and packaging lines.

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 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 325, PKG 323. R: Open only to 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.

805. Advanced Packaging Dynamics
Spring, 3(2-2)
P: PKG 410.

815. Permeability and Shlef Life
Spring, 3(3-2)
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-numbered years. 4(3-2)

825. Polymeric Packaging Materials
Fall. 4(3-0)
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-numbered years. 3(3-0)

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 9 credits in all enrollments for this course. R: Open only to Master's students in Packaging.

895. Analytical Solutions to Packaging Design
Spring of odd-numbered years. 3(3-0)
P: PKG 325 R: Open only to graduate students in the College of Agriculture and Natural Resources, College of Engineering, and College of Natural Science. Approval of department; application required. Analytical and quantitative techniques for packaging design and evaluation.