Osteopathic Surgical Specialties—OSS

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. SA: OM 658, OM 656 Develop proficiency in motor skills, aptitudes, comprehension of concepts and principles, patient evaluation, diagnosis, management, and therapy.

OFFICE OF THE PROVOST PRO

Office of the Provost

101 Freshman Seminar
Fall, Spring. 0 to 1 credits. 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) SA: PKG 210 Packaging systems, materials and forms and their relationship to the needs and wants of society.

221 Packaging with Glass and Metal
Fall, Spring. 3(3-0) P:M: (CEM 141 or CEM 151 or LBS 171) and (PHY 231 or PHY 183 or PHY 183A or PHY 183B or PHY 193H or LBS 271) and (PKG 101 or concurrently) SA: PKG 320, PKG 325 Physical and chemical properties of glass and metals and their applications to packaging.

322 Packaging with Paper and Paperboard
Fall, Spring. 4(3-2) P:M: (PKG 221 or concurrently and PKG 101) and (MTH 124 or MTH 132 or LBS 118 or MTH 152H) and (CEM 143 or CEM 251 or CEM 351) and (STT 200 or STT 201 or STT 315 or STT 351) and (STT 200 or STT 201 or STT 315 or STT 351) R: Open only to sophomores or seniors or graduate students in the School of Packaging. SA: PKG 326 Physical and chemical properties of plastics and their relationship to selection, design, manufacture, performance, and evaluation of packages.

330 Package Printing
Fall. 3(3-0) P:M: (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:M: Completion of Tier I writing requirement. RB: (CEM 141 or CEM 151 or LBS 164) R: Not open to freshmen or sophomores.


410 Distribution Packaging Dynamics
Fall, Spring. 3(3-0) P:M: (PKG 322 and PKG 323) R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging. SA: PKG 310 Identification and measurement of hazards in physical distribution. Methods of protection against climate, shock, vibration, and compression.

415 Packaging Decision Systems
Fall, Spring. 3(3-2) P:M: (MTH 116 or LBS 117 or MTH 114 or MTH 124 or MTH 132 or LBS 118 or MTH 152H) RB: (CSE 101 or CSE 131) R: Open only to sophomores 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:M: (PKG 322 and PKG 323) and (PHY 232 or PHY 232B or PHY 232C or LBS 267 or PHY 184) 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:M: (MTH 124 or MTH 132 or LBS 118 or MTH 152H)

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.
Medical Packaging  
Fall. 4(3-2) P:M. (PKG 322 or PKG 323) Special requirements for packaging pharmaceuticals and medical devices. Evaluation of package systems and packaging procedures.

Food Packaging  
Spring. 3(3-1) P:M: (PKG 322 and 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.

Distribution Packaging and Performance Testing  
Spring. 3(2-2) P:M: (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.

Packaging Economics  
Fall. 3(3-0) RB: (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.

Packaging Laws and Regulations  
Spring. 3(3-0) RB: (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.

Packaging Development (W)  
Fall, Spring. 4(4-0) P:M: (PKG 410 and PKG 415 and PKG 432) and completion of Tier I writing requirement. R: Open only to seniors or graduate students in the School of Packaging. Package development including selection, design and implementation of package systems for protection, distribution, merchandising, use and disposal.

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. RB: (PKG 322 and 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.

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.

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.

Professional Internship in Packaging  
Fall, Spring. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: (PKG 322 and PKG 323) R: A student may earn a maximum of 6 credits in all enrollments for any or all of these courses: ABM 493, AEE 493, ANR 493, ANS 493, CSS 493, EEP 493, FIM 493, FW 493, HRT 493, PKG 493, PLP 493, PRR 493, and RD 493. Approval of school; application required. Supervised professional experience in the field of packaging offered through corporations and other businesses throughout the U.S.

Packaging Materials  
Fall. 4(4-0) R: Approval of department. Physical and chemical properties of packaging materials; design, manufacture, performance and evaluation of packages.

Packaging Machinery, Distribution, and Dynamics  
Spring. 3(2-2) R: (PKG 410) Packaging machinery and line operations, statistical process control. Transportation environment. Distribution packaging design and testing.

Advanced Packaging Dynamics  

Permeability and Shelf Life  
Spring. 3(2-2) RB: (MTH 124Q and MTH 132 and PKG 322 and 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.

Instruments for Analysis of Packaging Materials  
Fall of even years. 4(3-2) RB: (PKG 322 and PKG 323) Analytical methods for packaging including spectrophotometry and chromatography. Material identification and characterization. Migration and permeation measurements.

Polymeric Packaging Materials  
Fall, Spring. 4(3-2) RB: (PKG 323) Physical and chemical properties of polymeric materials and structures used in packaging. Relationship of properties to performance.

Stability and Recyclability of Packaging Materials  
Fall of odd years. 3(3-0) RB: (PKG 322 and PKG 323) Interactions between packaging materials and environments: corrosion, degradation, stabilization, and recycling. Impacts of packaging disposal.

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.

Independent Study in Packaging  
Fall, Spring. 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.

Selected Topics  
Fall, Spring. 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.

Master's Thesis Research  
Fall, Spring. 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 the Packaging major. Master's thesis research.

Analytical Solutions to Packaging Design  
Spring of even years. 3(3-0) RB: (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.

Independent Study in Packaging  
Fall, Spring. 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.

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.

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. Doctoral dissertation research.