101  Principles of Packaging (W)
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 (W)
Fall, Spring. 3(3-0) P: (CEM 141 or CEM 151 or LBS 171) and (PHY 231 or PHY 231B or PHY 231C 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.

315  Packaging Decision Systems (W)
Fall, Spring. 3(2-2) P: (MTH 116 or LBS 117 or MTH 114 or MTH 124 or MTH 132 or LBS 118 or MTH 152H) and completion of Tier I writing requirement R: Open to sophomores or juniors or seniors in the School of Packaging. SA: PKG 415
Application of computers to communicate, analyze and solve problems in the management, specification, production, and testing of packaging systems.

322  Packaging with Paper and Paperboard (W)
Fall, Spring. 4(3-2) P: (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 351 or STT 352) R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging. SA: PKG 325
Physical and chemical properties, manufacture, conversion, and use of wood, paper, paperboard, and related components in packaging. Design, use, and evaluation of packages.

323  Packaging with Plastics (W)
Fall, Spring. 4(3-2) P: (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 351 or STT 352) and (MTH 124 or MTH 132 or LBS 118 or MTH 152H) R: Open only to sophomores or juniors or seniors or graduate students in the School of Packaging. SA: PKG 320
Physical and chemical properties of plastics and their relationship to selection, design, manufacture, performance, and evaluation of packages.

330  Package Graphics (W)
Fall, 3(3-0) P: PKG 221 R: Open to sophomores or juniors or seniors in the School of Packaging.
Position and importance of package graphics and structure in consumer packaging and marketing. Printing and decoration methods and technologies for paper, plastic, and other materials. Preparation, production, application and economics of package graphics operations.

370  Packaging and the Environment (W)
Spring, 3(3-0) P: 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 (W)
Fall, Spring. 3(3-0) P: 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.

432  Packaging Processes (W)
Fall, Spring. 4(3-2) P: (PKG 322 and PKG 323 and (PHY 232 or PHY 232B or PHY 232C or LBS 272 or PHY 184 or PHY 182B or PHY 184A or PHY 184B or PHY 294H) 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.

444  Radio Frequency Identification (RFID) for Packaging (W)
Fall, Spring. 3(2-2) P: PKG 322 and PKG 323 or approval of school
Automatic identification tags, codes, and hardware and software for radio frequency identification (RFID). Business applications. Effect of products, materials, packaging, warehousing, supply chain, and quality on radio frequency equipment and readability.

445  Robotics in Packaging (W)
Fall, Spring. 2(2-0) P: MTH 124 or MTH 132 or LBS 118 or MTH 152H SA: PKG 440
Robotic systems. Configurations, components, drive mechanisms, control and feedback, and safety. Line inspection, vision systems, guided vehicle, and storage retrieval systems.

450  Automotive and Industrial Packaging (W)
Fall. 2(2-0) P: MTH 124 or MTH 132 or LB 118 or MTH 152H SA: PKG 440
Returnable and expendable packaging for part shipments to assembly plants; cost justification, service parts packaging, logistics systems, and material handling.

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

455  Food Packaging (W)
Spring. 3(3-1) P: 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.

460  Distribution Packaging and Performance Testing (W)
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. Packages container design and testing.
Packaging—PKG

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

803 Packaging Distribution and Dynamics
Spring. 2(2-0) R: Approval of department. SA: PKG 802 Transportation environment, distribution packaging design and testing.

804 Packaging Processes
Spring. 2(2-0) R: Approval of department. SA: PKG 802 Integrated study of packaging and production operations, quality control, organization and control of machines. Interrelationship of products, packaging, machinery layout and efficiency, and quality issues.

805 Advanced Packaging Dynamics

814 Packaging for Food Safety
Summer. 3 credits. Interdepartmental with Veterinary Medicine. Administered by Veterinary Medicine. RB: Enrollment in graduate program in related field. R: Open to masters students in the Food Safety major and open to graduate students in the Packaging major or approval of college. Current issues in packaging and food safety.

815 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.

817 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.

827 Polymeric Packaging Materials
Fall. 3(3-0) RB: PKG 323 or PKG 801 SA: PKG 825 Physical and chemical properties of polymeric materials and structures used in packaging. Relationship of properties to performance.

828 Processing and Applications of Packaging Plastics
Spring. 3(3-0) Processing of packaging plastics: extrusion, coating, film, containers. Effects of processing variables on morphology and performance.

829 Packaging Plastics Laboratory
Fall. 1(0-2) Not open to students with credit in PKG 825. Structure versus property relationships and plastics processing.

840 Anti-Counterfeit Strategy and Product Protection
Summer. 3(3-0) Interdepartmental with Criminal Justice and Veterinary Medicine. Administered by Veterinary Medicine. R: Open to graduate students in the School of Criminal Justice or in the Food Safety major or approval of department. Theory and applied techniques for anti-counterfeit strategies and product protection for food and consumer products.

875 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.

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 the School of 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 4 credits in all enrollments for this course. R: Open only to graduate students in the School of 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 the Packaging major. Master's thesis research.

985 Analytical Solutions to Packaging Design
Spring of even years. 3(3-0) RB: PKG 801 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.

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 the School of 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 the School of Packaging. Doctoral dissertation research.