545. **Integrative Clinical Correlations V**  
*Spring, 10-2*  
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, 10-2*  
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 the 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.

### 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 152; 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 145, 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 145, 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.  

415. **Packaging Decision Systems**  
*Fall, Spring, 3(2-2)*  
P: MTH 110 or MTH 116; CFS 100 or CFS 130 or CPS 151. 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.  

440. **Automation in Packaging**  
*Fall, Spring, 4(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. 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.