

# PACKAGING SYSTEMS AND DESIGN

## Fall/Spring Semester *Packaging Systems and Design* Introductory Courses

*Students to view the timetable for any of the classes follow:*  
[https://banweb.banner.vt.edu/ssb/prod/HZSKVTSC.P\\_DispatchRequest](https://banweb.banner.vt.edu/ssb/prod/HZSKVTSC.P_DispatchRequest)  
Set the "Subject" box to "SBIO" and click "FIND class sections" for the desired semester.

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To help you explore your interest in the **Department of Sustainable Biomaterials**, we recommend the following courses for the fall and spring semesters, depending on your area of interest.

### Fall Recommendations

#### Principles of Packaging (SBIO 2104)

Packaging systems, materials, and forms and their relationship with the requirements of global societies for the distribution and storage of industrial and consumer products; packaging laws and regulations. Pre: none (3H,3C)

#### Packaging Distribution Systems (SBIO-3224)

Unit load and parcel supply chains. Principles of operation and design of warehouse distribution and fulfillment centers. Principles of operation and design of shipping and distribution systems. The relation between packaging design, pallet design, and unit load design and the operation of industrial consumer goods supply chain. Pre: 2104 (3C, 3H).

#### Packaging Design for Global Distribution Systems (SBIO-4024)

Understanding, identification, and measurement of hazards in physical distribution. Design and analysis of packaging protection against such hazards as shock, vibration, compression, and climate. Includes laboratory tests of shock, vibration and compression, and performance testing of packaging and components. Pre: 3224 (2H, 3L, 3C) The course will cover the major aspects of this multidisciplinary field including introduction about packaging systems, materials, requirements of global societies, environmental aspects of packaging, international marking principles, and laws and regulations. There are no pre-requisites.

### Spring Recommendations

#### Food and Health Care Packaging (3) (SBIO-3214)

Major types of food and health care packaging. Types, materials and properties, fabrication, functions, and packaging life cycle for food and health care packaging systems and design. Sustainable food packaging, medical device packaging, aseptic packaging, package/product interactions, smart active packaging, handling of packages, and modified atmospheric packaging. Pre 2104, 3122 and 3124 (3H, 3C)

#### Packaging Polymers and Production (3) (SBIO-3122)

Unit load and parcel supply chains. Principles of operation and design of warehouse distribution and fulfillment centers. Principles of operation and design of shipping and distribution systems. The relation between packaging design, pallet design, and unit load design and the operation of industrial consumer goods supply chain. Pre: 2104 (3C, 3H).

#### Paper and Paperboard (3) (SBIO-3124)

Detailed study of sustainable packaging materials focusing on sheets, wood, paper, paperboard, biodegradable synthetic and natural polymer as well as glass, metal and metal foils. Provides a comprehensive, hands-on exploration of paper and paperboard packaging Technologies. Includes understanding of packaging materials, manufacturing effects, characteristic test comparisons, die cutting and scoring.

### Wood Pallet, Container & Unit Load Design (3) (SBIO-4224)

Wood pallet design and performance. The design of wood containers and crates. Design and performance of unit loads. Design and performance of unit load equipment, i.e. conveyors, racking systems, automatic guided vehicles, fork trucks. Principles of unit load design. Mechanical interactions between pallets, packaging, and unit load handling equipment. Unit load stabilization techniques, i.e. strapping, stretch wrapping. International phytosanitation regulations of solid wood packaging; Principles of dunnage, blocking and bracing. Pre 3534, 4124, 4315 (2H, 3L, 3C)

For more information, contact us at [sbio@vt.edu](mailto:sbio@vt.edu).