

## **FST-403, Food Packaging 3(2-1)**

### **Educational Objectives:**

This course is aimed to assist students in recognizing and taking into account the key specifications for packaging for a variety of food products that need to have their shelf lives extended. Understanding and using the characteristics of frequently used packaging materials, such as paper, plastic, metal, and glass, is the main focus of this course. In regard to their employment in food-packaging applications, the physical and chemical properties of certain food packaging materials are investigated. This serves as the foundation for choosing and selecting the packaging material for a particular product, along with knowledge of the requirements for compatibility between food products and containers. This course will also discuss contemporary methods for packing meats, beverages, fruits, vegetables, bakery goods, and snack items.

### **Course Outcomes:**

1. Describe the purpose and application of the packaging materials for the various food needs and desires of consumers.
2. Link the characteristics of food packaging to conversion, processing, and packaging technologies as well as consumer demands, such as convenience, safety, and environmental concerns.
3. Quantify and assess the chemical, mechanical, and physical characteristics of packaging.
4. Describe the technology used to create, shape, and print different packaging materials and containers.

### **Theory:**

- Food packaging: introduction, needs, functions, suitability of packaging materials for the purpose,
- Packaging types: primary, secondary, tertiary.
- Packaging materials (paper and paperboard, metal cans and containers, glass, polymers and plastics, closures, flexible packaging laminates, corrugated fiberboard).
- Properties of food packaging: physical, chemical.
- Packaging guidelines: retail containers, shipping containers.
- Factors influencing design and selection of packaging materials: product, distribution, marketing, packaging operation, cost.

- Refilling /recycling, disposal and environmental issues pertaining to food packaging.
- Printing processes: inks, adhesives.
- Filling and labeling.
- Safety and legislation.
- Novel food packaging techniques.
- Food labeling: importance, types, methods.

### **Practicals**

- Identification of packaging materials used for various food products.
- Testing procedures of packing materials, requirements of packaging material for specific foods.
- Canning in metal containers.
- Can testing.
- Determination of shelf-life in various packaging materials.
- Vapor permeability test.
- Determination of film thickness.
- Visit to packaging industries.

### **Recommended Books:**

1. Ebnesajjad, S. 2013. Plastic films in food packaging: materials, technology and applications. The Boulevard Langford Lane, Kidlington, Oxford, UK.
2. Ahmet Yemenicioğlu, 2022, Edible food packaging with natural hydrocolloids and active agents, CRC Press
3. Robertson, G.L. 2013. Food packaging: principles and practice. CRC Press Taylor & Francis, London, UK.
4. Soroka, W. 2009. Fundamentals of packaging technology. Institute of Packaging Professionals, USA