

DEPARTMENT OF HOME SCIENCE

SEMESTER 6

B.Sc. Hons (Food Technology)

DISCIPLINE SPECIFIC CORE COURSE

DSC FT16: Food Packaging

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/Practice		
Food Packaging	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To impart comprehensive overview of the scientific and technical aspects of food packaging.
- To instil knowledge on packaging machinery, systems, testing and regulations of food packaging
- To acquire knowledge of package designing for different food groups

Learning Outcomes

After completing this course, students will be able to:

- Comprehend the overview of scientific and technical aspects of food packaging
- Understand packaging machinery, systems and testing of material and package
- Acquire an insight into food packaging laws and regulations
- Apprehend the requirement of packaging material and package designing of food.

SYLLABUS OF DSC FT16

THEORY

Credits: 3; Hours:45

UNIT I: Introduction to Food Packaging

15 Hours

Unit Description: The unit will provide information on the status and concept of packaging, different packaging materials, their manufacturing process and applications

Subtopics:

- Status of Packaging industry, concept of food packaging
- Flexible packaging material (paper, plastic films, laminate and Aluminum foil)-manufacturing process and applications
- Semi rigid packaging material (paper board, corrugated board and composite carton)-manufacturing process and applications
- Rigid packaging material (metal, glass and plastic containers)-manufacturing process and applications
- Aseptic, active and intelligent packaging systems

UNIT II: Package Designing for Foods

15 Hours

Unit Description: The unit will provide knowledge of factors affecting shelf life of food, packaging system requirement and package designing

Subtopics:

- Fresh horticultural produce
- Animal foods
- Dry and moisture sensitive foods
- Frozen foods
- Fats and oils
- Thermally processed food

UNIT III: Testing of Food Packaging Material and Package

8 Hours

Unit Description: The unit will provide an understanding of the testing and quality evaluation of packaging material and package.

Subtopics:

- Testing procedures for packaging materials- thickness, tensile properties, puncture resistance, bursting strength, seal strength, water vapor permeability, gas transmission rate (CO₂ and O₂ permeability), grease resistance
- Compatibility and shelf-life studies
- Evaluation of transport worthiness of filled packages

UNIT IV: Regulatory Aspects of Food Packaging

7 Hours

Unit Description: The unit will provide knowledge of the food packaging and labelling regulations, environment issues and life cycle analysis (LCA)

Subtopics:

- Food Packaging and Labelling regulations (FSSAI)
- Sustainable and green packaging-environment issues
- LCA definition and methodology, carbon foot print and its significance in packaging material

PRACTICAL

Credit: 1, Hours: 30

1. Identification of plastic using floatation method.

2. Demonstration of the operation of Shrink wrapping/Vacuum packaging/Form Fill and Seal packaging machinery
3. Testing of packaging material and package: COBB / tensile strength /bursting strength / tear resistance/ drop/ leakage
4. Testing of thermal shock resistance of glass.
5. Study of water vapor transmission rate of packaging material.
6. Development of biodegradable film.
7. Design a package label
8. Study porosity of tinplate.
9. Examination of can double seam

Essential Readings

- Saha, N. C. (2022). *Food Packaging: Materials, Techniques and Environmental Issues*. Springer Nature.
- Robertson, G.L. (2012) *Food Packaging – Principles and Practice*. CRC Press Taylor and Francis Group
- Coles, R., McDowell, D.& Kirwan, MJ. (2003). *Food Packaging Technology*. Blackwell publication
- Paine, F.A. and Paine, H.Y. (1992). *A Handbook of Food Packaging*. Blackie Academic and Professional.

Suggested Readings

- Daniel, Lu. and Wong, D. (Eds). (2017). *Materials for Advanced Packaging*. Springer
- Garg, M., Meena, P.L., Sadhu, S.D. and Alam, T. (2020) *Food Packaging: A Practical Guide*, The Computype Media (Publishing Division), ISBN No.614027934-9

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.