19FT213 PRINCIPLES OF FOOD PROCESSING AND PRESERVATION

Hours Per Week :

L	T	P	C
3	-	2	4

Total Hours :

L	T	P
45	-	30

WA/RA	SSH/HSH	CS	SA	S	BS
25	50	-	-	5	5

Source:
https://www.newportnaturalhealth.com/2017/04/best-food-preservation-techniques/

COURSE DESCRIPTION AND OBJECTIVES:

This course deals with the basic principles involved in food preservation methods. The objective of this course is to provide students with the knowledge of basic food preservation principles and processing methods to control food spoilage and deterioration.

COURSE/ OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes	POs
1	Apply various physical, chemical and biological methods of food preservation to extend shelf life of food.	1
2	Use the principle of low temperature preservation to avoid food spoilage.	2, 3
3	Investigate the impact of various types of thermal processing on food preservation and analyse thermal sterilization kinetics.	4
4	Formulate thermal process condition to attain sterility and ensure safe food.	4
5	Apply the knowledge of various non-thermal processing techniques for food preservation.	5
6	Identify chemical preservatives and their safe usage limit.	2

SKILLS:

- ✓ *Identify appropriate processing and preservation method for a given food.*
- ✓ *Identify and suggest suitable food additive for a given food product.*
- ✓ *Troubleshoot problems related to food safety during food processing.*

UNIT - I **L-9**

INTRODUCTION : Scope of food processing, importance and need of food preservation; Historical developments; Principles of food preservation - preservation by physical methods, chemical methods and biological methods; Water activity vs Food stability.

UNIT - II **L-9**

FOOD PRESERVATION BY LOW TEMPERATURE : Processing; Mechanism; Preservation by low temperature-refrigeration, chilling, freezing, freezing curve, changes occurring during freezing, types of freezing, thawing and its effects.

UNIT - III **L-9**

FOOD PRESERVATION BY HIGH TEMPERATURE : Different thermal operations-sterilization, pasteurization, blanching, and UHT processing; Canning-different unit operations involved, canning equipment, types of canning containers; Thermal destruction of Microorganisms – D value, F- value, Z-value.

UNIT - IV **L-9**

FOOD PRESERVATION BY NON-THERMAL METHODS: Non-thermal treatments - irradiation, microwave, dielectric heating, high pressure processing, pulsed electric field, hurdle technology, ohmic heating, novel processing.

UNIT - V **L-9**

CHEMICAL FOOD PRESERVATION : Types of chemical preservatives used to preserve the food and its functions; Permissible limits and safety aspects of using chemical preservative.

TEXTBOOKS:

1. Physical Principles of Food Preservation: Revised and Expanded, 2nd edition, Marcus Karel, Daryl B. Lund, 2008.
2. J. P. Fellows, “Food Processing Technology, Principles and Practices”, 2nd edition, Wood Head Publishing, 1999.
3. N. N. Potter and J. H. Hotchkiss, “Food Science,” 5th edition, Springer, 1998.

REFERENCE BOOKS:

1. H. Ramaswamy, M. Marcotte, “ Food Processing: Principles and Applications” Hardcover, Import, 2005.
2. B. Lal, G. B. Siddappa and G. N. Tandon, “Preservation of Fruits and Vegetables,” 2nd edition, ICAR Publication, 1967.