

Government Degree College (Autonomous) Baramulla

SEMESTER- 3rd

MAJOR/MINOR

Subject: Food Science and Technology

Title: Fruit and Vegetable Processing Technology

Code: FST322M

Credits: (4 + 2) Theory: 04 Practical: 02

Contact Hours: 64 T + 64 L

Part-1 THEORY (4 CREDITS)

Course Objectives:

- To acquaint the students with nutritional importance of fruits and vegetables.
- To introduce students to the principles of preservation fruits and vegetables.
- To learn about the methods of fruit and vegetable preservation.

Learning outcomes:

After completing the course, the students will be able to:

- Understand various methods of preservation.
- Learning to develop processed from fruits and vegetable products.
- Know the about the post-harvest manage of fruits and vegetables.

Unit – 1

(16 HOURS)

- Fruits and Vegetables: Definition, classification and production status.
- Nutritional significance of fruits and vegetables.
- Fruit maturity and ripening indices.
- Post-harvest loses in fruits and vegetables.
- Post-harvest physiology of fruits and vegetables, respiration and transpiration.

Unit-2

(16 HOURS)

- Handling of horticultural produce, pre-cooling and transport of horticultural commodities.
- Storage of fruits and vegetables
- Types of storage: Low cost and high cost storage systems
- Controlled atmospheric storage: Introduction, construction and control of gases.
- Zero energy cool chamber.
- Cold chain management.

Unit –3

(16 HOURS)

- Preservation of fruits and vegetables: Brief history and scope
- Preservation by heat: Canning and bottling
- Preservation by drying, Types of dryers.
- Freezing drying of fruits & vegetables
- Preservation by chemicals: Class-I and Class-II

Government Degree College (Autonomous) Baramulla

- Preservation by fermentation, types of fermentation, pickling

Unit – 4

(16 HOURS)

- Requirements for a fruit and vegetable based processing plant.
- Processed products of fruits and vegetables - Jam, jelly, marmalade, juice, nectar, candy, sauce and chutney.
- Specifications of various fruit and vegetable products as per FSSAI 2006
- Tomato products–Puree, ketchup and chutney

Part- 2: Laboratory course (Credits: 02)

- Quality evaluation of fruits and vegetables
- Preparation of fruit jam and preserves
- Preparation of tomato sauce/ketchup
- Preparation of fruit and vegetable pickle
- Preparation and preservation of fruit juice
- Preparation of apple chutney and bars
- Preparation of syrup & brine solutions
- Cut out analysis of canned fruits & vegetables
- Project formulation for a fruit/vegetable/cereal based processing plant
- Visit to a fruit and vegetable processing plant.

Books recommended

1. Fruits vegetable preservation by Girdhari Lal, Siddhapa &Tandon
2. Fruit & Vegetable Preservation by Srivastra
3. Post-Harvest Technology of Fruits & Vegetables-L.R. Verma & V.K. Joshi
4. Food Processing Technology by P.J. Fellows
5. The Technology of Food Preservation by Desrosier
6. Food Science by N.N. Potter

Government Degree College (Autonomous), Baramulla

SEMESTER -3rd

SKILL ENHANCEMENT COURSE

Sub: Food Science and Technology

Title: Food Processing and Value Addition-III
CREDITS: 04 THEORY: 02 PRACTICAL: 02

Code: FST322S
CONTACT HOURS: 64

Course Objective/ Learning outcome

- *To introduce students to cereals and millets processing.*
- *To acquaint the students with manufacturing of cereal products.*
- *To familiarize the students with Processing of meat and dairy products.*

UNIT I

(16 hours)

- Nutritional significance of cereals and millets
- Raw materials for baking
- Bread making and its types
- Cookies, Biscuits and Cakes
- Confectionary products
- Quality evaluation of bakery products.

UNITII

(16 hours)

- Composition and nutritive value of meat
- Preservation of meat by curing, drying and smoking
- Traditional meat products of Jammu & Kashmir
- Quality evaluation of meat and meat products
- Composition and nutritive value of milk.
- Fluid milk processing
- Introduction to milk products

Government Degree College (Autonomous), Baramulla

Part-2: Laboratory course (Credits: 02)

Course Objectives:

- *To preserve fruits and vegetables by different methods of preservation.*
- *To prepare value added products of fruits, vegetables, meat and milk.*

Learning outcomes:

- *Accomplish the Preservation and safety of food products.*
- *Accomplish the preparation of value added products.*

1. Preparation of Bread, Biscuit and Cookies
2. Quality evaluation of raw materials for baking
3. Determination of fat content of milk
4. Platform tests of milk
5. Preparation of fermented milk products.
6. Preparation of traditional meat products.
7. Slaughtering and dressing of poultry birds

REFERENCES

1. Kent's Cereal Technology by Kent
2. Basic Baking by S. C. Dubey
3. Outlines of Dairy Technology by S. K. De
4. Milk and dairy Product Technology by Edger Spreer.
5. Dairy Chemistry by H.H. Sommer
6. Lawre. R. A. & Ledward, D. A. (2006). Lawres Meat Science 7th Ed. Woodhead Publishing Company, Cambridge, England.
7. Principles of Meat Science by Forest.
8. Developments in Meat Science by Lawrie.
9. Processed Meats by Pearsons.

Government Degree College Baramulla

SEMESTER -1st - 3rd

MULTIDISCIPLINARY

Subject: Food Science and Technology

Title: Food Preservation

FST022I

Credits: Theory: 03

Contact Hours: 48

Course Objectives:

- *To introduce the students to basic concepts of foods, their classification and quality parameters.*
- *To acquaint the students with various hazards associated with foods.*
- *To acquaint the students with various methods of food preservation.*

Learning outcome:

After completing the course, the students will be able to:

- 1. Apply the scientific method to study the characteristics of foods and the problems associated thereof.*
- 2. Apply different techniques of preservation for shelf-life extension of foods.*

Unit I: Introduction to Foods

(16 hours)

- Introduction to Food groups – Cereals, legumes, fruits, vegetables, milk, meat, spices, and plantation crops.
- Classification of foods on basis of pH, origin and shelf-life.
- Hazards in foods – physical, chemical and microbiological
- Different types of food spoilage – physical, biochemical and microbiological.
- Food quality – definition, consumer concept of quality.
- Quality control laboratory

Unit II: Thermal processing

(16 hours)

- High temperature processing – Pasteurization and Sterilization
- Canning – Principle and steps involved
- Low temperature processing – Refrigeration and Freezing.
- Different types of freezers, cryogenic freezers and thawing.

Government Degree College Baramulla

Unit III: Non-thermal processing

(16 hours)

- Preservation of foods by sugar and salt
- Fermentation – principle, types and advantages
- Packaging of foods – Definition and functions
- Modified atmospheric packaging
- Controlled atmosphere storage

Books Recommended:

1. Food Science by N. N. Potter
2. Food: Facts and Principles by Shakuntala Manay
3. Food Chemistry by O. R. Fennema.
4. Food Processing Technology by P.J. Fellows
5. Physical principles of Food Preservation by M. Karel, O.R. Fenema and D.B. Lurd.
6. Food Packaging Science and Technology by D. S. Lee, K. L. Yam and L. Piergiovanni