

**Govt. Degree College Baramulla
(Autonomous)**

SEMESTER 5th

COURSE - MAJOR/MINOR

Subject: Industrial Fish and Fisheries

Title: FISH PROCESSING

Code: IFF22M501

Credit: (4+2) Theory: 04; Practical: 02 Contact Hours: 60 (Theory) + 30 (Practicals)

Course Objectives:

- *To introduce students with proximate composition of fresh, processed and preserved fish and concept of fish spoilage.*
- *To provide knowledge about the basic principles of fish preservations*
- *To understand the procedure and importance of different methods of fish processing ranging from traditional to advanced methods.*

Learning outcomes:

On completion of the course, the student should be able to:

- *Understand the methods of fish preservations and processing.*
- *Understand the importance of value added fish products and fish by-products*

Unit I: Basics of Fish Processing

16 Contact hours

- 1.1 Proximate composition of fish, Factors affecting the proximate composition of fish.
- 1.2 Fish spoilage: post mortem changes, rigor mortis, rancidity and autolysis
- 1.3 Principle and importance of fish preservation
- 1.4 Nutritional value of preserved and processed fish.

Unit II: Fish Processing Methods

16 Contact hours

- 2.1. Traditional methods of fish preservation:
 - (a) Sun drying,
 - (b) Salt curing - dry and wet salting
 - (c) Pickling
 - (d) Smoking
- 2.2. Advanced methods of fish preservation:
 - (a) Chilling
 - (b) Freezing
 - (c) Canning
 - (d) Freeze drying

Unit III: Value added Fish products

16 Contact hours

- 3.1. Fish meal: Preparation and uses
- 3.2. Fish oil: Extraction and uses
- 3.3. Fish pickles, Fish cutlets, Fish wafers, Fish protein concentrate (FPC), Fish flour
- 3.4. Fish Hydrolysate

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Unit IV: Fish by-products

16 Contact hours

- 4.1. Fish glue, Isinglass
- 4.2. Chitosan: Extraction and uses
- 4.3. Shark fins, Fish leather, Fish silage, Fish manure, Squalene
- 4.4. Pearl essence

Part 2: Laboratory Course (2 Credits)

Course Objectives:

- *To study the procedure for estimation of proximate composition of fish.*
- *To study the methods of preservation of fish*
- *To demonstrate the procedure of preparation of different fish products and by-products*

Learning outcomes:

On completion of the course, the student should be able to:

- *Prepare different fish products and by-products*
 - *Preserve and process the fish by different traditional and advanced methods*
1. Study of proximate composition of fish: protein, lipid, ash and moisture
 2. Preparation and preservation of various fish products by traditional methods
 3. Practice and preservation of various fish products by advanced methods
 4. Preparation of different fish products
 - a. Fish cutlet
 - b. Fish balls
 - c. Fish meal
 - d. Fish wafers
 5. Visit to different fish processing units
 6. Field visit to observe fish drying, fish smoking and fish pickling

Suggested Readings:

1. K. K. Balachandran. Post Harvest Technology of Fish and Fish Products
2. K Gopakumar .Textbook of Fish Processing Technology.
3. Hall GM. (Ed). 1992. Fish Processing Technology. Blackie.
4. Hersom AC & Hulland ED. 1980. Canned Foods. Chemical Publ. Co.
5. Larousse J & Brown BE. 1997. Food Canning Technology. Wiley VCH.
6. Venugopal V. 2006. Seafood Processing. Taylor & Francis.
7. Warne D. 1988. Manual on Fish Canning. FAO Fisheries Tech. Paper 285. 6. Zeathen P. 1984. Thermal Processing and Quality of Foods. Elsevier.