

BIHAR ANIMAL SCIENCES UNIVERSITY, PATNA
COLLEGE OF FISHERIES, KISHANGANJ

B.F.Sc. Programme

DEPARTMENT OF FISH PROCESSING TECHNOLOGY

LECTURE PLAN FOR THE SEMESTER

Course Code: FPT-221 (1+1)

Course Title: Fish Canning Technology

Credit Hours: 1 (Theory) + 1 (Practical)

Course Instructor: Dr. Abhishek Thakur

Designation: Assistant Professor

Department: Fish Processing Technology

A. Theory Lecture Plan

Week No.	Topics to Be Covered
1	Introduction to canning technology, historical development, importance, advantages, and limitations of canning compared with other preservation methods.
2	Raw materials and subsidiary materials used in canning. Characteristics and suitability of commercially important finfish, shellfish, and cephalopods.
3	Classification of foods based on pH; low-acid, acid, and acidified foods; commercial sterility, absolute sterility, pasteurization, and sterilization.
4	General canning process and its flow diagram. Preparation of raw materials, washing, dressing, cutting, and pretreatment.
5	Packing, filling media, pre-cooking, exhausting, can seaming, and their significance in fish canning.
6	Retorting, cooling, labelling, storage, and handling of canned fish products. Introduction to HTST processing and aseptic canning.
7	Principles of thermal processing and heat transfer mechanisms: conduction, convection, and factors affecting heat transfer in canned foods.
8	Heat resistance of microorganisms; thermal death time (TDT), D-value, and Z-value.
9	F-value, F_0 value, lethal rate, and their significance in thermal process evaluation.
10	Heat penetration studies, cold spot determination, and the significance of cold spots in canned foods. Conduction-type and convection-type packs.
11	Thermal process calculations using general and graphical methods. Estimation and interpretation of F_0 values.

12	Commercial sterilization, the 12-D concept, process lethality, and factors affecting the adequacy of thermal processing.
13	Canning of commercially important finfish: raw material selection, preparation, packing media, processing, and quality characteristics.
14	Canning of shellfish and cephalopods: preparation, processing requirements, and quality considerations.
15	Spoilage of canned foods: types, causes, microbial spoilage, chemical spoilage, container-related defects, and preventive measures.
16	Quality standards for canned fish, quality assurance, and examination of canned products.
17	Types of packaging materials used for canned foods: tinplate, tin-free steel (TFS), aluminium cans, and retortable pouches.
18	Cannery plant layout, hygiene, sanitation, waste disposal, and good manufacturing practices in fish canning industries.
19	Revision of thermal processing principles, numerical problems, canning operations, packaging materials, and spoilage of canned foods.
20	Comprehensive revision, discussion of important questions, and preparation for the end-semester theory examination.

B. Practical Lecture Plan

Week No.	Practical/Experiment Exercise
1	Introduction to canning equipment and study of the layout of a fish cannery.
2	Identification and study of different types of cans used in fish canning.
3	Familiarization with packaging materials and containers used for fish products, including retortable pouches.
4	Preparation and pretreatment of fish raw materials for canning, including washing, dressing, and cutting.
5	Demonstration of packing, filling, pre-cooking, and exhausting operations in fish canning.
6	Demonstration and study of can-seaming equipment and retorting equipment.
7	Study of heat transfer mechanisms and factors affecting heat penetration in canned foods.
8	Study of heat resistance of bacteria and interpretation of thermal death parameters using laboratory or demonstration data.
9	Numerical exercises on D-value, Z-value, TDT, F-value, F_0 value, and lethal rate.

10	Demonstration of heat penetration studies and identification of the cold spot in canned food.
11	Thermal process calculation by the general method using suitable time-temperature data.
12	Numerical exercises on thermal process lethality and interpretation of the 12-D concept.
13	Canning of a commercially important finfish species, subject to raw material and equipment availability.
14	Demonstration or practical preparation of canned shellfish or cephalopods, depending on availability.
15	Study of spoilage conditions in canned products and identification of common defects.
16	Cut-out test of canned fish products and recording of observations.
17	Examination of can double seams and identification of common seam defects.
18	Study of canning plant hygiene, sanitation, waste disposal, and quality assurance procedures.
19	Practical revision: thermal process calculations, interpretation of results, and review of canned product quality.
20	Practical revision, laboratory record verification, and viva voce preparation.
