

## FT308 PROCESSING OF MEAT AND POULTRY PRODUCTS (ELECTIVE - II)

### **Course Description & Objectives:**

*This course will impart knowledge about the various technologies for meat and poultry processing.*

*By the end of the course students will be able to understand various meat processing technology and equipment, Quality standards for meat and poultry products and handling and storage of meat and poultry products*

### **Course Outcomes:**

*By the end of the course students will be able to understand*

1. Sources and development of meat and poultry industries in India and importance in national economy.
2. Methods of slaughter - Stunning techniques - mechanical, electrical, chemical methods; Ritual/religious methods of slaughter - Jewish, Halal, Jhatka and Spanish methods.
3. Principles of various meat preservation techniques.
4. Safety standards in meat industry - Meat food product order - HACCP-ISO-9000 standards. Meat plant sanitation and hygiene.
5. Composition, spoilage, preservation and maintenance of eggs of eggs.

### **UNIT I-Introduction to meat and poultry**

Introduction: Sources and development of meat and poultry industries in India and importance of meat and meat industries in national economy. Structure of meat muscle-microscopic view - Myofibrils - Actin - Myosin - Contraction. Chemical composition of meat muscle - muscle proteins - fats - carbohydrates - connective tissue-nutritive value of meat. Pre-slaughter care-requirements - different modes of transport of meat animal. Ante-mortem examination of meat animal; principles and judgements. Slaughtering of meat: Scientific methods of slaughter - Stunning techniques - mechanical, electrical, chemical methods; Ritual/religious methods of

slaughter - Jewish, Halal, Jhatka and Spanish methods. Dressing and cutting of carcass in sheep, pig and buffalo.

#### **UNIT II-Post mortem changes in meat**

Post mortem examination of carcass and principles of judgement. Grading of meat and packaging of meat Postmortem changes in meat - Rigormortis - Biochemical changes associated with Rigormortis which lead to the conversion of muscle to meat - Factors - Ph decline, resolution of rigor- autolytic proteolytic enzymes - microbial invasion and loss of structural integrity. Meat quality parameters - Meat color - Water holding capacity - Marbling - Quantum of connective tissue - firmness and storage conditions. Palatability characters of meat and factors affecting meat quality. Methods of tenderization - aging, enzymes and curing - factors affecting tenderness

#### **UNIT III-Principles of various meat preservation techniques**

Spoilage of meat - Sources of contamination, growth of microorganisms – Deteriorative changes in meat - Identification of spoilage. Principles of various meat preservation techniques - Chilling - Freezing- Curing – Smoking - Thermal processing - canning - Dehydration - Irradiation and Hurdle concept. Processing technology of meat products - Basic processing - Comminution – Mechanical deboning - Emulsification - Meat emulsion - methods of stabilization of meat emulsion meat extension - preblending - Hot processing - Cooking Techniques. Cured meats - Process of curing, methods of curing - commercial processing of ham and Bacon - Sausage processing - Production of Intermediate moisture and shelf stable meat products.

#### **UNIT IV-Safety and quality standards in meat and poultry industry**

Restructured meat products - tumbling - massaging - chunking - forming - tearing and forming. Value added meat products like luncheon meats - meat patties - meat loaves - meat balls and meat nuggets Safety standards in meat industry - Meat food product order - HACCP-ISO-9000 standards. Meat plant sanitation and hygiene. Structure of egg - different parts of an egg. Composition of egg - Proteins of Egg white, Yolk proteins and lipids and nutritive value of egg. Egg quality characteristics - Internal Quality - Haugh's unit - Terms indicating defective quality and Egg grading Ante mortem and post mortem examination of poultry birds - principles of judgement.

#### **UNIT V-Spoilage and Preservation of eggs**

Preslaughter care, handling, Transport and dressing of a poultry bird Cuts of poultry bird and Indian Standards of a dressed chicken. Microbial spoilage of eggs - types of spoilage in eggs - indications – organismscausing spoilage. Preservation and maintenance of eggs - Preservation of shell eggs - Egg cleaning – Oil Treatment - Cold storage - Thermo stabilization - Immersion in liquids. Preservation of Albumin and yolk-powder production. Preservation of poultry meat - Chilling, Freezing, Curing, Smoking, Dehydration, Canning and Radiation. Processing of value added products - Chicken barbecue, chicken sausage, meat balls and Pickling

**TEXT BOOKS:**

1. Sharma, B.D. Meat and Meat Products Technology (Including Poultry Products Technology),Jaypee Brothers Medical Publishers Pvt. Ltd, New Delhi, 2000.
2. NIIR Board of Consultants .Preservation of Meat and Poultry. Asia Pacific Business Press Inc,Delhi, 2004.

**REFERENCES:**

1. Lawrie R.A. Meat Science, Paragoan Press, Oxford and New York, 1999.
2. Sharma, B.D. Modern Abattoir Practices and Animal By-Products Technology. Jaypee BrothersMedical Publishers Pvt. Ltd, New Delhi.
3. Meat Processing and Meat Products Hand Book. EIRI, Delhi, 2002.
4. William J. Stadel. Egg Science. CBS Publishers, New Delhi, 2001.