# Department of B.Voc

# Morigaon College (Auto)

# Syllabus

**Programme**: Bachelor of Vocation (B.Voc)

**Trade Name**: Food Processing and Quality Management/ Food Processing Technology/ Food Processing (Agri)

**Programme Outcome:**

1. To provide judicious mix of skills relating to profession and appropriate content of general education
2. To ensure that the students have adequate knowledge and skills , so that they are ready to work at each exit point of the programme
3. To provide flexibility to the students by means of predefined entry and multiple exit points
4. To integrate NSQF in order to enhance employability of the graduates and meet industry requirements

# List of core papers

## (1st and 2nd semester)

| Sl No | Semester | Paper Name |
|---|---|---|
| 01 | I | Food plant sanitation and hygiene management |
| 02 | | Food Processing –I |
| 03 | | Bioresources in Food Processing |
| 04 | II | Food Quality and Regulation-I |
| 05 | | Food Processing-II |
| 06 | | Food plant layout and utilities |

## Semester I

Core Paper-1

Course Code: FPR-CORE-MC-0100103

### Food Plant Sanitation and Hygiene Management

**Course objective**

- To impart theoretical and practical knowledge of various activities for cleaning and sanitation in food plants
- To enable the student to supervise hygiene practices in food plants
- To enable application of necessary health and safety practices to ensure workplace health and safety
- To impart the necessary background to work effectively with others
- To train students to use resources at the workplace optimally

**Course Outcome**

- Enable the student to be 'Hygiene Coordinator'

- Increased employability
- Ability to monitor and supervise the cleaning and sanitation tasks.
- Understanding of basic food safety standards.
- Managerial skill to deal with accidents and emergencies.
- Effective work in an organization.
- Thorough understanding of waste management / recycling

**Unit 1: Food Safety and Hazards** **12 Hours**

Concept of Food Safety, Importance of Guidelines on Prevention of Food Safety Hazards, Concept of food hazards, prevention of food hazards. Importance of identifying and preventing food safety hazards, Food Safety Hazards and Quality Defects: Physical Hazards, Chemical Hazards, Biological Hazards, Allergens

**Unit 2: Sanitation and Health** **6 Hours**

Definition and importance of sanitation, Application of sanitation in food industry and food service establishment, Microorganisms and their relationship to sanitation

**Unit 3: Hygiene and Sanitation in Food Plant and Food Service Establishments 8 Hours**

Sanitation in Food Plant and Food business operator Establishments: Cleaning Agents, Disinfectants or Sanitizers, Waste Disposal, Pest and Rodent Control, General Principles of Food Hygiene, Hygiene Requirements for Licensing and Sale, Health Status of Food Handlers, Personal Hygiene, Facilities to Employees

**Unit 4: Sanitary aspects of water supply** **5 Hours**

Physicochemical properties of water, Source of water, Quality of water, Water supply and its uses in food industries, Purification and disinfection of water

**Unit 5: Food Handling** **5 Hours**

Receiving and Inspecting Food Deliveries, Storage Space, Dry Storage, Low Temperature Storage, Store Room Management

**Unit 6: Food Plant Waste Management System** **6 Hours**

Energy Efficiency and Conservation, Water Conservation, Byproduct Utilization, Treatment of Solid Wastes, Treatment of Liquid Wastes.

**Practicals**

1. Data Collection and Hazard Identification (Physical, Chemical and Biological)
2. Hygienic Requirements for Manufacturing Premises
3. Practice of sanitation at workplace
4. GAP analysis
5. Preparation of different checklist
6. Study on different methods of energy conservation
7. Study on CIP and COP
8. Methods of inspection of food at different points in a manufacturing unit
9. Study on utilization of byproducts
10. Study on different methods of waste

**Suggested Readings**


1. Food Safety and standards Act 2006, Rules 2011, Regulations, 2011, 10th Edition, ILBCO India, Indian Law Book Company, 2013.
2. Principles of Food Sanitation. N. G. Marriott, Springer, 5th Edition, 2006.
3. Hobbs Food Poisoning and Food Hygiene. Jim Mclauchlin and Christine Little (Eds), 7th Edition, 2007.
4. Food Plant Sanitation: design maintenance, and good manufacturing practices, by

Michael M. Cramer,CRC Press

5. Mukundan, M.K. and Balasubramaniam, S. 2007. Seafood Quality Assurance.CIFT Training Manual 1

6. Gopakumar, K. 2002. Textbook on Fish Processing Technology, Indian Councilof Agricultural Research (ICAR), New Delhi

7. **http://egyankosh.ac.in//handle/123456789/10012**

Core Paper-2

Course Code: FPR-CORE-MC-0100203

## Food Processing-I

**Course objective**

- To enable the need of food processing, understand the challenges faced by the food processing units and know about the various sectors and sub sectors of food processing.
- To outline about the career opportunities in food processing
- To impart the idea of unit operation in food processing
- To teach the basic industrial mathematics required in a food processing industry
- To understand the basic concept of different machineries required in food industry and basic line of different food industries
- To acquaint with the basics of food quality parameters and understand the concept of HACCP
- To impart the idea of entrepreneurship and motivate for self employability

**Course Outcome**

- Understanding the need of food processing
- Learning about the basic industrial mathematics
- Awareness about food safety and quality control

- Ability to design the basic concept of a processing plant
- Developing technical skill by thorough learning about the different types of machineries used in a food industry
- Motivating to become an entrepreneur

***Unit 1: Basics of Industrial Food Processing*** **6 Hours**

Food spoilage and causes, food processing, aims of food processing, historical developments in food processing, advantages and disadvantages of food processing, traditional and modern methods of food processing, various sectors and sub sectors of the food processing industry, the basic problems faced by the food processing industry, relationship with other disciplines, career opportunities, significance of food processing and technology, unit operations and techniques used in unit operations

***Unit 2: Basic industrial mathematics*** **5 Hours**

Ingredient formulation, Chemical concentration, Normality, Molarity, ppm, ppb calculation

***Unit 3: Basics of food safety and quality control*** **8 Hours**

Definition of food quality, quality attributes of food, subjective and objective indices for quality, factors affecting quality in food chain, effects of intrinsic and extrinsic properties on quality, HACCP

***Unit 4: Designing of a Food Industry*** **8 Hours**

Introduction to food plant layout and design, location and site selection for food plant, basic production lines of different food industries, bakery industry, dairy industry, fruits and vegetables processing, meat processing

***Unit 5: Introduction to Food Processing Machineries*** **7 Hours**

Basics concepts of food processing machinery, mills, ovens, boilers, freezers, mixers and kneaders, size reduction machineries, pasteurizer, packaging equipment

***Unit 6: Concept of entrepreneurship*** **6 Hours**

Entrepreneurship, nature and characteristics of entrepreneurship, need for entrepreneurship, entrepreneur characteristics of entrepreneur, becoming an entrepreneur, benefits of self-employment, prospects of entrepreneurship citing examples from North Eastern Region.

**Practicals**

1. Basic Laboratory rules
2. Identification of laboratory glasswares and accessories
3. Identification of different instruments and machineries with their working principles
4. Instrument handling procedures.
5. Construction, operation and utility of food processing laboratory equipments.
6. Preparation of standard solutions- normality, molarity, ppm, ppb and percent calculation
7. Identification of entrepreneurial skills
8. Visit to a food service establishment to study its planning and functioning

**Suggested Readings**

1. Srilakshmi,B, Food Science (3rd edition), New age International (p) limited Publisher , New Delhi, 2003

2. Fellows, Food process technology: Principles and Technology, CRC publications.

3. Pierson, M. D. (2012). HACCP: principles and applications. Springer Science & Business Media.

Core Paper 3
Course Code: FPR-CORE-MC-0100302

# Bio resources in Food Processing

**Course objective**

- To impart the concept of raw materials in a Food Plant, Raw materials may be primary and processed.
- To impart theoretic and practical knowledge of various bioresources which are used as bulk raw materials in food processing plants. These raw materials may be of plant or animal origin.
- To introduce the concept of nutraceutricals and functional foods.
- To ready the student to understand the role of micro-organisms in Food Processing.

**Course Outcome**

- Understanding of the selection criteria for raw materials to be used in Food Processing
- Awareness of the health benefits of different traditional foods.
- Ability of sampling and management of raw materials at different points in a Food Processing Unit
- Awareness of value-addition in foods and importance of underutilized bio-resources for its utilization in near future for product formulation.

## *Unit 1: Introduction to Bio resources* **6 Hours**

Bio-resources, types of bio-resources, bio-resources in food processing, concept of raw materials and ingredients, underutilized bio resources

## *Unit 2: Plant Based Bio resources in Food Processing* **8 Hours**

The concept of primary processing, different plant-based bio resources- raw fruits and vegetables, cereals , grains, pulses , oil seeds , tea, coffee, spices and their quality standards, selection of plant-based raw materials for preparation of various products and their properties,

concept of nutraceuticals and functional foods.

***Unit 3: Animal Based Bio resources in Food Processing*** **12 Hours**

Different types-meat, fish, poultry, egg, milk and their quality standards, selection of animal based raw materials for preparation of various products and their properties

***Unit 4: Micro-organisms as Bioresources in Food Processing*** **6 Hours**

Concept of probiobiotic and prebiotic, industrially important micro-organisms, beneficial role of micro-organisms

***Unit 5: Raw Materials for Food Processing*** **8 Hours**

Raw materials quality inspection in food industry, quality requirements of raw materials, concept of sampling , concept of FIFO and FEFO, management of raw materials in food industry

**Suggested Readings**

1. Potter, N.N. and Hotchkiss, J.H. 2007. Food science. The AVI Pub. Co. Inc., Westport, Connecticut,USA.

2. Bawa. A.S, O.P Chauhan etal. Food Science. New India Publishing agency, 2013