

Morigaon College(Autonomous)

Morigaon: Assam



SYLLABUS

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FYUGP

(3rd Semester)

MORIGAON COLLEGE (AUTONOMOUS)
DEPARTMENT OF VOCATIONAL EDUCATION
SYLLABUS
FYUGP Semester – 3

Course Type: CORE
Course Title: Food Quality and Regulation –II
Course Code: FPR-CORE-MC-0300103
Credit: 3

Course Objectives:

- To provide students with a comprehensive understanding of the principles, practices, and regulations governing the quality and safety of food
- To equip students with the knowledge and skills necessary to assess, monitor, and maintain food quality standards throughout the food supply chain
- To impart about the roles and responsibilities of FSSAI and about other national standards, also introduce about various initiatives taken by FSSAI
- To understand students about the general principles for food safety regulations at both the national and international level

Course Outcome

- Understand the fundamental concepts and principles of food quality and safety.
- Identify and evaluate the factors that affect food quality, including raw materials, processing, storage, and distribution.
- Comprehend the regulatory frameworks and guidelines related to food quality and safety at national and international levels.
- Assess and implement quality control and quality assurance programs in food production, processing, and handling.
- Evaluate the impact of food quality and safety on public health, consumer perception, and the economy.
- Develop effective communication and problem-solving skills to address food quality and safety issues.

Course Contents:

Unit 1: Basic Concept of Food Laws and Regulations

Food laws and regulations, concepts of Codex Alimentarius, ISO series, GMP, GHP, 5S,4M, AIB, Six Sigma, PCI, SOP, checklist, audit system, documentation; FSSAI, role of various food standards in India- PFA, FPO, AGMARK and BIS. Recent developments in food quality regulation, MOFPI and schemes for establishing food industries in India

Unit 2: FSSAI

FSSAI:-Introduction to the law, Salient features of Food Safety& Standards Act, 2006, Structure of FSSAI, Administrative set up at the State level and central level, Licensing and registration, Licenses be granted by Central Licensing Authority, Documents/ Format required for Registration/ Licensing, Food Laboratories: Accreditation of Food Laboratory, Referral Laboratories, Hierarchy of Food Safety Authorities; Food Labelling; Promoting safe and wholesome food (Eat Right India, Food Fortification, Clean street food Hub, RUCO, BHOG and various other social and behavioural change initiatives taken by FSSAI)

Unit 3: General Principles for food safety regulation at International level

FAO, World Health Organization (WHO), Joint FAO/WHO Food Standards Program -JECFA, JEMRA, JMPR; Codex Alimentarius Commission- Codex India – Role of Codex Contact point, National Codex contact point (NCCP), National Codex Committee of India, World Trade Organization (WTO), Principles of trading system. SPS and TBT, differences between SPS & TBT; WTO agreement on the application of SPS

Unit 4: Standard Operating Procedures

Defining Standard operating procedure: purpose, Format, developing and implementing; effective writing; SOP for purchasing raw materials, receiving raw materials, storage, cleaning, holding, cooling, freezing, personal hygiene, facility and equipment. Systems in laboratory accreditation, GRN making, Invoice making and maintenance

Practicals:

1. Identification of Food Logos
2. Study on food Labelling
3. Preparation of SOP for
 - a. Receiving raw materials
 - b. Finished products
4. Preparation of GRN, Invoice
5. Preparation of checklist
6. Study on 5S practices in food industry
7. Visit to a food industry and prepare a report on various quality laws and regulations followed

Suggested Readings

- Amerine MA, Pangborn RM & Rosslos EB. 1965. Principles of Sensory Evaluation of Food. Academic Press.
- Early R.1995.Guide to Quality Management Systems for Food Industries. Blackie Academic.
- Furia TE.1980. Regulatory status of Direct Food Additives. CRC Press.
- Jellinek G. 1985. Sensory Evaluation of Food - Theory and Practice. Ellis Horwood.
- Krammer A & Twigg BA.1973. Quality Control in Food Industry. Vol. I, II. AVI Publ.
- Macrae R, Roloson R & Sadlu MJ. 1994. Encyclopedia of Food Science & Technology & Nutrition. Vol. XVI. Academic Press.
- Piggot J.R. 1984. Sensory Evaluation of Foods. Elbview Applied Science.
- Ranganna S. 2001. Handbook of Analysis and Quality Control for Fruit and Vegetable Products. 2nd Ed. Tata-McGraw-Hill.
- Export/Import policy by Govt. of India
- InteazAlli (2003). Food Quality Assurance Principles and Practices.CRC Press.
- J Andres Vasconcellos (2003) Quality Assurance for the Food Industry. A Practical Approach.CRC Press.

Course Type: CORE
Course Title: Food Chemistry-I
Course Code: FPR-CORE-MC-0300203
Credit: 3

Course objective

- To demonstrate a sound knowledge of the chemical properties of food components (water, carbohydrates, proteins, enzymes)
- To understand the relationship between the properties and structures of chemical components and ingredients to the functional and chemical properties of foods.
- To understand the physical and chemical interactions between food components and their impact on quality.
- To learn and understand the chemistry with respect to role and functionality of constituents of the food.

Course Outcome

- Students will get introduced to Food chemistry
- Student will be able to understand basic chemistry of water, carbohydrates, proteins and enzymes
- Students will learn about classification and properties of carbohydrates, proteins and enzymes
- They will have knowledge about different tests used for estimation of carbohydrate, protein in food industry

Course Content

Unit 1: Water

Structure of water and ice, Physical properties of water, Types of water in food, Water holding capacity and water binding capacity, concept of Water activity and relation to food stability

Unit 2: Carbohydrates

Classification, Structure, Properties, sources and Reactions of Carbohydrates; Reducing & Non-reducing sugar; Difference between amylose & amylopectin

Unit 3: Proteins

Classification, structure, properties, sources and reactions of protein; essential and non-essential

amino acids, Peptide bond; biological roles of protein; chemical bonds involved in protein structure;

Unit-4: Enzymes

Introduction, classification of enzyme, enzyme kinetics, enzyme activity, factors affecting enzyme activity. Enzyme inhibitors- reversible (Competitive, Noncompetitive & Uncompetitive), enzyme activity- zymogens inactivation, covalent modification and feedback inhibition; Enzyme immobilization and its application; Enzymes used in food industry

Practical

1. Study different Reactions of Carbohydrates
2. Determination of moisture by drying method
3. Estimation of protein content of different food product
4. Study of Coagulation of Protein by Heat
5. Determination of protein by kjeldahl method
6. Study on water activity of different foods
7. Study on various techniques of enzyme immobilization

Suggested Readings

1. Fenema's food chemistry-4th edition, CRC press, Taylor and Francis group, New York, 2008
2. Meyer, L.H- Food chemistry, CBS publisher and distributor, New Delhi, 2002
3. Manay, N.S, Shadaksharaswamy, M., Foods- Facts and Principles, New Age International Publisher, New Delhi, 2004
4. Potter, N.N, Hotchkiss, J.H. Food Science, CBS Publisher, New Delhi, 2000
5. Srilakshmi, B, Food Science (3rd edition), New age International (p) limited Publisher, New Delhi, 2003
6. Nielsen, S.S. Introduction to the chemical analysis of foods. Jones and Bartlett publishers, Boston, London, 2003
7. Sadasivam, S, Manickam, A. Biochemical methods, 2nd edition, New age international (p) limited, New Delhi, 2001

Course Type: CORE
Course Title: Food Microbiology-I
Course Code: FPR-CORE-MC-0300302
Credit: 2

Course objective

- To enable the students to gain an insight into basic aspects of food microbiology.
- To understand the advanced techniques in microbial analysis of food.

Course Outcome

- Students will develop knowledge and understanding of different food microorganisms and know different techniques used to detect microorganisms
- Students will develop knowledge and understanding of different food microorganisms and different techniques used in its detection.
- Student will enable to know the basics of microbiology.
- Students will understand causes of food spoilage of different foods and its type

Course Content-

Unit-1: Introduction to food microbiology

Discovery and History of microbiology, current status, role of food microbiology, sources of microorganisms in food, Changes caused by microorganisms in food, Growth and survival of microorganisms in foods, biological, chemical, and physical changes caused by microorganisms, physical and chemical methods to control microorganisms

Unit 2: Microscope

Introduction, types of microscope, parts of microscope, Maintenance of the Microscope

Unit-3: Characteristics of microorganisms

Classification of microorganisms, nomenclature, morphology - yeast and moulds, bacterial cells, viruses; important microbes in food, microbial growth characteristics - Microbial reproduction, nature of growth in food

Unit-4: Culture Media

Introduction to culture media – differential media, selective media, transport media, pure culture, microbial culture techniques, Pure culture techniques – pour, spread and streak plate method; thermal inactivation of microbes; Basic concept of F, Z and D value

Unit 5: Staining Techniques

Staining characteristics, Basic principle of simple and grams staining process, mordant and its action, acidic and basic dyes

Unit 6: Microbial Growth in Food

Microbial growth characteristics, Factors affecting microbial growth – temperature, pH, oxygen concentration, water activity, Psychrophiles, halophiles, mesophiles, Thermophiles; Growth curve – lag, log, stationary, decline phase

Suggested Readings

- Atlas, R.M. (1998) Microbiology: Fundamental and applications, 2nd edition, Macmillan Publishing Company, New York.
- Pelezar, M.J., Chan, E. G. S. and Krieg, N.R. (1999) Microbiology.
- Heritage, J., Evance, E.G.V. and Killington, R.A. (1999) Microbiology in action, Cambridge University Press.
- Prescott, L.M., Harley, J.P. and Klein, D.A. (1999) Microbiology, W.C.B. Oxford.