One Year Diploma in

Food Safety and Quality Control

Semester-I

Course Type	Course Code	Course Title	Marks
Theory	101	Nutritional Biochemistry, Food Analysis & Testing	50
	102	Food Laws & Standards	50
	103	Food Processing, Preservation & Packaging	50
Practical	104	Chemical Analysis & Quality Assurance of Food	50
	105	Internship in Food Industry (50 hrs)	50
Total Marks			250

Semester-II

Course Type	Course Code	Course Title	Marks
Theory	201	Food Microbiology& Food Hygiene	50
	202	Food Safety & Quality Management	50
	203	Food & Dairy Technology	50
Practical	204	Food Microbiology	50
	205	Food Industry Visit Report	50
Total Marks			250

Semester-I

Course Code	Course Title	Detailed Syllabus
101 (theory)	Nutritional Biochemistry, Food Analysis & Testing	1. Fundamentals of Food Science: Basic idea of food, food from plant and animal sources. 2. Food Chemistry: Chemical composition of food-carbohydrates, proteins, lipids, dietary fibers, vitamins and minerals. 3. Biological and Biochemical Functions of Food: Daily requirement, digestion and absorption, biological value of proteins, protein-efficiency ratio, digestibility co-efficient, net-protein utilization, net-protein ratio, energy value of food, respiratory quotient, BMR, RDA SDA, balanced diet formulation. 4. Food Analysis: Sampling techniques for collection of sample, food adulteration and physical and chemical techniques used for its detection, common adulterations, contamination and pesticide analysis. Principle, procedure and detectors of chromatographic techniques (column, paper, TLC, HPLC and GC). Spectroscopic techniques- IR, UV, MS, & AAS. Food analysis- moisture content, ash, carbohydrate, fat, crude fiber, crude protein, Na, K, calcium, & phosphorus. Oils & fats- iodine value and saponification value. Sensory evaluation of food products.
102 (theory)	Food Laws & Standards	1. Food Safety, Standard Act, Rules and Regulations: Food safety and standard act-2006. Inspection and audit including 3rd party audit. International food control system, laws, regulations and standards/ guidelines with regards to food safety. Overview of CODEX Alimentarius Commission (History, Members, Standard setting and Advisory mechanisms: JECFA, JEMRA JMPR): WTO agreements (SPS/TBT). Important national and international accreditation bodies. Voluntary national standards- BIS & AGMARK; other relevant national bodies- APEDA, EIC, MPEDA, Spice Board etc. Structure and functions of food authorities. Role of state food authorities. 2. FSSAI: Role, functions and initiatives. Genesis and evaluation of FSSAI. Promoting safe and wholesome food (Eat Right India, Food

		Fortification, Safe and Nutritious Food (SNF), clean Street Food Hub, RUCO and various other social and behavioral change initiatives). Training and capacity building. 3. Export and Import Laws and Regulations: Export act, export regulations and promotion bodies, food import and quarantine aspects, food labelling.
103 (theory)	Food Processing, Preservation & Packaging	1. Basic Principles and Methods of Food Preservation: Heat processing, pasteurization, canning, dehydration, freezing, freeze drying, fermentation, microwave, irradiation and chemical preservatives. Refrigerated and modified atmospheric storage. Aseptic preservation, hurdle technology. Alternative thermal and non-thermal processing, new/novel food additives and preservatives, safety issues of processed foods available in market. 2. Food Packaging: Overview of food packaging methods, principles of novel packaging techniques, nano-packaging, modified air packaging (MAP), modified vacuum packaging (MVP) 3. Waste Management of Food Processing Industries: Types of waste generated from food processing industries, waste management in food processing industries, green technology in food industries for waste management, waste disposal and treatment from food industries.
104 (practical)	Chemical Analysis & Quality Assurance of Food	Calibration of Glassware Preparation of Standard Volumetric Solutions Determination of Moisture in Food Products by Hot Air Oven-drying Method Determination of Moisture in Food Products Using Karl Fischer Titration Method Determination of Moisture in Food Products by Dean and Stark Method Determination of Protein Content in Food Products by Kjeldahl Method Determination of Crude Fat in Foods by Soxhlet Extraction Method Determination of Total Fat in Foods by Rose Gottleib Method Determination of Volatile Oil in Spices

		Determination of Starch in Cereal Grains by Acid Hydrolysis Method Determination of Starch in Cereal Grains by Glucoamylase Method Determination of Crude Fibre in Food Sample Determination of Total Ash Content in Food Products Determination of Acid Insoluble Ash in Food Products Determination of pH of Food Products by Using pH Meter Determination of Free Fatty Acids and Acid Value in Oils and Fats Determination of Unsaponifiable Matter in Oils and Fats Determination of Melting Point or Solidification Point of Oils and Fats Determination of Refractive Index of Oils and Fats Determination of Specific Gravity of Oils and Fats Determination of Titre Value of Oils and Fats Determination of Colour of Oils and Fats by Lovibond Tintometer Determination of Iodine Value in Oils and Fats Determination of Saponification Value in Oils and Fats Determination of Acetyl Value and Hydroxyl Value in Oils and Fats Determination of Allyl Isothiocyanate in Mustard Oil Determination of Reichert Meissl (RM) Value and Polenske Value (PV) in Oils and Fats Determination of Peroxide Value of Oils and Fats Determination of Sodium Chloride Content in Butter Determination of Gluten Content in Wheat Flour Determination of Sorbic Acid in Food Products Determination of Copper, Zinc, Lead and Cadmium in Food Products by Atomic Absorption Spectroscopy Determination of Cholesterol Content in Ghee by GC Determination of Vitamin A Content in Ghee by HPLC Sensory Evaluation Laboratory Selection of Sensory Panelists Sensory Evaluation of Food Products−Hedonic Rating Test Judging of Milk
105 (practical)	Internship in Food Industry (50 hrs)	Study implementation of GHP/ HACCP/ QMS/FSMS in Food Establishments and preparation of report on it.