

AMCH27 FOOD PROCESS ENGINEERING

UNIT-1 INTRODUCTION

- 1.1 Current status of the Indian (a) Agriculture, (b) Food Industry, (c) Food Processing Industry,
- 1.2 Processing Industry,
- 1.3 Market opportunities for the Indian Processed Food Industry
- 1.4 Engineering challenges in the Food Processing Industry,
- 1.5 Product and Process development
- 1.6 Major challenges in India,
- 1.7 R & D opportunities within the Food Industry

UNIT-2 BASIC FOOD BIOCHEMISTRY AND MICROBIOLOGY

- 2.1 Food Constituents: Water, Proteins, Carbohydrates, Lipids, Vitamins, Flavors, Nutritional & sensory characteristics, Food fortification
- 2.2 Water activity Enzymes: Production from microorganisms and application in food processing
Lipid oxidation Growth of microorganisms and food spoilage D & Z values Food Safety
- 2.3 Indian laws regulating Foods and Food Processing

UNIT-3 AMBIENT TEMPERATURE PROCESSING

- 3.1 Raw material preparation Size reduction of solid fibrous foods and in liquid foods,
- 3.2 Emulsification and Homogenization,
- 3.3 Theory and Equipment, Mixing and Forming, Theory and Equipment,
- 3.4 Extraction & expression Membrane concentration Fermentation,
- 3.5 Theory, Types, Equipment, Effect on Foods

UNIT-4 HEAT PROCESSING USING STEAM OR WATER: THEORY, EQUIPMENT, EFFECT ON FOODS

- 4.1 Blanching Extrusion Pasteurization Heat Sterilization In-container Ultra high temperature (UHT)/ aseptic processes

UNIT-5 HEAT PROCESSING USING HOT AIR

- 5.1 Theory, Equipment, Effect On Foods Dehydration Banking & Roasting

UNIT-6 HEAT PROCESSING USING HOT OILS

- 6.1 Theory, Equipment, Effect on Foods
- 6.2 Frying

UNIT-7 HEAT PROCESSING BY DIRECT AND RADIATED ENERGY

- 7.1 Theory, Equipment, Effect on Foods Dielectric heating
- 7.2 Microwave

UNIT-8 PROCESSING BY REMOVAL OF HEAT

- 8.1 Theory, Equipment, Effect on Foods chilling Freezing Freeze drying and freeze concentration

**UNIT-9 FOOD PRESERVATION & STORAGE FOOD CONTAMINATION MODIFIED
ATMOSPHERE STORAGE (MAS) HURDLE TECHNOLOGY**

UNIT-10: POST PROCESSING APPLICATIONS PACKAGING

10.1 Modified-atmosphere packaging (MAP) Coating and enrobing Filling and sealing of containers

Reference Books:

1. 1st Edition Food Process Engineering Operations By George D. Saravacos , Zacharias B. Maroulis
2. Food Process Engineering and Technology, 3rd Edition Author: Zeki Berk

