FOOD PLANT SANITATION AND WASTE MANAGEMENT

THEORY

Paper No.	**:**	**8.1**
Maximum Marks	**:**	**100**
Credits	**:**	**4**
Teaching Period	**:**	**4 Theory + 1 Students' Presentation**
Teaching Load	**:**	**48 Theory Periods + 12 Presentations / Semester**

Objectives

1. To study design of plant and processing equipment.
2. To develop comprehensive understanding of waste product handling and management.

CONTENTS

UNIT 1 Food Plant Layout and Equipment Design (Chapter -10,24,25 Rao, D. G. (2010).) (15lectures)

General principles of food plant Design and layout ,Design of food processing equipments :Size Reduction, mixing, separation, extraction, filtration, centrifugation, distillation and, gas absorption equipments**.**

UNIT 2 Warehousing and Cold Chain Management (Chapter1,13,23. James 2013) (15 lectures)

Food hygiene and safety in transportation, with a focus on warehouse storage and refrigerated ships- Safe food storage at shopping outlets: use of coolers/chillers/freezers, length of time in storage ,Design of warehouses Scopes of Cold Chain for enhancing marketing potentials of perishables in domestic and international markets Principles of Cold Chain Creation and Management. Physicochemical changes in stored products during storage, air tight, non-air tight, under ground conventional & modern storage structures for fruits, vegetables, meat and marine products ; Aerated, refrigerated and controlled atmospheric storage; Layout and Design of storage structures, economics of storage structures

UNIT 3 Food Plant Hygiene and Sanitation (Chapter 5,6,7,8. Norman G. et al 2006) **(18 lectures)**

Waste disposal, Control methods using Physical and Chemical Agents, Pest and Rodent Control, ETP Design and Layout food storage sanitation, transport sanitation and water sanitation. By-products utilisation obtained from dairy plant, egg& poultry processing industry and meat industry. Wastewater and solid waste treatment: - Waste-types-solid and liquid waste characterization, physical, chemical, biological, aerobic, anaerobic, primary, secondary and tertiary (advanced) treatments.

Recommended Readings:

1. Norman G. Marriott and Robert B. Gravani. (2006). Principles of Food Sanitation,5th edition
2. Rao, D. G. (2010). Fundamentals of Food Engineering, PHI learning Private Ltd.
3. Fellows P. (2000). Food Processing Technology, 2nd Edition. Woodhead Publishing Limited and CRC Press LLC
4. James A (2013) The supply chain handbook, distribution group.
5. FAO, US (1984) Design and operations of cold store in developing countries.

PRACTICALS IN FOOD PLANT SANITATION AND WASTE MANAGEMENT

Maximum Marks : 50
Credits : 2
Teaching Period : 4 / Week
Teaching Load : 48/Semester

CONTENTS:

1. Design and layout of various food processing systems and food service areas.
2. Design and layout of cold storage and warehouse.
3. Determination of physico-chemical properties of wastewater.
4. Preparation of a sanitation schedule for food preparation area.
5. Testing of sanitizers and disinfectants.
6. Study of Phenol coefficient of sanitizers.
7. Determination of BOD (biological oxygen demand)/ COD in waste water.
8. Study of waste water treatment system/ETP.

Recommended Readings:

1. Norman G. Marriot and Robert B. Gravani. 2006, 5th Ed. ,Principles of Food Sanitation
2. Forsythe, S.J. and Hayes, P.R. (1998). Food Hygiene, Microbiology and HACCP. Gaitersburg, Maryland: Aspen.
3. Hui, Y.H., Bruinsma, B., Gorham, R., Nip, W.-K. (2003). Food Plant Sanitation. New York: Marcel Dekker.
4. Rees, N. and D. Watson. (2000). International Standards for Food Safety. Gaitersburg, Maryland: Aspen