

SEMESTER: I	FOOD CHEMISTRY (OPEN ELECTIVE – I) COURSE CODE: 22PCHEO17-1	CREDIT: 3 HOURS: 45
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COURSE OBJECTIVES

- 1) To understand the principles of food fermentation technology.
- 2) To study about packaged drinking water.
- 3) To study importance of beverages and its types.
- 4) To study about food adulteration
- 5) To understand about food preservation and packaging.

UNIT-I: Fermented Foods

5 hrs

Fermentation-Definition, types of fermentation-Fermented foods sauerkraut, cucumber pickles, olive pickles-Oriental fermented foods-soy sauce, tofu-Traditional fermented foods-idli, dosa, etc., fermented meat and milk products.

UNIT-II: Packaged drinking water

10 hrs

Packaged drinking water-definition types- manufacturing processes of raw and processed water - Quality evaluation of raw and processed water - methods of water treatment-BIS quality standards (for bottled water; mineral water, natural spring water).

UNIT-III: Beverages and its types

10 hrs

Beverages: Types-Definitions-Types-Manufacturing process and technology-Note on Specialty beverages based on tea coffee- dairy based beverages-Synthetic Beverages-technology of carbonated beverages-Low-calorie and dry beverages-Isotonic and sports drinks-Role of various ingredients of soft drinks-Carbonation of soft drinks.

UNIT-IV: Food adulteration and food poisoning

10 hrs

Food adulteration - Sources of foods, types, advantages and disadvantages, constituents of foods, carbohydrate, protein, fats and, oils, flavour colour, natural toxicants. Food poisoning -Sources, causes and remedy-Causes and remedies for acidity, gastritis indigestion and constipation.

UNIT-V: Food preservation and processing

10 hrs

Food Spoilage-definition-Prevention-Food Preservatives-definition-classification- food preservation- Methods of preservation - classification – Low and high temperature -preservatives processing by heating-sterilization, pasteurization - Food Additives-Definition-classification- and their functions.

COURSE OUTCOMES

- 1) Students will be able to acquire knowledge of fermented food.
- 2) Acquire knowledge about packaged drinking water.
- 3) Illustrate the importance of beverages and its types.
- 4) Acquire knowledge about food adulteration.
- 5) Illustrate the importance of food preservative

Text Books

- 1) Sri Lakshmi, B. (2005). *Food Science* (3rd ed.). New Age International Publishers.
- 2) Meyer, L. H. (2004). *Food Chemistry*. BS Publishers & Distributors.
- 3) Fox, B. A., & Cameron, A. G. (1995). *Food Science*. London: Nutrition and Health - Edward Arnold.
- 4) Ramani, A. V. (2021). *Food Chemistry* (1st ed.). MJP Publishers.

SUPPLEMENTARY READINGS

- 1) Sumathi, M. R., & Rajagopal, M. V. *Fundamentals of Foods and Nutrition*. Madras: Wiley Eastern Ltd.
- 2) Swaminathan, M. *Hand book of Food and Nutrition*. Bangalore: Bangalore Printing and Publishing Co. Ltd.

OUTCOME MAPPING

	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	3	3
CO2	3	2	3	3	2
CO3	2	3	2	3	3
CO4	2	2	3	2	2
CO5	3	3	3	2	3

SEMESTER: I	INDUSTRIAL CHEMISTRY (OPEN ELECTIVE – I) COURSE CODE: 22PCHEO17-2	CREDIT: 3 HOURS: 45
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COURSE OBJECTIVES

To understand the

- 1) To gain knowledge about the principles of industrial fuels.
- 2) To understand the importance of leather and water industry.
- 3) To study about small scale industries.
- 4) To learn the importance of cement and glass industries.
- 5) To understand the principles of sugar and paper industry.

Unit-I: Industrial fuels

10hrs

Sources: non-renewable-classification of fuels – solid liquid and gaseous
Calorific values of fuels and its determination. Solid fuels: coal-types, properties and uses-lignite-and anthracite-definition and uses. Liquid fuels: Refining of crude petroleum and uses of fractions-Cracking- Octane number. Gaseous fuels: Natural gas and gobar gas – production – composition and uses.

Unit-II: Leather Industry and Water Industry

10hrs

Leather Industry: Curing-preservation and tanning of hides and skins- Process of dehairing and dyeing - Treatment of tannery effluents. Water Industry: Pollution of water by fertilizers, pesticides and industrial wastes -BOD-COD-thermal pollution. Reverse osmosis- softening of hard water.

Unit-III: Small Scale Chemical Industries

5hrs

Electro thermal and electrochemical industries: electroplating - surface coating industries - oils, fats and waxes. Match industries and fireworks manufacture of some industrially important chemicals like potassium chlorate- and red phosphorus.

Unit-IV: Cement, Ceramics, Glass

10hrs

Cement: Manufacture - Wet Process and Dry process. Types- Analysis of major constituents- setting of cement- reinforced concrete. Cement industries in India. Ceramics: Important clays – glazing and verification. Glass: Types, Composition, manufacture of Optical glass, colored glasses, lead glass and neutron absorbing glass.

Unit-V: Sugar and Paper industry

10hrs

Sugar industry: Double sulphitation process, refining, and grading of sugar. Saccharin: synthesis and uses as a sugar substitute. Ethanol: manufacture from molasses by fermentation. Sugar industries in India. Paper industry: Manufacture of paper: production of sulphite pulp and conversion to paper (bleaching, filling, sizing and calendaring).

COURSE OUTCOMES

- 1) Students will be able to acquire knowledge of industrial fuels.
- 2) Illustrate the importance of leather and water industries.
- 3) Acquire knowledge about small scale industries.
- 4) Acquire knowledge about cement industries.
- 5) Acquire knowledge about sugar and paper industries.

Text Books

- 1) Biswas, A. K. (1989). *Frontiers in Applied Chemistry*. Narosa publishing house.
- 2) Vermain, O. P & Narula, A. C. (2014). *Applied chemistry theory and books*. National Publishers.

Supplementary Readings

- 1) Shreve, R. N., & Brink, J. A. (1977). *Chemical Process Industries* (4th edn.). Tokyo: McGraw Hill.
- 2) Chakrabarty, N. (1981). *Industrial Chemistry*. New Delhi: Oxford & Publishing Co.
- 3) Singh, P. P., Joseph, T. M., & Dhavale, R. G. (1983). *College Industrial Chemistry* (4th edn.). Bombay: Himalaya Publishing House.

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CO1	2	3	2	2	2
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CO5	3	2	2	3	2

SEMESTER: I	MEDICINAL CHEMISTRY (OPEN ELECTIVE – I) COURSE CODE: 22PCHEO17-3	CREDIT: 3 HOURS: 45
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COURSE OBJECTIVES

- 1) Make the students learn the concept of medicinal chemistry
- 2) To understand the various sources and classification of drugs
- 3) To learn the importance of Chemotherapy
- 4) To study about the common body ailments
- 5) To understand about health promoting drugs.

UNIT-I: Introduction

10hrs

Common Diseases & their treatments: Insect borne diseases: Malaria, Filariasis & Plague. Air Borne diseases: Diphtheria, Whooping cough, Influenza, Measles mumps, Tuberculosis, Water borne diseases: Cholera, Typhoid & Dysentery. Common disease of the digestive system- jaundice, respiratory system- asthma, nervous system- epilepsy. Some other common diseases- piles, leprosy. First aid for accidents. Common poisons & their antidotes - acid poisoning, alkali poisoning, Poisoning by disinfectants hallucinogens.

UNIT-II: Drugs

10hrs

The nature and source of drugs, pharmacologically active principles in plants. The terms- Drugs, pharmacology, pharmacognosy, pharmacy, Therapeutics, Toxicology, chemotherapy, pharmacopoeia, first aid –Important rules of first aid - Cuts, Abrasions and Bruises, Fractures, bleeding for blood, maintain breathing. Burns and fainting. First aid box.

UNIT-III: Chemotherapy

10 hrs

Drugs based on physiological action, definition and two examples each of anesthetics- General and local – analgesics – narcotic and synthetic –Antipyretics and anti-inflammatory agents– antibiotics – Penicillin, Streptomycin, Chloroamphenicol, Antiviral, AIDS – symptoms, prevention, treatment – Cancer (Structure not required).

UNIT-IV: Common body ailments

5hrs

Diabetes – Causes, hyper and hypoglycemic drugs – Blood pressure – Systolic & Diastolic Hypertensive drugs–Cardio vascular drugs–depressants and stimulants –Lipid 128 profile–HDL, LDL cholesterol lipid lowering drugs. (Structure not required).

UNIT-V: Health promoting drugs

10hrs

Vitamins A, B, C, D, E and K micronutrients – Na, K, Ca, Cu, Zn and I, Medicinally important in organic compounds of, P, As, Hg and Fe, Examples and applications, Agents for kidney function (Aminohippuric acid). Agents for liver function (Sulfobromophthaein), antioxidants, treatment of ulcer and skin diseases. (Structure not required).

COURSE OUTCOMES:

- 1) Appreciate the importance of medicinal chemistry.
- 2) Acquire knowledge of classification of drugs.
- 3) Identify the importance of Chemotherapy.
- 4) Acquire knowledge of common body ailments.
- 5) Illustrate the importance of health promoting drugs.

Text Books

- 1) Ghosh, J. (2014). *Text Book of Pharmaceutical Chemistry* (5th ed.). New Delhi: S. Chand and Company Ltd.
- 2) Lakshmi, S. (2010). *Pharmaceutical Chemistry* (1sted.). New Delhi: S. Chand and Company Ltd.

Supplementary Readings

- 1) Kar, A. (1993). *Medicinal Chemistry*. New Delhi: Wiley Eastern Ltd.
- 2) William, D., & Foyes, T. L. (2013) *Principles of Medicinal Chemistry*. BI Publishers.
- 3) Nogrady, T., & Weaver, D. F. (2005) *Medicinal Chemistry* (3rd edn.). Oxford University Press

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