

20CY205 INDUSTRIAL CHEMISTRY

(FOOD, AGRO AND PHARMACEUTICAL CHEMISTRY)

Hours Per Week :

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4	-	-	4

Course Description and Objectives:

This course focuses on the various principles involved in processing natural and synthetic foods along with their disadvantages. This course also deals with the chemistry of nutrients, enzymes, flavors and various technologies utilized by the food industry. The measures implemented to improve the crop productivity and various methodologies for both post and pre harvest management are discussed for better productivity in Agro field. Moreover, this course also provides insights about pharmaceutical products and drugs.

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes
1.	Understand the principle of food processing, their additives
2.	Evaluate the chemistry behind nutrients, flavors and their processing
3.	Examine the chemistry and technology for agricultural products
4.	Apply the concept of crop management to various agro products such as vegetables and fruits.
5.	Analyze the rational design for the synthesis of pharmaceuticals through examples from various sources.

Unit - I :

Introduction to Food Chemistry : Principles of Food Processing, Food Additives and ingredients, Food Processing, Food Toxicology.

Unit - II :

Advances Food chemistry : Advances in food chemistry and nutrients, nutraceuticals and health foods, enzymes and food processing, Flavour chemistry and technology.

Unit - III :

Carbohydrates : Introduction, lipids, protein chemistry and Technology, Technology of fruits and veg processing.

Unit - IV :

Crop production : Concepts and practices; Post harvest management of fruits and vegetables, Agrochemicals and residues in foods.

Unit - V :

Pharmaceuticals: Introduction to drug discovery: Sources of drugs-natural products, drugs from organic synthesis, drug discovery and development – Stages of drug-discovery with suitable examples

Text Books and suggested References:

1. Fellows PJ. 2005. *Food Processing Technology: Principle and Practice*. 2nd Ed. CRC.
2. Verma LR. & Joshi VK. 2000. *Post Harvest Technology of Fruits and Vegetables*. Indus Publ
3. FAO. 2007. *Handling and Preservation of Fruits and Vegetables by Combined Methods for Rural Areas- Technical Manual*. FAO Agr. Ser. Bull., 149
4. Kulp K & Ponte GJ. 2000. *Handbook of Cereal Science and Technology*. 2nd Ed. Marcel Dekker.
5. Chakrabarty MM. 2003. *Chemistry and Technology of Oils and Fats*. Prentice Hall.
6. NIIR. 2004. *Handbook on Spices*. National Institute of Industrial Research Board, Asia Pacific Business Press Inc.
7. Rathore NS *et al.* 2008. *Fundamentals of Dairy Technology - Theory & Practices*. Himanshu Publ
8. Mead M. 2004. *Poultry Meat Processing and Quality*. Woodhead Publ.
9. Branen AL, Davidson PM & Salminen S. 2001. *Food Additives*. 2nd Ed.
10. Gerorge AB. 2004. *Fenaroli's Handbook of Flavor Ingredients*. 5th Ed. CRC Press.
11. Brigelius-Flohé, J & Joost HG. 2006. *Nutritional Genomics: Impact on Health and Disease*. Wiley VCH.
12. Whitehurst R & Law B. 2002. *Enzymes in Food Technology*. Blackwell Publ.
13. Concon JM. 1988. *Food Toxicology - Principles & Concepts*. Marcel Dekker.