

## FOOD ADULTERATION AND TOXICOLOGY

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
V	19CNF5C	Elective Paper I	Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week	-----	3
			45	3	45	3		

### COURSE OBJECTIVE:

1. To learn and understand about food adulterations.
2. To identify the different types of toxins in various foods.
3. To learn the importance of food safety regulations.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to Food Adulteration and Additives	K1, K2
CO2	Learning about different types of food toxins	K1, K2
CO3	Understanding the difference between food sensitivity and contaminants	K1, K2
CO4	Evaluating the Quality of food	K2, K3, K4
CO5	Regulations to be followed to maintain the food safety	K2. K3. K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	M	S
CO2	M	S	S	M	S
CO3	M	S	S	M	S
CO4	M	S	M	M	S
CO5	M	S	M	M	S

S-Strong; M-Medium, L- Low

## UNIT – I

9 Hours

### INTRODUCTION TO FOOD ADULTERATION AND ADDITIVES

- A. **Food adulteration:** Meaning and definition; Types of food adulterants; Methods used for detection of food adulterants.
- B. **Food Additives and Adulterants:** Food additives definition; Common food additives and its function and usage; Permissible limits of additives in foods; Implications of additives on consumers health;

## UNIT – II

9 Hours

### DIFFERENT TYPES OF FOOD TOXINS

- A. **Food poisoning:** types, causative factors, preventive symptoms, natural food toxins, antinutritional factors, other food toxins, harmful effects, methods of removal.
- B. **Microbial toxins and food intoxications:** Source of contamination Effect on health, preventive measures, methods of inactivation/destruction.
- C. **Chemical toxins:** Pesticides, insecticides metallic and others, residual effects, preventive measures, methods of removal.
- D. Determination of toxicants in foods and their management.

## UNIT – III

9 Hours

### FOOD SENSITIVITY AND CONTAMINANTS

- A. **Food allergies and sensitivities:** natural sources and chemistry of food allergens; true/untrue food allergies; handling of food allergies; food sensitivities (anaphylactoid reactions, metabolic food disorders and idiosyncratic reactions); Safety of genetically modified food: potential toxicity and allergenicity of GM foods. Safety of children consumables.
- B. **Environmental contaminants and drug residues in food:** fungicide and pesticide residues in foods; heavy metal and their health impacts; use of veterinary drugs (e.g. Malachite green in fish and  $\beta$ agonists in pork); other contaminants in food, radioactive contamination of food, Food adulteration and potential toxicity of food adulterants. Endocrine disrupters in food.

## UNIT – IV

9 Hours

### EVALUATION OF FOOD QUALITY

- A. **Testing of Food Quality:** Quality meaning and need of food quality testing; Types of evaluation – subjective and objective; Subjective evaluation methods based on difference, rate, sensitivity etc.; Objective evaluation methods – tools and instruments used; quality standards for cereal, pulses and legumes, vegetables and fruits, milk, egg and flesh foods, fat and sugar and related products.

## UNIT – V

### STANDARDS FOR FOOD SAFETY

**9 Hours**

- A. **Food Laws and Standards:** Need and importance; National food legislation such as FSSA, Essential Commodities Act, HACCP, ISI or BIS, AGMARK, FPO and PFA, International Organization such as FAO, WHO, Codex Alimentarius, and Agriculture and Processed food products Export Development Authority (APEDA). Recent Food Laws and standards.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

#### TEXT BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	TõnuPüssa	Principles of Food Toxicology, Second Edition	CRC Press	2013
2	S.S. Deshpande Ed,	Handbook of Food Toxicology	CRC Press, ISBN 9780824707606.	2013
3	Srilakshmi, B.	Food Science, 5 <sup>th</sup> Edition	New Age International (P) Ltd., Publishers, New Delhi	2012

#### REFERENCE BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Helferich, W., and Winter, C.K.	Food Toxicology	CRC Press	2001
2	Shibamoto, T., and Bjeldanes, L.	Introduction to Food Toxicology, 2nd Ed	Elsevier Inc., Burlington, MA	2009
3	Duffus, J.H., and Worth, H.G. J	Fundamental Toxicology	The Royal Society of Chemistry	2006
4	Stine, K.E., and Brown, T.M.	Principles of Toxicology, 2nd Ed.	CRC Press	2006
5	Tõnu, P.	Principles of Food Toxicology.	CRC Press	2007

## **TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

## **SYLLABUS DESIGNER:**

- Ms. R. TAMILSELVI, Head and Assistant Professor, Department of Foods and Nutrition