



**Shri Vaishnav Vidyapeeth Vishwavidyalaya**  
**Shri Vaishnav Institute of Science**  
**Department of Chemistry**  
**Generic Elective Course**  
**Choice Based Credit System (CBCS)**

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
GUCH204	UG	Real-world Applications of Chemistry	0	1	4	3	00	00	00	60	40

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

**\*Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

**Course Objectives:**

1. To educate students about common food adulterants and their detection.
2. To integrate foundational concepts of chemistry into real-world scenarios.

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Comprehend certain basic skills of detecting adulteration in common foods.
2. Identify and explain the properties and chemical reactions of common elements and compounds found in household products.
3. Understand and describe fundamental chemical processes used in various industries.
4. Explore the process of drug discovery and development and understand the side effects of various drugs.
5. Critically analyze case studies related to environmental chemistry and apply scientific principles to propose solutions for specific environmental challenges.

**Syllabus:**

**Unit I: Food Adulteration**

Introduction, Different types and harmful effects of food adulteration,

Detection and Prevention of Food Adulteration:

- (i) To detect the adulterants like paraffin wax/hydrocarbons, dyes and argemone in the fats, oils and ghee, the adulteration of insoluble substance, chalk powder and washing soda in sugar.
- (ii) To detect the presence of adulterants like water, proteins, urea, formalin, detergent, sugar and starch in the milk.
- (iii) To detect the adulteration of Red lead salts/brick powder in chilli powder, yellow lead salts/ colored saw dust in turmeric, dried papaya seeds in pepper, sugar as an adulterant in honey.



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#### **Unit II: Chemistry in House-hold Materials**

Artificial preservatives, Baking chemistry, Rusting of iron, Cleaning Chemistry: Action of soap and detergents, Identification of pesticide in fruits and vegetables, Effects of pesticides on human health.

#### **Unit III: Role of Chemistry in Industries**

Hardness of water, Chemistry in textiles, Making of soaps, Preparation and testing of some cosmetic products, Chemical explosives, Paints and Varnishes.

#### **Unit IV: Chemistry in Medicines**

Therapeutic Action of Different Classes of Drugs: Antacids, Analgesics, Antibiotics, Antiseptics and disinfectants, Working of devices used to measure blood pressure, blood glucose, body temperature, and breathing sensor.

Case studies on side effects of different medicines,

Case studies on medical importance of haldi, neem, tulsi, aloe vera, amla, etc.

#### **Unit V: Environmental Chemistry**

Case Studies related to: Energy resources, Air pollution, Water pollution, Noise pollution, Soil pollution, Global Warming, emission standard, criteria pollutant.

Environmental Management: Environmental impact assessment, Environmental Audit.

#### **References:**

1. A first course in Food Analysis, A.Y. Sathe, New Age International (P) Ltd., 1999.
2. Food Safety, case studies – R. V. Bhat, NIN, 1992.
3. DART- Detect adulteration with rapid test. FASSAI, Imprinting Trust, assuring safe and nutritious food, Ministry of Health and Family Welfare , Government of India.
4. Rapid detection of food adulterants and contaminants Theory and Practice, S. N. Jh, 2016, Kindle Edition.
5. Domestic Tests for Food Adulterations, H. G. Christian, Forgotten books.
6. A Laboratory Manual of Food Analysis, S. Sehgal, Wiley Publishers.
7. Food Safety and Standards Act, 2006. Bare ACT, November 2020, Commercial law publishers