



**Sarvodaya Kelavani Samaj managed,
Shri Manibhai Virani and Smt. Navalben Virani Science College (Autonomous)**

(Affiliated to Saurashtra University, Rajkot)

Re-Accredited at 'A' Level by NAAC

STAR college Scheme & Status by MST-DBT

UGC- College with Potential for Excellence (CPE)

UGC-DDU KAUSHAL Kendra

GAAA –Grade A-1 by KCG, Government of Gujarat

GPCB-Government of Gujarat approved Environment Audit Center

Nodal Center for capacity building by GSBTM

DEPARTMENT OF CHEMISTRY

B.Sc. Chemistry

Syllabi for Generic Elective Courses

Offered to Other UG Department

Semester - V & VI

Effective From 2018-19 & Onwards

Semester - V		
Course Code	Course Title	Course Credit and hrs
19UCHGE01	Chemical Hazards and Safety	2 Credit - 2 hrs / wk

Course Objectives:

Students will be able to:

- Understand the safety measures about a chemicals.
- Assimilate the knowledge regarding different types of chemical hazards.
- Get the detailed knowledge which encircling different aspects of MSDS.

Module-1: Hazards identification and overview (6hrs.)

- **Physical Hazards** : Electrical, Fire/explosion, Noise, Radiation, Thermal stress, Slips/falls, Striking against, Struck by
- **Chemical Hazards** : Inhalation, Skin contact, Absorption, Injection, Ingestion
- **Biological Hazard** : Blood borne pathogens, Brucellosis, Building-Related Illness (BRI), Legionnaires' Disease, Mold, Plant and insect poisons, Tuberculosis (TB), Water and wastewater

Module-2: Types of Chemical Hazards: (6 hrs.)

- **Flammable** : Compressed gases, flammable and combustible chemicals
- **Corrosive** : Corrosive & oxidizing chemicals
- **Toxics** : Poisons/toxins & irritants chemicals
- **Identifying Chemical Hazards:** Types of hazard symbol & color, Material Safety Data Sheets, Labels & Pictograms.

Module-3: Forms of Chemical Hazards: (6hrs)

- **The hazard** : From exposure to a chemical,
- **Various forms of chemical hazards** : aerosols, gases , solid & liquid .
- **Exposure** : Exposure routes & exposure limit

Module-4: Health Hazards of Common Chemicals: (6 hrs.)

- **Household Chemicals:** Air fresheners, ammonia, Antifreeze, Household bleach, drain cleaners, laundry detergent mothballs, motor oil, oven cleaner, rat poison, insect repellent ,windshield wiper fluids etc.
- **Laboratory Chemicals:** Asbestos, silica, lead, carbon monoxide, isocyanates, hydrogen sulfide & benzene.

Module-5: Controlling Chemical Hazards: (6 hrs)

- **Overview** : Introduction & Need of it.

- **MSDS** : Proper labeling & Chemical Compatibility Combustible & corrosive chemical, Manipulation & Disposal/Recycling, Storage & Transportation of Flammable .
- **Personal Protective equipments** : Respiratory PPEs & Non -Respiratory PPEs Chemical

Pedagogic tools:

- Chalk and Board, Power point presentation, Charts etc
- LCD and Videos.

Text book:

1. Hazardous Chemicals: Safety Management and Global Regulations by T.S.S Dikshit
2. Elements of Industrial Hazards: Health, Safety, Environment and Loss Prevention by Ratan Raj Tatiya.

Reference Books:

1. Hazardous Chemicals Desk Reference , Sixth Edition by Richard J. Lewis,Sr.(**ISBN-13: 978-0470180242**)
2. Hazardous Laboratory Chemicals Disposal Guide , Second Edition by Margaret- Ann Armour (**ISBN-13: 978-1566701082**)

Suggested reading / E-resource

- <https://www.sciencebuddies.org/science-fair-projects/references/chemistry-safety>
- <https://www.acs.org/content/acs/en/chemical-safety/resources.html>

Semester - VI		
Course Code	Course Title	Course Credit and hrs
19UCHGE02	Chemistry in Everyday Life	2 Credit - 2 hrs / wk

Course Objectives:

Students will be able to:

- Understand the chemistry related to drugs and their pharmacological action.
- Assimilate the knowledge regarding different types of coloring agents, cleansing agents ,cosmetic materials etc.

Module -1 : Drugs and their Classification: (6 Hrs.)

- Introduction of drugs
- Classification (based on pharmacological effect, drug action, chemical structure)
- Therapeutic action of different classes of drugs - antacids, analgesics, antimicrobials including antibiotics and antiseptics.

Module -2 : Chemicals in food products: (6 Hrs.)

- Introduction & Definition of food additives for example artificial sweetening agents and food preservatives.
- Classification of food additives for example artificial sweetening agents and food preservatives.

Module -3 : Cleansing Agents: (6 Hrs.)

- Introduction & Definition of Cleansing Agents
- Classification of cleansing agents, soaps - types, structure, incompetency of soaps with hard-water, detergents - types and structure of detergents.

Module -4 : Coloring Agents:**(6 Hrs.)**

- Introduction of Coloring Agents
- Coloring phenomena
- Classification of dyes
- , its examples and applications.

Module -5 : Chemistry of Cosmetic Materials:**(6 Hrs.)**

- Introduction of Cosmetic Materials
- Formulation and role of important chemicals/components used in cream, perfumes, talcum powder, and dental products.

Pedagogic tools:

- Chalk and Board, Power point presentation, Charts etc
- LCD and Videos.

Text book:

1. Chemical formulation an overview of surfactant – based preparation used in everyday life – Tony Hargreave, Royal Society of Chemistry, 2003
2. Cosmetic and Toiletry Formulations - Vol. 2, Ernest W. Flick, Noyes Publication

Reference Books:

1. Food Chemistry, H.-D. Belitz, W. Grosch, P. Schieberle, Springer-Verlag Berlin Heidelberg 2009, (ISBN: 978-3-540-69933-0)
2. An Introduction to Medicinal Chemistry - Graham L. Patrick, Oxford University Press (ISBN-13: 978-0199697397)

Suggested reading / E-resource

- <https://www.sciencebuddies.org/science-fair-projects/references/chemistry-safety>
- [https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_Introductory_Biology_\(CK-12\)/13%3A_Human_Biology/13._21%3A_Drugs_and_the_Nervous_System](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/Book%3A_Introductory_Biology_(CK-12)/13%3A_Human_Biology/13._21%3A_Drugs_and_the_Nervous_System)

Guidelines and Evaluation Norms for Generic Elective Course-UG Programme

Generic Elective Courses:

Generic Elective (GE) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective.

P.S. A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

Generic Elective Course:

- a) Generic Elective Course – two courses in 5th& 6th semesters-each of 2 credits, total credit-04, 100% CIA courses.
- b) Choice from among courses – from the **List-GE**

S.N.	Component	Content	Duration if any	Marks	Sub Total
	Test-I	1 st &2 nd unit	1 hrs.	20 (set for 20marks)	

1.	Test-II	All 5 units	3 hrs.	Objective) 70 (set for 70marks) Question Paper Pattern enclosed in Annexure-I	90 Marks
2.	Assignment-I Assignment-II			5 (Set for 20 Marks) 5 (Set for 20 Marks)	10 Marks
Total					100 Marks

Annexure -1

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**Question Paper Pattern - Test-II - Generic Elective Courses-UG Program
Effective from A.Y. 2019-20 & Onwards**

Duration of Examination: **3 Hrs.**

Max. Marks: **70**

Part A (45 Questions X 1 Mark = 45 Marks)

Answer **ALL** questions

1.



45.

Part B (5 Questions X5 Marks = 25 Marks)

Answer **ALL** questions

46a.

OR

46b.



50a.

OR

50b.
