Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Science
Department of Chemistry
Generic Elective Courses

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*
GUCH104	UG	Chemistry Applied to Industries	4	0	0	4	60	20	20	00	00

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A –Quiz / Assignment / Attendance, MST Mid Sem Test.
*Teacher Assessment shall be based on following components: Quiz / Assignment / Project/ Participation in class (Given that no component shall be exceed 10 Marks)

Course Objective:

- To understand some basic concepts of Industrial application.
- To identify & analyze appropriate Environmental Chemical Analysis.
- To understandindustrial application of chemistry in a more appropriate manner.

Course Outcomes: -

After completion of this course the students are expected to be able to demonstrate following knowledge, skills, and attitudes. The student will demonstrate capability of

- will gain basic knowledge of Industrial Organic and Inorganic Chemistry.
- be able to discuss the challenges faced in each step of Industrial applications of chemistry.
- Will be able to understand Basics of safety &Handling of Chemicals.

UNIT I: Introduction to Materials Science

Classification of engineering materials and their applications: Metals and alloys, Ceramics and glasses, Polymers, Composites and Novel Materials. Price and availability of materials. Processing of engineering materials.

UNIT II Environmental Chemical Analysis:

Sampling and analysis of various air and water pollutants; Estimation of BOD & COD in wastewater. Methods of analysis of air and water pollutants.

Chairperson Board of Studies Physical Sciences	Chairperson Faculty of Studies Science	Controller of Examinations SVVV, Indore	Joint Registrar SVVV, Indore

UNIT III Instrumental Methods of Chemical Analysis

Basic theory, instrumentation, laboratory techniques and analytical application of the following: Absorption Spectrophotometry: UV-visible, Fourier Transform Infrared Spectroscopy, Nuclear Magnetic Resonance, Chromatography.

UNIT IV: Industrial Organic and Inorganic Chemistry

Chemical explosives: characteristics, classification, and manufacture of important explosives. Polymerization technology: classification of polymers, plastics, fibres, elastomers. Dyes: Requirments of a dye, chemical nature, classification, chemistry of representative important dyes.

UNIT VChemical Safety and Ethical Handling of Chemicals:

Safe working procedure and protective environment, emergency procedure and first aid, Safe storage and use of hazardous chemicals, procedure for working with substances that pose hazards, flammable or explosive hazards, safe storage and disposal of waste chemicals, recovery, recycling and reuse of laboratory chemicals, procedure for laboratory disposal of explosives, identification, verification and segregation of laboratory waste, disposal of chemicals in the sanitary sewer system, incineration and transportation of hazardous chemicals.

TEXTBOOK AND READING LIST

1. Skoog, West, and Harris: Analytical Chemistry: an Introduction Saunders, College Publishing.
2. Skoog, Holler and Nieman: Principles of Instrumental Analysis,Brooks/Cole-Thompson Learning Publishers.
3. Vogel's Quantitative Chemical Analysis.
4. Kenneth A. Rubinson: Contemporary Instrumental Analysis, Culinary and Hospitality Industry Publications Services
5. W.D. Callister. Jr.: Materials Science &Engineering: An Introduction.
6. K.G Budinski, M.K. Budinski: Engineering Materials: Properties & Selection.
7. D.R. Askeland: The Science and Engineering of Materials.
8. V. Raghavan: Materials Science and Engineering.
9. J.P. Mukhlyonov: Fundamentals of Chemical Technology.
10. M.G. Rao, M.Sittig: Dryden’s out line of Chemicals Technology.
11. Emil Raymond Riegel: Industrial Chemistry.
12. Frank Hall Thorp: Outlines of Industrial Chemistry.
13. Madan, R.L., *Organic Chemistry*, McGraw-Hill Education.
14. Smith, Janice Gorzynski ,*Organic Chemistry 4e*, McGraw-Hill Education.