



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*
GUCH106	UG	SUSTAINABILITY AND CHEMISTRY	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 exceed more than 10 marks.

Course Objective:

- To give basic knowledge of role of chemistry for sustainable development.
- To promote the safe use of chemicals.
- To develop the achieving measurable reduction in greenhouse gases emission and pollutants.

Course Outcomes

After completion of the course the students will be able to understand: Role of chemistry for sustainable development and aware about benefit of sustainable chemistry.

Unit-I Introduction of synthetic Chemistry

Basic of Synthetic methods of Chemicals in different industries such as, Chemical processes in Food Industries, Polymer industries, Paint Industries, Pharmaceutical Industries, Leather Industries, Beverages.

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Unit-II Concept of Sustainability:

Definition and Principles of sustainable development. Concept of Economy, Environmental and Social sustainability. Goal of sustainability. principles of sustainable and green chemistry.

Unit-III Design of safer chemicals:

Adverse effect of chemicals on health and environment. Analysis and development of Green industrial processes. Catalytic methods in green synthesis, safer chemicals - different basic approaches; selection of auxiliary substances (solvents, separation agents).

Unit-IV: Energy Resources

Concept and demand of energy, growing energy needs, renewable and non-renewable sources, use of alternate energy sources, Wind energy, Solar energy, water as source of energy, Biofuels production, use and sustainability.

Unit-V: Case Study

Case studies related to: sustainability and Chemistry

: Nanotechnology in Green Chemistry

: Industrial Green Catalyst

: Environmental engineering and Pollution Prevention.

: Green Building Design

Student may Opt any one from above list.

Reference Books:

1. Lynn Goldman, Christine Coussens, Implications of nanotechnology for environmental health research, National Academic Press, Washington, 2007

2.. Matlack, A. S. Introduction to Green Chemistry. Marcel Dekker: New York, 2001

3.. Anastas, P. T.; Warner, J. C. Green Chemistry: Theory and Practice. Oxford Univ. Press:Oxford, 1998.

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4 Lynn E. Foster: Nanotechnology: Science, Innovation, and Opportunity, December 21, 2005, Prentice Hall.

5. Fei Wang & Akhlesh Lakhtakia (eds) (2006). Selected Papers on Nanotechnology— Theory & Modeling (Milestone Volume 182). SPIE Press.

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