



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

**SEMESTER VI**

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*
GUCH602	UG	Petrochemicals & Alternate fuels	3	0	0	3	60	20	20	00	00

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

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

**Course Objectives:**

1. This course will provide the knowledge of petroleum industry, and important engineering process involved in the production of petrol.
2. To comprehend petrochemical chemistry principles and deliver knowledge in a rational manner while putting a focus on its commercial applications.
3. To transfer knowledge and abilities in applied chemistry so that it can be utilised in related fields.
4. To expand knowledge, motivate future entrepreneurs, and familiarise the students with broad concepts.
5. To provide the detailed information about different products from petroleum fractions and their commercial values

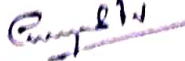
**Course Outcomes:**

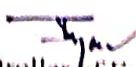
1. Students will be able to recall the concepts of applied chemistry and its significance
2. Students will develop an understanding about the synthetic utility of petrochemicals and their manufacturing process
3. The graduates can pursue their careers in petrochemical industries and related areas
4. Students can learn the in-depth knowledge of process used in petroleum industries
5. The learner is able to recognize the various kinds of alternative fuels and their benefits

**UNIT I Petrochemicals-I**

Natural gas: composition and classification. Natural gas as petrochemical feed stock. Crude oil: composition, classification and characteristics.

  
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**UNIT II Petrochemicals-II**

Petroleum refining process and operations- cracking, distillation, reforming, isomerization, hydrotreating, and blending

**UNIT III Petrochemical products**

Commercial utilization of various fractions from crude oil, hydrocarbons (ethylene, benzene), petroleum-based polymers (polyethylene, polypropylene and PVC) and fertilizer.

**UNIT IV Alternate fuels-I**

Definition and need for alternate fuels, important properties such as cetane number, calorific value, flammable limits, octane number, and comparative properties.


**UNIT V Alternate fuels-II**

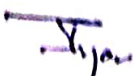
Characteristics of some important alternate fuels- alcohols (methanol, ethanol), hydrogen, vegetable oils (sunflower oil, palm oil), ethers (dimethyl ether, diethyl ether), and biodiesel.

**List of Textbooks**

1. Introduction to petrochemicals by Sukumar Maiti oxford and IBH pubs co. New Delhi.
2. A text on petrochemicals by Dr. B. K. Bhaskar Rao, Khanna pubs. New Delhi.
3. Chemicals from petroleum by A. L. Wadams (ELBS and John Murray London)
4. Petrochemicals by S. L. Venkatewarn ( Colour pubs. Pvt. Ltd., Mumbai)
5. Petrochemicals digest by MGK Manon (Asia Publishing house, Mumbai)
6. Handbook of industrial chemicals Vol-I by K. M. Shah (Multi-tech publishing Co., Hingwala lane, Ghatkoper (E) Mumbai-400077.
7. Industrial chemistry by B. K. Sharma, Goel publishing house, Meerut.
8. Alternative fuels by S.S.Thipse, Jaico publishing house, Mumbai-400001
9. Alternative fuels guidebook: properties, storage, and vehicle facility modifications by Richard L. Bechtold, SAE India, Chennai-600020.

  
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