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*
GPCH102	PG	CONTEMPORARY METHODS OF CHEMICAL ANALYSIS	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 following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:

1. To integrate the knowledge of different equipments, analytical and statistical methods used in chemical science.
2. To understand the advancement in properties of materials at nano-scale range.
3. To understand the impact of chemical technology on society.

Course Outcomes:

1. Students will be able to learn different methods used in chemical analysis.
2. Students will be able to understand the relation between chemical technologies and society.

Syllabus:

Unit I: Analytical Aspects of Assorted Materials

Analysis of dairy products, food products, drug and petrochemicals.

Body Fluid analysis: Analysis of blood for haemoglobin, biochemical properties of glucose and carbohydrates Protein, lipid and cholesterol analysis. Urine analysis.

Unit II: Elementary Concepts of Nanoscience and Technology

Introduction to nanoscience and nanotechnology, nanofabrication technology, Properties of nanomaterials, role of size in nanomaterials, nanoparticles, semiconducting nanoparticles, nanowires, nanoclusters, quantum wells, nanotechnology enable devices.

Unit III: Equipment Design and Applications

Instrumental methods and applications of GC-MS, HPLC, Cyclic Voltammeter, thermogravimetric analysis, Scanning Electron Microscopy.

Unit IV: Data Analysis in Chemistry

Concepts of statistical population and sample from a population; qualitative and quantitative data; nominal, ordinal, ratio, interval data; cross sectional and time series data; discrete and continuous data. Sources, collection and scrutiny of primary and secondary data.

Reliability of analytical data, mean, median and mode, standard deviation, Correlation and Regression analysis.

Unit V: Chemical Technology and Society

Introduction to clean technology, society exploration of societal and technological issues from a chemical perspective. Chemical and scientific literacy to develop a better understanding of consumption of natural resources and technological and sustainable development of non conventional resources.

Text Books:

1. Analytical Chemistry: Gary D. Christian (Wiley,India).
2. Instrumental Methods of Analysis: Willard, Merrit, Dean, Settle (CBS Publishers, Delhi, 1986)
3. Instrumental Methods of Chemical Analysis: Braun (Tata McGraw-Hill)
4. Basic Concepts in Analytical Chemistry: S. M. Khopkar (New Age International Publication)
5. Chemistry of nanomaterials: Synthesis, properties and applications by CNR Rao et.al.
6. Nanochemistry: A Chemical Approach to Nanomaterials, Royal Society of Chemistry, Cambridge UK.
7. Fundamentals of Biostatistics: N.K. Dutta (Kanishka Publishers).
8. Analytical Chemistry: Gurdeep R. Chatwal (Himalaya Publishing House).

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