

## Chemistry

(16 Core + 3 Elective = 19 Courses = 60Cr)

Chemistry is a basic science that empowers the learners to understand life and its requirements at a molecular level in terms of structure, composition, interactions, evolution and involvement. The scope of chemistry encompasses materials, medicines, environment, life and many others.

Major in Chemistry has been designed keeping in view the requirements of the contemporary curriculum which necessitates understanding the basics of chemical bonding, intermediates, reaction kinetics, elemental properties, analytical and purification techniques along with integrated lab experiences. The content has then been advanced to predict chemical properties, reactions and their application. An equal emphasis has been laid on the material and life sciences along with practical aspects so that students taking chemistry as a major can pursue higher studies or a career in the industry.

Third, fourth and fifth semester of the Chemistry Major for the students of School of Liberal Arts and Sciences will consist of four core courses and an integrated lab that will build upon the concepts starting from the basics of chemistry to reach a stage where they will be able to choose electives depending upon the path forward in the sixth semester. This semester of their graduation will also include full-fledged project work to deepen the expertise and experience by working in a research lab.

The course also ensures students' exposure to the industry, current research problems being worked upon and presentation skills by organizing industrial trips, lectures by eminent speakers and in-house symposiums.

The layout of the semester wise course plan is as follows for the <b>CHEMISTRY MAJOR</b>		
<b>S.No.</b>	<b>CORE COURSES Year - II, 3rd Semester</b>	<b>CREDITS</b>
1	Bonding, Theories, Intermediates and Orientations in Chemistry	3
2	Basics in Analytical Chemistry	3
3	Basics of Thermodynamics: Energetics and Feasibility of Chemical Reactions	3
4	Trends in Chemical Properties of elements	3
5	Lab Course : Purification Techniques using Physical Properties	3
<b>CORE COURSES Year - II, 4th Semester</b>		
6	Reactions in Organic Functional groups	3
7	Principles of the Purification and separation techniques	3
8	Fundamentals of Chemical Kinetics: Single and Multiple Pathways	3
9	Coordination Chemistry: From Colours to medicines	3
10	Lab Course: Short Synthesis & Characterization	3
<b>CORE COURSES Year - III, 5th Semester</b>		

11	Heterocyclic Compounds & their Reactions	3
12	Spectroscopic Techniques for Structure Determination	3
13	Quantum Chemistry & its Applications	3
14	Bioinorganic Chemistry and enzyme catalysis	3
15	Lab Course : Multiple Step Synthesis & Application	3
	<b>CORE COURSES Year - III, 6th Semester</b>	
16	Elective - I *	3
17	Elective - II *	3
18	Elective - III*	3
19	Project Work in Research Lab	6
16	Elective -I Basket	
	(i) The art of Organic synthesis	
	(ii) Pericyclic Reactions	
	(iii) Organic Photochemistry	
17	Elective -II Basket	
	(i) Chemistry of Polymers	
	(ii) Advance Analytical Techniques - Electrochemical/ XRD/Raman/SEM etc.	
	(iii) Radiochemistry: Energy, environment and medicine	
18	Elective - II - Basket	
	(i) Reactions in Aqueous Solutions	
	(ii) Enzyme kinetics	
	(iii) Thermochemistry and its Applications	