



Department of Chemistry

Bhaskaracharya College of Applied Sciences
(University of Delhi)

Sec -2, Phase - 1, Dwarka, New Delhi -110075

One of the leading subjects in pure sciences, Chemistry offers the students an ideal platform to begin exploring the composition, structure, properties & behavior of all forms of matter. The emphasis at the under-graduate level is to give a broad coverage of most common branches of Chemistry considering the inter-disciplinary nature of the subject today.

The laboratories of the Department are well equipped with sophisticated instruments. Some notable instruments are electronic and analytical balances, pH-meter, hot air oven, double distillation plant, vacuum pump, de-ionizer, spectrophotometer, polarimeter, colorimeter, digital potentiometer, digital melting & boiling point apparatus, conductivity meter and fuming hood chamber that enables students to carry out all the experiments as prescribed in the syllabus as well as simple projects. Besides these, there is an Instrumentation laboratory for carrying out experiments in Physical chemistry and Analytical techniques. Titrations, synthesis, purification and analysis of chemical compounds are some of the aspects that form the basis of the lab. Moreover, there are dedicated laboratories for conducting research work in leading areas of Chemistry that are equipped with sophisticated instruments being funded by Board of Research in Nuclear Sciences, Science and Engineering Research Board and University of Delhi. Currently, the department has 01 Post –Doc fellow and 04 students are pursuing their Ph.D. To provide detailed subjective knowledge to the students, modern power-point based teaching methodologies are employed. Moreover, students are encouraged to perform minor projects to attain hands-on experience of latest instruments. Further, we go beyond curriculum by encouraging students to take projects and fellowship program. After graduation, students have lucrative and attractive career options in Research & Development and Managerial positions in Pharmaceutical and Chemical industries.

About the Department

It is worth mentioning that B.Sc.(H) in Chemistry course commenced from the year 2017-18. In all 69 students were enrolled. The result was overwhelmingly 100%. Two batches have passed out and we are proud that our Alumni are performing well. The Department has a well organized Alumni Association which meets periodically.

The Department has the chemical society named 'ALCHEMY' which is managed by the students. The society organizes events viz. webinars, seminars, invited lectures/ talks, excursion and a Chemistry Fest 'Colors of Chemistry'. The Department had organized two National Conferences in 2017 & 2019 which experienced overwhelming response from academia.

The Department has its own Blog (<http://bcaschem.blogspot.in/?m=1>) and at present 10880 visitors have visited the blog site. A Google-page, Email and WhatsApp group of the Department of Chemistry is also functional. The Department has a task force "Bhaskaracharya Environmental and Sustainability Taskforce (BEST)" whose primary objective is to preserve and enhance the environmental activity so as to achieve healthier environment

In order to bring equity, efficiency and diversification the university adopted CBCS in 2017 and now LOCF. Accordingly Generic elective subjects are offered, the department offers GE papers as to expose students in a discipline different from their course of study. The Department has started taking baby steps in implementation of NEP by adopting Blended teaching. Our endeavor is to re-boot India's education system and enable India's burgeoning youth to prepare themselves for what is widely touted as India's century. The department has picked up the baton and trying to hit the ground running.

Admission Eligibility Criteria

- ❖ The overall percentage in Physics, Chemistry and Mathematics (PCM) should be 55% and one compulsory language should be 50%

Faculty Details

S.No	Name of Faculty	Qualifications	Specialization
1)	Dr. Lalit Kapur (<i>Teacher in-Charge</i>)	Ph.D. (D.U.)	Inorganic Chemistry
2)	Dr. Balaram Pani	Ph.D. (J.N.U.)	Inorganic Chemistry Environmental Chemistry

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Semester-wise distribution of Courses under CBCS)			
SEMESTER I		SEMESTER II	
C1	Inorganic Chemistry-I	C3	Organic Chemistry-I
C2	Physical Chemistry-I	C4	Physical Chemistry-II
AECC1	English communication/Environmental Science	AECC2	English communications/ Environmental Science
GE1	Generic Elective	GE2	Generic Elective
SEMESTER III		SEMESTER IV	
C5	Inorganic Chemistry-II	C8	Inorganic Chemistry-III
C6	Organic Chemistry-II	C9	Organic Chemistry-III
C7	Physical Chemistry-III	C10	Physical Chemistry-IV
SEC1	Skill-Enhancement Elective Course	SEC2	Skill-Enhancement Elective Course
GE3	Generic Elective	GE4	Generic Elective
SEMESTER V		SEMESTER VI	
C11	Organic Chemistry-IV	C13	Inorganic Chemistry-IV
C12	Physical Chemistry-V	C14	Organic Chemistry-V
DSE1	Discipline Specific Elective	DSE3	Discipline Specific Elective
DSE2	Discipline Specific Elective	DSE4	Discipline Specific Elective
Abbreviations used for Course			
C	Core Course		
AECC	Ability Enhancement compulsory Course		
GE	Generic Elective course		
SEC	Skill Enhancement Elective Course		
DSE	Discipline Specific Elective course		
<p>SEC: Skill-Enhancement Elective Courses <i>(any one paper per semester in semesters 3rd and 4th)</i></p>	<ol style="list-style-type: none"> 1. IT Skills for Chemists 2. Basic Analytical Chemistry 3. Chemical Technology & Society 4. Chemoinformatic 5. Business Skills for Chemists 6. Intellectual Property Rights 7. Analytical Clinical Biochemistry 8. Green Methods in Chemistry 9. Pharmaceutical Chemistry 10. Chemistry of Cosmetics & Perfumes 11. Pesticide Chemistry 12. Fuel Chemistry 		

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<p>DSE: Discipline Specific Elective <i>(any two paper per semester in semesters 5th and 6th)</i></p>	<p style="text-align: center;">(DSE- 1)</p> <ol style="list-style-type: none"> 1. Novel Inorganic Solids 2. Inorganic Materials of Industrial Importance <p style="text-align: center;">(DSE 2 -4)</p> <ol style="list-style-type: none"> 3. Applications of Computers in Chemistry 4. Analytical Methods in Chemistry 5. Molecular Modelling & Drug Design 6. Polymer Chemistry 7. Research Methodology for Chemistry 8. Green Chemistry 9. Industrial Chemicals & Environment 10. Instrumental Methods of Analysis 11. Dissertation 				
<p style="text-align: center;">GE : Generic Electives <i>(any one paper per semester in semesters 1st to 4th.)</i></p>	<p>GE1: Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons</p> <p>GE3: Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry</p> <p style="text-align: center;">(For academic Year 2021-22)</p>				
Category wise seat distribution					
Total Seats	UR	SC	ST	OBC	EWS
40	16	6	3	11	4

GENERIC ELECTIVE WRITE UP (DEPARTMENT OF CHEMISTRY, BCAS)

To acquire a B.Sc. (Hons) Chemistry degree, the student will have to study four Generic Elective Courses in the first four semesters of the course. Different Generic Elective courses are offered to students of B.Sc. (Hons) Chemistry Programme by other Departments of the College and the student will have the option to choose one GE course each in Semesters I, II, III, and IV. After admission in B.Sc Hons Chemistry in first year students are counseled to select one generic elective paper from any one of the department other than chemistry. Generally students are advised to opt Mathematics in the first semester because **at least two papers of Mathematics are compulsory for admission to M.Sc. Chemistry in University of Delhi, thus students are advised to opt for the same.**

Note: Student cannot opt GE paper from their own department.

For students of other disciplines Department of Chemistry, BCAS offers following four GE courses (GE-1, GE-2, GE-3, GE-4) currently

GE-1: Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons

GE-2: Chemical Energetics, Equilibria & Functional Group Organic Chemistry-I

GE-3: Solutions, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry-II

GE-4.: Chemistry of s- and p-block elements, States of matter and Chemical Kinetics

The objectives and learning outcomes of the Generic elective paper offered by department of chemistry, BCAS to first year students is depicted in following table.

The course is hybridized format of two important branches of chemistry i.e. Inorganic and Organic chemistry which are studied in two sections: SECTION A (Inorganic chemistry) and SECTION B (Organic Chemistry)

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Course Name and Title	Objective	Learning outcomes
GE-1: Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons Total Credits: 06 (Credits: Theory-04, Practical-02) (Total Lectures: Theory- 60, Practical-60)	The course reviews the following <ol style="list-style-type: none"> 1. Structure of the atom which is pre-requisite in understanding chemical bonding. 2. Provides basic knowledge about ionic, covalent and metallic bonding and explains that chemical bonding. 3. Periodicity in properties with reference to the <i>s</i> and <i>p</i> block, which is necessary in understanding their group chemistry. 4. Fundamentals of organic chemistry. 5. Stereochemistry: Concept of visualizing the organic molecules in a three dimensional space. 6. Alkanes, alkenes, alkynes and aromatic hydrocarbons 	<ol style="list-style-type: none"> 1. Solve the conceptual questions using the knowledge gained by studying the quantum mechanical model of the atom, quantum numbers, electronic configuration, radial and angular distribution curves, shapes of <i>s</i>, <i>p</i>, and <i>d</i> orbitals. 2. Will able the student to draw the plausible structures and geometries of molecules using radius ratio rules, VSEPR theory and MO diagrams (homo- & hetero-nuclear diatomic molecules). 3. Periodicity in atomic radii, ionic radii, ionization energy and electron affinity of elements. 4. Understand and explain the differential behavior of organic compounds based on fundamental concepts learnt. 5. Formulate the mechanism of organic reactions by recalling and correlating the fundamental properties of the reactants involved. 6. Learn and identify many organic reaction mechanisms including free radical substitution electrophilic addition and electrophilic aromatic substitution.