

**BANKURA CHRISTIAN COLLEGE (DEPARTMENT OF CHEMISTRY)**

Sr. No.	Course	Course Outcomes
1.	B.Sc. (Honours in Chemistry)	<p><b><u>1<sup>st</sup>Year:</u></b> After revision of the basic and fundamental topics, students are exposed to advanced and modern approaches of learning different aspects of chemistry along with laboratory work.</p> <p><b><u>1<sup>st</sup>Semester:</u></b> <b>Organic Chemistry:</b> Students learn the basic concepts of organic chemistry which include stereochemistry, bonding and reaction mechanism. They also learn how to identify or separate organic compounds. <b>Physical Chemistry:</b> Students get basic ideas on the most important topics of physical chemistry viz. thermodynamics, chemical kinetics and kinetic theory. They perform different experiments on chemical kinetics in this course.</p> <p><b><u>2<sup>nd</sup> Semester:</u></b> <b>Organic Chemistry:</b> Students are exposed to newer and modern approaches to stereochemistry and reaction mechanism. They prepare a good number of organic compounds in their practical classes. <b>Inorganic Chemistry:</b> Students become familiar with the quantum mechanical approach to atomic structure, the latest periodic table, modern theories of acids and bases and redox chemistry to get a comprehensive idea on these fundamental topics. They learn different titrimetric methods of analysis in this course.</p>
		<p><b><u>2<sup>nd</sup>Yr:</u></b> <b><u>3<sup>rd</sup>Semester:</u></b> <b>Organic Chemistry:</b> Students get acquainted with advanced aspects of stereochemistry, reaction mechanism, various name reactions and reagents including synthesis and properties of some important class of organic compounds. <b>Physical Chemistry:</b> In the course, students are exposed to applications of thermodynamics and transport processes They are introduced to the modern world of quantum mechanics in this course. <b>Inorganic Chemistry:</b> In this course, students get advanced knowledge on chemical bonding. Basic nuclear chemistry is also taught in this course. <b>Practical:</b> Students prepare a variety of organic</p>

		<p>substances by nitration, acetylation, oxidation, reduction etc. In physical chemistry lab, they determine partition coefficient, equilibrium constant etc. Also, they perform conductometric titrations to determine saponification value, strength of acid against base. In inorganic lab, students perform iodo/iodimetric titration and determine the metal content in some selective samples.</p> <p><b>SEC:</b> The skill enhancement subject comprises basic analytical chemistry. In this course, students learn how to analyse soil, water, food products and cosmetics. Besides, they are introduced with chromatographic separation methods. Spectrophotometric determination of few substances are done in the lab.</p> <p><b>4<sup>th</sup> Semester:</b></p> <p><b>Organic Chemistry:</b> Students are exposed to the study of a group of organic compounds. Besides, they are introduced to the field of organometallic chemistry in this course.</p> <p><b>Physical Chemistry:</b> Students get familiar with more applications of thermodynamics and quantum chemistry. They are also taught electrical properties of molecules.</p> <p><b>Inorganic Chemistry:</b> Students are introduced to the principles of metallurgy. They learn comprehensive studies of the chemistry of the elements and inorganic polymers. Besides, they are introduced to the field of coordination chemistry.</p> <p><b>Practical:</b> Students carry out detection of elements and functional group in an organic sample including preparation of derivative. In physical chemistry lab, students get familiar with potentiometric and pH-metric titrations along with other experiments e.g. study of phase diagrams. Students perform complexometric titrations and prepare a few complex compounds in this course.</p> <p><b>SEC:</b> Students are introduced to the field of drugs and pharmaceuticals. They also know the use of fermentation in manufacturing some organic compounds viz. ethyl alcohol and citric acid. Preparation of an analgesic and an antacid constitute the lab work in this course.</p> <p><b>3<sup>rd</sup> Yr:</b></p> <p><b>5<sup>th</sup> Semester:</b></p> <p><b>Organic Chemistry:</b> Students learn the logic of organic synthesis besides study of other organic</p>
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		<p>compounds. They are introduced with spectroscopic methods (IR, UV and NMR) and their applications to identify simple organic molecules.</p> <p><b>Inorganic Chemistry:</b> Students are exposed to newer ideas of coordination chemistry. Colour, spectra and magnetic moments of complex compounds are dealt with in this course. A thorough study of the d and f-block elements is undertaken here.</p> <p><b>Practical:</b> In organic chemistry lab, students learn to estimate some organic compounds quantitatively viz glycine, glucose, sucrose, phenol, vitamin etc. In inorganic lab, they carry out chemical analysis by chromatography, spectrophotometry and gravimetry.</p> <p><b>DSE:</b> Advanced course physical chemistry containing crystallography, statistical thermodynamics and some special topics comprises this discipline specific elective. Students get thorough knowledge in physical chemistry after being exposed to this course. In the lab, computer programming is taught.</p> <p><b>DSE:</b> Awareness about the use of green chemistry to cope up with environmental pollution is focused in this course. Designing a green synthesis and future trends of green chemistry are taught here. Bio-diesel and nano particles are prepared in the lab.</p> <p><b>6<sup>th</sup> Semester:</b></p> <p><b>Organic Chemistry:</b> Students are introduced to different classes of organic compounds viz. carbocycles and heterocycles, alicyclic compounds biomolecules and carbohydrates. They are also taught methodology in organic synthesis and pericyclic reactions.</p> <p><b>Inorganic Chemistry:</b> Students are exposed to new ideas on a variety of topics including organometallic compounds and their catalytic activity, kinetic of inorganic reaction, role of metal ions in living systems etc.</p> <p><b>Physical Chemistry:</b> Students know more details on photochemistry as well as molecular spectroscopy and surface phenomena.</p> <p><b>Practical:</b> Students learn separation of organic compounds by chromatographic methods e.g. TLC. Paper and column chromatography. Also, the students record full spectral analysis of a no. of</p>
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		<p>organic samples. In inorganic lab, they practice qualitative semi-micro analysis of a variety of acid and basic radicals. They also perform various physical chemistry experiments like determination of surface tension, CMC including its spectrophotometric determination.</p> <p><b>DSE:</b>In this course, various methods of chemical analysis e.g. thermal, optical and electroanalytical methods are introduced to the students. Students also learn different separation techniques e.g. solvent extraction, spectrophotometric and chromatographic separation by GLC, GPC, TLC and HPLC. They carry out separation of various mixtures by these methods in the lab.</p> <p><b>DSE:</b>Students are introduced to the field of polymers in the course. They learn the kinetics of polymerization, nature, properties and structure of polymers. They determine molecular mass of polymers and analyse and characterize, as well.</p>
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<b>Sr. No.</b>	<b>Program</b>	<b>Program Objectives</b>	<b>Program Specific Objectives</b>
1.	<b>B.Sc. (Honours in Chemistry)</b>	A training to offer clear and comprehensive knowledge with ability of application in various fields of chemistry	Basic and fundamental knowledge in the subject, in particular and science, in general is to be gathered so that a student is able to continue higher studies, to appear at various competitive examinations, to serve industries or to pursue a research career. Familiarity with modern fields of research and application is necessary.