

**GOVT SHYAMA PRASAD MUKHERJEE
COLLEGE SITAPUR
DEPARTMENT OF CHEMISTRY**

Course Outcomes (COs) for Chemistry

Course 1

CO1.1 – This course gives the student idea about the nature and purity of the crystal.

CO1.2 – This course is very important for the student. This course gives student idea about the way a reaction proceeds and kinetics in details, specially for inorganic reaction.

CO1.3 – This course is more related to biochemistry. This course gives the student idea about the effect of metal ions in living system and also with different drugs.

CO1.4 – Organometallic compounds are very important in biological bodies like hemoglobin, chlorophylls, Vitamin B12 and also they can be used as chemical reagent. This course discussed about the synthesis and properties of these organometallics.

CO1.5 – This course gives student knowledge about the synthesis of different complexes and their analytical study by spectroscopy.

CO1.6 – Nanoscience is very important for modern scientific community.

CO1.6 discuss details about the application of some specific nano molecules. This course also discuss details of synthesis, structure as well as reaction of supramolecules which are very important for biological body.

CO1.7 – This is related to nuclear chemistry. It has a broad application from designing nuclear weapons to the use in medical sciences.

CO1.8 – Data analysis is very important for modern chemical sciences. This course gives a detail knowledge to the student about the analysis of statistical data they got through from different chemical experiment.

CO1.9 – Metal ion estimation is very important for industry. This is discussed in this course and also students get idea of different methods of estimation of a large number of ions present.

CO1.10 – Purification and separation of compounds need special techniques. These are solvent extraction, chromatographies etc. This is discussed in this course and students learn the application of it.

Course 2

CO2.1 – Dyes are very important class of organic chemicals. They are the source of colour in different colouring chemicals available in market. In this course the synthesis and usefulness of different dyes are discussed.

CO2.2 – Nowadays synthesis of medicine is a very important issue for pharmaceutical industry. The medicines can be antipyretic drugs like paracetamol or antibiotic like penicillin. This course mainly deals with the structural determination, synthesis and uses of some drugs such as antipyretics, analgesic, sulpha-drugs penicillin etc.

CO2.3 – Heterocyclic compounds are very interesting due to their distinct structure and the availability of this kind of heterocyclic structures in medicinal drugs. So the technique of synthesis of heterocyclic compounds is important in the synthesis of different drugs. This course gives the quantitative ideas about the synthesis, properties and uses of such heterocyclic compounds like pyrrole, pyridine quinoline, thiophene, furan etc.

CO2.4 - Proteins are important kind of chemicals in biological bodies. The preliminary unit of proteins are amino acids. This course discussed the methods of synthesis of proteins. Also the conversion of one amino acid to other by protection and de-protection of different groups are also discussed here.

CO2.5 – Carbohydrates, starch etc. are different class of macromolecules consisting of preliminary units like glucose, mannose etc. Their structure are also a matter of constant study due to their uniqueness. They are available in different foods like potato and recently they are being used in medicinal sciences also. This course deals with determination of structure of these class of chemicals and also their preliminary units. Inter-conversion of one preliminary unit to other is also discussed here.

CO2.6 – Alkaloids and terpenes are two very important class of organic chemicals available in different kind of drugs and perfumery chemicals like ephedrine, coniine, citral, jasmone etc. The contents of this course deals with synthesis and structural determination of these class of chemicals. Few reactions of them are also discussed here.

CO2.7 – Synthesis of organic reaction is itself involves a large part of organic chemistry. This is called synthetic organic chemistry. This is discussed in a simple way for some simple molecule to the students. This includes fragmentation and retrosynthetic analysis and also finding synthon or reactive starting molecule of a target molecule.

CO2-8 – Pericyclic reactions are used in a vast way in nature and also by organic chemist. This course gives the student the theoretical basis of this kind of reaction and also helps them to find a way to carry out these types of reaction.

CO2.9 – To determine the structure is very important for organic chemist. Various spectroscopic methods are available like NMR, IR, UV absorption spectroscopies are few of them. The students are given a very preliminary idea on in this course.

CO2.10 – Hereditary its transfer is a matter of discussion among the scientist for a long time. De-oxy ribo nuclic acid (DNA) is responsible for this. RNA (ribo nuclic acid) is also another class of nuclic acid. This course gives the students a basic idea about the structure and nature of these types of compounds.

CO2.11 – Use of green chemistry in modern chemical transformation is a becoming very important tool recently. The course taught here gives the student the principle of green chemistry and few methods of using green chemistry in chemical transformations.

Course 3

CO3.1 – Electrochemistry discussed electrical properties of ionic solutions. Different applications are there of this course.

CO3.2 – Properties of solid surface is unique in nature. They can adsorb different chemicals and also this adsorbed solid can be used as catalyst. Micelle and reverse micelle are also two different name of substances where solids adsorbed different chemicals. This is very important in enzyme chemistry. This is discussed here.

CO3.3 – This course deals with molecular symmetry which is very fundamental in spectroscopic study.

CO3.4 – Quantum chemistry started to flourish in 20th century. This is a very important topic of theoretical research work in chemistry. This chemistry gives idea about the theoretical estimation of different physical and chemical properties of chemicals.

CO3.5 – Photo means light. Exposure of light on different chemicals produce colour of chemicals and also can carry out chemical conversion. This course discussed the theoretical basis of photochemistry as well as different types of spectroscopy.

CO3.6 – This chapter deals with different types of quantum particles like boson, fermion. This is very fundamental in nature and can be studied in particle physics.