

Chemistry Olympiad Program

Overview

Chemistry Olympiad program is conducted in 3 different stages. Here we are targeting to prepare for the first 2 steps, spanning over two years period. The NSEC (National Standard Examination of Chemistry) will take place every November and it will be totally multiple choice Question based on NCERT Class XI-XI Syllabus. The Qualified Candidates (Which is almost 1% of the aspirant appeared) will then Proceed to InChO (Indian Chemistry Olympiad) which is scheduled to be held on January Next Year. The format here is written objective type answers. Overall, Top 35 student will then proceed to Orientation cum Selection Camp which is modeled as Boot camp. 60% of the weightage is given to the theory and 40% to the practical expertise of the Student. Based on The Performance in OCSC, only 4 student will be send to Pre-Departure training Camp for IChO.

Scope

The Chemistry Olympiad program emphasizes on Scientific thought process and elevate student to take up the subject at ease and create an Intuitive sense towards the structure and interaction of the material world around us. It also enables student to understand how the subject grew from an historical perspective, which is going to benefit student to understand how the scientist in the field approaches towards a problem. This subject initially stress more on Logical basis of material science and less on Core mathematical problem (which is crudely

Arithmetic in nature), but when the fundamentals are established it extends its reach to analytical chemistry, where mathematics and logic both are prevalent.

The subject of Chemistry is broadly divided into 3 Parts,

Physical Chemistry

Inorganic Chemistry

Organic Chemistry

For NSEC syllabus, the modules are comprised of these 3 Sections, which is clearly mentioned in NCERT syllabus too. In InCho, the emphasis is further extended into analytical chemistry and Biochemistry, which is a try to pull one parallel to the IChO syllabus.

So, here is the main broad Topics which will cover during the course:

Physical Chemistry
Inorganic Chemistry
Organic Chemistry
Biochemistry
Analytical Chemistry and Spectroscopy
Applied and Environmental Chemistry
Experimental Chemistry

Physical Chemistry

This section of Chemistry will be dealing with the governing laws behind the Chemical Interaction and serves as the backbone of Chemical experiments/analytical methodology. The highlight chapters are

- Structure of atom, Periodic properties and Chemical Bonding

- Thermodynamics, Chemical Kinetics and Equilibriums
- Solid State, Solutions and Gas laws

Inorganic Chemistry

Understanding each of the atom is essential to succeed in Chemistry. The detailed property, interaction, source, synthesis and reactions of each group of Elements, which is laid in Periodic Table, is to be discussed in this section. Here the highlight goes to the 3 blocks of Elements s, p and d, both have unique characteristic feature. In addition to that, Lanthanides and Actinides completes the set.

Understanding all these blocks and the groups making the block is going to help in couple of ways

1. Write down an equation intuitively and
2. Properties of compound would be predicted.

Organic Chemistry

Most of the chemistry and modern research on Chemistry revolves around this field today. Success at Chemistry Competition is not possible without the understanding of this section at all.

Main 3 Highlights of the Section are

- ◆ Structure, Nomenclature and Isomerism
- ◆ Mechanism and name reaction
- ◆ Application in everyday life

Experimental, Applied and Analytical Chemistry

This section gets prominence when we go up in the ladder of the competition. Ultimately these sections act as the deciding factors between winner and loser. There is the methodology of Chemical reaction engineering discussed elaborately. There is also a lecture on how to purify and analyse the product of a reaction, and how to use rationale to design a desired product. In application, these sections emphasise how chemistry is involved in daily life, especially in the form of polymers and also as biomolecules. Last but not the least, the overall impact of material science on the environment and the recycling/recovery/disposal of chemical waste is also discussed here briefly as per the scope we get.

- Laboratory set up and techniques
- Chromatography and other separation/purification techniques
- Spectroscopy, Crystallography and other analytical techniques (Qualitative and Quantitative)
- Biochemistry
- Polymer Science
- Environmental Chemistry