



## Introduction

Chemistry is central and stands at the pivot of science. On the one hand it deals with biology and provides explanations for the processes of life. On the other hand, it mingles with physics and finds explanations for phenomena in the fundamental processes and particles of the universe. Chemical principles lie behind the physical environment in which we live, and some understanding of chemistry is essential preparation for studies in the life sciences. The study of chemistry thus serves two roles – preparation for courses in other sciences as well as preparation for a career or higher academic studies.

Emphasis will be placed on presenting the core concepts of chemistry in ways which emphasize its practical use and applicability to real-world issues. This lays a strong foundation for further work in chemistry at higher levels, as well as the use of chemical knowledge in other areas. The challenge of chemistry lies in being able to unify real-world data, experimentation, and theoretical concepts to make sense of physical interactions and solve practical problems. A good background in science is required for students selecting Higher Level (HL) and Standard Level (SL) Chemistry. Students applying for both HL and SL Chemistry should expect to achieve a satisfactory grade in either the GCE 'O' Level Chemistry or the Integrated Programme Chemistry.

## Course Content

The course is available at both HL and SL, and supplemented by the study of an additional option topic. All students will spend 95 hours on the core topics, but HL students are required to spend an additional 60 hours on the additional Higher Level material which covers more depth and detail within each of these areas of study. The core materials for both HL and SL includes Stoichiometry, Atomic Theory, Periodicity, Bonding, Energetics, Kinetics, Equilibrium, Acids and Bases, Oxidation and Reduction, Measurement and Data Processing and Organic Chemistry.

## Options

There are 4 Options in the syllabus and every student is required to study one of them. The Option topic chosen for ACS(I) students is Medicinal Chemistry.

## Skill Development

By its very nature Chemistry lends itself to an experimental approach and it is expected that this will be reflected throughout the course. It has a substantial practical element of regular experimental reports throughout the two years. And through this rigorous course students learn to selectively organise, present and analyse data to identify patterns, report trends, draw inferences and make predictions. They will also be encouraged to analyse and evaluate hypotheses, research questions and predictions; scientific methods/ techniques and procedures; and scientific explanations. Option topics like Energy or Medicinal Chemistry help to reinforce students' awareness of the social, economic, technological, ethical and cultural implications of chemistry for the individual, society, the environment and the world.

## Assessment

	Higher Level (%)	Standard Level (%)
Paper 1	20	20
Paper 2	36	40
Paper 3	24	20
Internal Assessment	20	20

The final grade for the internal assessment will be based on one scientific investigation taking about 10 hours and the write up is about 6 to 12 pages. It should cover a topic that is commensurate with the level of the course of study. HL students will spend at least 60 hours, and SL students 40 hours, on laboratory practical activities. The duration includes 10 hours for the Group 4 project and 10 hours for the internal assessment.

## University Courses and Careers

Chemistry is a prerequisite for many other courses in higher education, such as medicine, dentistry, pharmacy, life sciences and environmental science, engineering, food science and the oil and gas industry.

More details available at [http://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-\(ib\)-diploma/subject-pre-requisites](http://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-(ib)-diploma/subject-pre-requisites) (NUS website), and <https://admissions.ntu.edu.sg/UndergraduateAdmissions/Pages/index.aspx> (NTU website).

