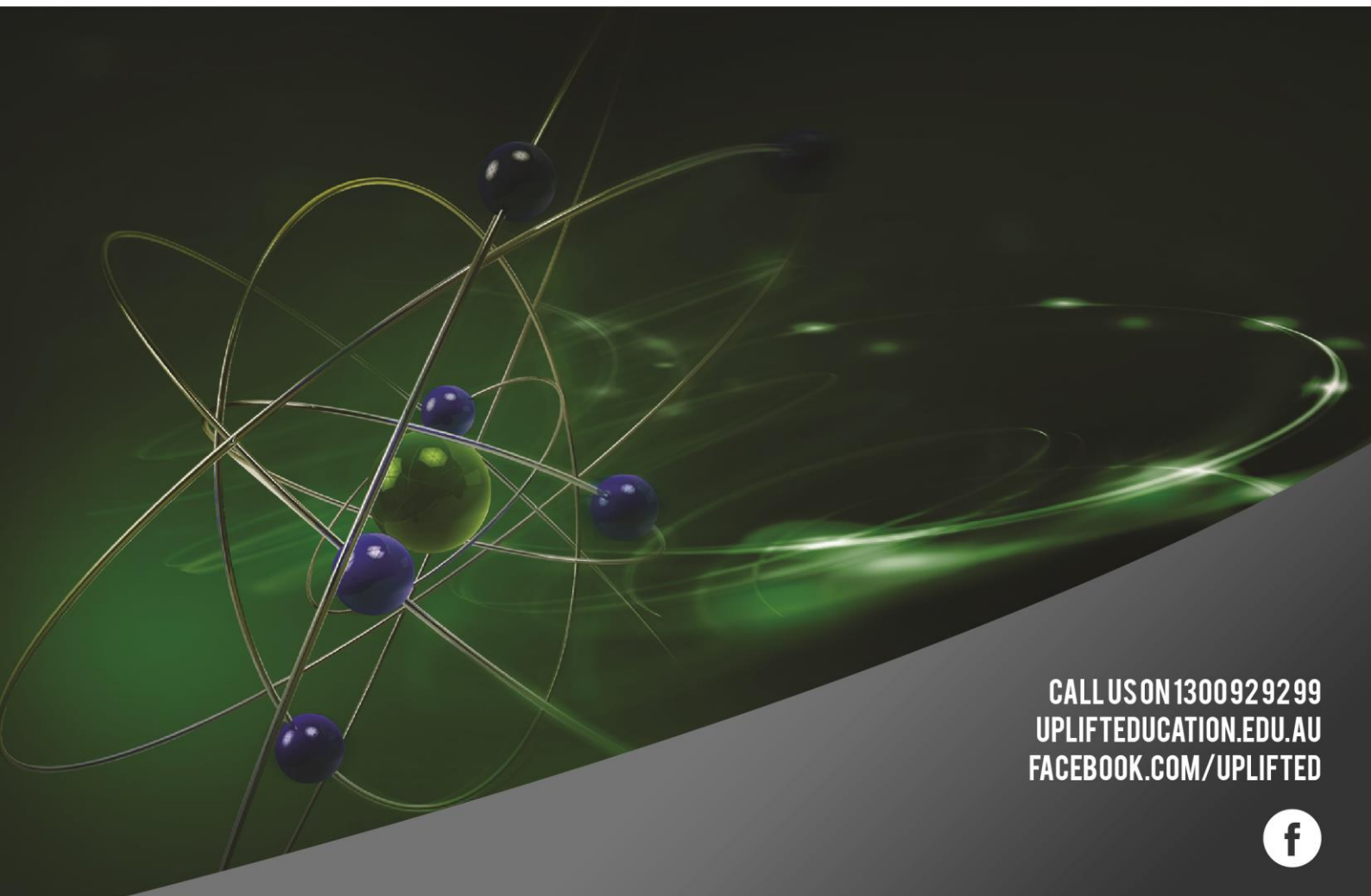




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education

SCIENCE

HSC CHEMISTRY PROGRAM



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YEAR 12: HSC CHEMISTRY PROGRAM

OVERVIEW

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Year Overview

The HSC chemistry course is designed to build upon the foundation gained in the preliminary chemistry course. Students at Uplift Education are expected to be able to solve more complex chemical problems and apply their investigative and problem-solving skills to household and industrial applications. There are three core modules in the HSC chemistry course along with a fourth option topic. It is expected that students completing the HSC chemistry course will be able to understand the nature, practice, application of chemistry in the everyday environment.

A significant component of the HSC chemistry course is the practical component, which must take up at least 35 indicative hours as required by the BOSTES. It is expected that the student will perform at least one open-ended investigation integrating the skills and knowledge they have gained throughout this course.

Unit Sequence

Unit 1: Production of Materials (22 hours)

Humans have always exploited their natural environment for all their needs including food, clothing and shelter. As the cultural development of humans continued, they looked for a greater variety of materials to cater for their needs. The twentieth century saw an explosion in both the use of traditional materials and in the research for development of a wider range of materials to satisfy

technological developments. Added to this was a reduction in availability of the traditional resources to supply the increasing world population. Chemists and chemical engineers continue to play a pivotal role in the search for new sources of traditional materials such as those from the petrochemical industry. As the fossil organic reserves dwindle, new sources of the organic chemicals presently used have to be found. In addition, chemists are continually searching for compounds to be used in the design and production of new materials to replace those that have been deemed no longer satisfactory for needs. This module increases students' understanding of the implications of chemistry for society and the environment and the current issues, research and developments in chemistry.

Unit 2: The Acidic Environment (22 hours)

Acidic and basic environments exist everywhere. The human body has a slightly acidic skin surface to assist in disease control and digestion occurs in both acidic and basic environments to assist the breakdown of the biopolymers constituting food. Indeed, microorganisms found in the digestive system are well adapted to acidic or basic environments. Many industries use acidic and basic compounds for a wide range of purposes and these compounds are found in daily use within the home. Because of this, an awareness of the properties of acids and bases is important for safe handling of materials. Currently, concerns exist about the increased release of acidic and basic substances into the environment and the impact of these substances on the environment and the organisms within those environments. This module increases students' understanding of the history, nature and practice of chemistry, the applications and uses of chemistry and implications of chemistry for society and the environment.

Unit 3: Chemical Monitoring and Management (22 hours)

The state of our environment is an important issue for society. Pollution of air, land and water in urban, rural and wilderness areas is a phenomenon that affects the health and survival of all organisms, including humans. An understanding of the chemical processes involved in interactions in the full range of global environments, including atmosphere and hydrosphere, is indispensable to an understanding of how environments behave and change. It is also vital in understanding how technologies, which in part are the result of chemical research, have affected environments. This module encourages discussion of how chemists can assist in reversing or minimising the environmental problems caused by technology and the human demand for products and services. Some modern technologies can facilitate the gathering of information about the occurrence of chemicals — both those occurring in natural environments and those that are released as a result of

human technological activity. Such technologies include systems that have been developed to quantify and compare amounts of substances. This module increases students' understanding of the nature, practice, applications

Unit 4: Option Topic (22 hours)

HSC chemistry students have the option of choosing one of the following five topics for study in this module.

- Industrial Chemistry
- Shipwreck, Corrosion and Conservation
- The Biochemistry of Movement
- The Chemistry of Art
- Forensic Chemistry

Uplift Education is aware that the chosen option topic may vary depending on the school that the student attends. This module will be taught in the form of seminars to ensure that all students will be able to cover their chosen topic.

Assessment

Students will be required to sit a module exam at the end of each unit to monitor progress and set achievable medium-term goals. Students will also be given homework research tasks throughout the semester which will be marked and placed in the Student Work Portfolios as evidence of teaching and learning. Short revision quizzes will also be given to students within their classes to monitor their understanding of the scientific concepts they have learnt.



Plagiarism and Academic Integrity

Uplift Education has a zero-tolerance plagiarism policy. In the case that plagiarism is found in a student's work, Uplift Tutors may penalise students with a reduction of marks, or in more serious cases, Uplift Education reserves the right to deny service to the student. Uplift Education defines plagiarism in the forms of:

Copying: using the same or very similar words to an original piece of work without acknowledgement or credit, or acquiring another person's academic work and copying it.

Inappropriate paraphrasing: changing words and/or phrases while retaining the original structure and/or information without acknowledgement or credit.