



Subject:	Chemistry (CH) – Elective
Subject Outline:	This subject is designed to provide an understanding of all the major concepts of Chemistry, investigate some of the applications of these concepts in everyday life and discuss the role of science and technology in society.
Objectives:	On successful completion of this subject, students will be able to: <ol style="list-style-type: none">1. Apply knowledge of chemical facts and principles to solve problems (GA 2, 5);2. Analyse, evaluate and present information on chemical science topics (GA 1, 2, 7);3. Solve problems in chemical science using complex reasoning (GA 2, 5);4. Deliver a presentation on a chemistry topic and contribute to group discussion (GA 1, 2, 6);5. Evaluate the strengths and limitations of scientific work in relation to chemical science (GA 2, 5, 7);6. Operate safely and proficiently while conducting chemical science activities (GA 2, 6).
Graduate Attributes (GA):	On completion of the Foundation Program, students will be able to: <ol style="list-style-type: none">1. Communicate effectively in English in a variety of contexts, circumstances and modes2. Demonstrate relevant, practical and theoretical knowledge in a subject area3. Apply relevant academic literacy skills in a subject area4. Apply relevant numeric literacy skills in a subject area5. Apply critical, analytical thinking, and problem solving skills for academic contexts6. Work independently and collaboratively in a cross-cultural context7. Demonstrate academic integrity
Contact Time:	➤ Standard Students – Four (4) hours per week including one (1) hour tutorial ➤ Express Students – Five (5) hours per week
Attendance:	Students are expected to attend all classes, lectures and practical sessions. Attendance is highly valued and contributes directly to the academic success of the student. Attendance is monitored as described in the Attendance Policy.
Tutorials:	Standard students receive assistance from tutors, which involves clarifying concepts discussed in teacher classes, helping students to comprehend and solve questions/problems and providing direction for students about current assessment activities. Express students while not having tutorials, do have less structured student led sessions as part of their program, which encourage students to actively participate in class.
Student Textbook:	❖ There is no prescribed textbook for this subject. It is recommended that students use <i>Openstax – Chemistry</i> as a reference text. It is a free textbook which is available online. ❖ Two IES Chemistry Manuals are also available online
Content:	<ul style="list-style-type: none">● Chemistry basics (classification, properties and changes of matter)● Atomic structure● Chemical names and formulas● The mole concept● Chemical reactions● Stoichiometry● Electrons in atoms



	<ul style="list-style-type: none">● Chemical periodicity● Ionic bonding● Covalent bonding● States of matter● Thermochemistry● Gas laws● Water and aqueous solutions● Properties of solutions● Reaction rates and Equilibrium● Acids and Bases● Neutralisation● Redox Reactions● Electrochemistry● Hydrocarbons● Organic Functional Groups and Reactions
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Students in the standard program are assessed through the following assessment activities:

Assessment Activity	Description	Weighting
Research Portfolio	This assessment activity is divided into two parts. In Semester 1, students will need to create a scientific poster relating to a topic of interest in chemical sciences. In Semester 2, students will need to conduct research using a variety of primary and secondary sources to identify a contemporary issue in chemical sciences relating to a topic of interest and discuss the ethical issues related to the selected topic.	20%
Progress Tests 1 and 2	Students will complete two short 'in-class' tests (50 minutes); these tests are given at the completion of each unit of work. Progress Test 1 (Matter and Changes, Atomic Structure, Chemical Names and Formulas, The Mole Concept) is in the first part of the course and Progress Test 2 (Gas laws, Water and Aqueous solutions and Properties of Solutions) is in the second part of the course. Each test has multiple choice questions, short answer questions and an extended response question.	20%
UQ Practical Experience	In the course, students must successfully complete a series of practical investigations at UQ Chemistry laboratories, collecting and analysing results, and prove themselves competent at following procedures and using laboratory equipment.	10%
Mid-Course Exam	Students will complete an exam (90 minutes with 10 minutes perusal time in length) which covers some of the topics discussed in the first half of the course (Chemical Quantities, Stoichiometry, Electron Structure, Periodicity, Ionic and Covalent Bonding, Thermochemistry). The exam has multiple choice questions, short answer questions and extended response (multistep and novel) questions.	20%
Workshops/Online quizzes	During tutorials, students will engage in a wide range of hands-on activities and interactive workshops that are directly linked to the chemistry curriculum. In addition, students will be offered online quizzes ("Pre-class Quiz" and "Check your understanding" at the	10%



	end of every chapter). The "Pre-class" quiz will assist students to prepare for the lesson and "Check your understanding" will test their knowledge of the topic.	
Final Exam	Students will complete an exam (90 minutes with 10 minutes perusal time) which covers some of the topics discussed in the second half of the course (Reaction rates and Equilibrium, Acids and Bases, Neutralisation, Redox Reactions, Electrochemistry, Organic Chemistry). The exam has multiple choice questions, short answer questions and extended response (multistep and novel) questions.	20%

Students in the express program are assessed through the following assessment activities:

Assessment Activity	Description	Weighting
Research Portfolio	This assessment activity is divided into two parts. In Semester 1, students will need to create a scientific poster relating to a topic of interest in chemical sciences. In Semester 2, students will need to conduct research using a variety of primary and secondary sources to identify a contemporary issue in chemical sciences relating to a topic of interest and discuss the ethical issues related to the selected topic.	20%
Trimester exams	Students will complete three 90 minute (with 10 minute perusal time) exams at the completion of each trimester. Trimester 1 exam covers Chemistry Basics, Atomic Structure, Chemical Names and Formulas, The Mole Concept, Chemical Reactions, Stoichiometry, Electrons in Atoms and Chemical Periodicity. Trimester 2 exam covers Ionic Bonding, Covalent bonds, States of Matter, Thermochemistry, Gas Laws, Water and Aqueous solutions, Properties of Solutions and Reaction rates and Equilibrium. Trimester 3 exam covers Acids and Bases, Neutralisation, Redox Reactions, Electrochemistry, Hydrocarbon compounds and Functional groups. Each trimester exam has multiple choice questions, short answer questions and extended response (multistep and novel) questions.	55%
UQ Practical Experience	In the course, students must successfully complete a series of practical investigations at the UQ Chemistry laboratories, collecting and analysing results, and prove themselves competent at following procedures and using laboratory equipment.	10%
Workshops/Online quizzes	During tutorials, students will engage in a wide range of hands-on activities and interactive workshops that are directly linked to the chemistry curriculum. In addition, students will be offered online quizzes ("Pre-class Quiz" and "Check your understanding" at the end of every chapter). The "Pre-class" quiz will assist students to prepare for the lesson and "Check your understanding" will test their knowledge of the topic.	15%