

CHEM150: Concepts in Chemistry

Science

(15 points)

Course Prescription

The fundamentals of chemistry are explored with a view to enhancing understanding of the chemical nature of the world around us and providing a foundation for further study in chemistry. Special attention is paid to familiarisation with the language of chemistry and the chemist's perspective of the properties of matter and its transformations. It is recommended that students with a limited background in chemistry take this course prior to CHEM 110 or CHEM 120.

Course Overview

Why take CHEM150:

CHEM 150 (15 points) introduces foundational chemical concepts including the classification of substances and the ways substances change, different types of chemical reactions and some of the factors that affect these reactions. This course will enable students to gain an understanding of the atomic basis of nature as well as practice some basic laboratory techniques.

Who CHEM150 is designed for:

This course aims to build a solid foundation of chemical concepts so that students may be more confident in exploring chemistry or chemistry-related topics in higher-level courses. This course is good preparation for students going into CHEM110 and/or CHEM120 and/or biological sciences.

Where CHEM150 may lead to:

CHEM150 reinforces students' understanding of fundamental concepts in chemistry. The topics covered in CHEM150 are presented more in-depth in CHEM110 and CHEM120 in the School of Chemical Sciences.

Course Requirements

Restriction: Cannot be taken at the same time as any other chemistry course, or after any successfully completed chemistry course, other than CHEM 100/CHEM 100G

Capabilities Developed in this Course

Capability 1: People and Place

Capability 2: Sustainability

- Capability 3: Knowledge and Practice
 Capability 4: Critical Thinking
 Capability 5: Solution Seeking
 Capability 6: Communication
 Capability 7: Collaboration
 Capability 8: Ethics and Professionalism

Graduate Profile: [Bachelor of Science](#)

Learning Outcomes

By the end of this course, students will be able to:

1. Identify and discuss chemical and physical properties of elements, simple ionic and molecular compounds, and organic compounds given their names or structures. (Capability 3 and 6)
2. Describe, calculate and consider the amount of product made in a typical chemical reaction given initial quantities of reactants. (Capability 2, 3 and 5)
3. Describe and predict the products of fundamental organic reactions given the starting materials and reaction conditions using balanced chemical equations. (Capability 4, 5 and 6)
4. Identify and explain the driving factors of chemical reactions. (Capability 2, 3, 4 and 5)
5. Display competence in working within a laboratory environment. (Capability 1, 2, 3, 4, 5, 6, 7 and 8)

Assessments

Assessment Type	Percentage	Classification
Tests	30%	Individual Test
Final Exam	40%	Individual Examination
Quizzes	5%	Individual Coursework
Assignments	5%	Individual Coursework
Laboratories	20%	Group & Individual Coursework
5 types	100%	

Assessment Type	Learning Outcome Addressed				
	1	2	3	4	5
Tests	✓	✓	✓	✓	
Final Exam	✓	✓	✓	✓	
Quizzes	✓	✓	✓	✓	

Assignments	✓	✓	✓	✓	
Laboratories	✓	✓	✓	✓	✓

A student must pass both the theory component and the practical component to gain an overall pass. The theory component is composed of the quizzes, term test, and final exam. The practical component is composed of the laboratory experiments.

Tuākana

Tuākana Science is a multi-faceted programme for Māori and Pacific students providing topic specific tutorials, one-on-one sessions, test and exam preparation and more. Explore your options at

<https://www.auckland.ac.nz/en/science/study-with-us/pacific-in-our-faculty.html>

<https://www.auckland.ac.nz/en/science/study-with-us/maori-in-our-faculty.html>

As part of the University-wide Tuākana community, The School of Chemical Sciences aims to provide a welcoming learning environment for and enhance the success of Māori and Pacific students. We are led by the principles of tautoko (support) and whanaungatanga (connection) and hope you find a home here at the School. Students who have identified as Māori and/or Pacific will receive an invitation to our online portal introducing the Programme, the resources we have available, and how you can get involved.

Tuākana Chemistry runs a range of activities for students enrolled in this class. This includes weekly workshops, social activities, and opportunities to engage with senior students and researchers within the School of Chemical Sciences. Tuākana-eligible students will be added automatically to the Tuākana Chemistry program when they enroll in this course. For more information, please see the Tuākana program website or email ruth.cink@auckland.ac.nz.

Key Topics

Atomic Structure

Nomenclature

Bonding

States of matter

Chemical reactivity

Stoichiometry

Quantitative Chemistry

Limiting Reagents

The Periodic Table

Acid-base Titrations

Thermodynamics

Equilibrium

Reduction-oxidation reactions

Organic structures

Organic reactions

Special Requirements

Attendance at the laboratories is a compulsory part of this course.

Workload Expectations

This course is a standard [15] point course and students are expected to spend 20 hours per week in the summer involved in each 15 point course that they are enrolled in.

For this course, you can expect [6] hours of lectures, [2] hours of tutorial, [3] hour of labs, [4.5] hours of reading and thinking about the content and [4.5] hours of work on assignments and/or test preparation.

Delivery Mode

Campus Experience

Attendance is required at scheduled activities including labs and tutorials to receive credit for components of the course.

Lectures will be in-person and will also be available as recordings.

The course will not include live online events.

Attendance on campus is required for the test/exam.

The activities for the course are scheduled as a standard weekly timetable.

Learning Resources

Course materials are made available in a learning and collaboration tool called Canvas which also includes reading lists and lecture recordings (where available).

Please remember that the recording of any class on a personal device requires the permission of the instructor.

Required course book and laboratory manual (available on Canvas as PDFs).

Textbook is prescribed.

Health & Safety

Students must be wearing safety glasses, covered footwear and a lab coat before entering the laboratory and must keep these on until after exiting the laboratory. Jandals or other open shoes are not satisfactory footwear. Students who wear prescription spectacles are required to wear safety glasses over their spectacles.

Student Feedback

During the course Class Representatives in each class can take feedback to the staff responsible for the course and staff-student consultative committees.

At the end of the course students will be invited to give feedback on the course and teaching through a tool called SET or Qualtrics. The lecturers and course co-ordinators will consider all feedback.

Your feedback helps to improve the course and its delivery for all students.

Students in previous semesters suggested that content be presented in a different order so that they can digest certain concepts well in advance of their examinations. The students enjoyed the structure and organization of the course overall. Therefore, we maintain our course structure but adjusted the Section themes to highlight some concepts from earlier on in the semester.

Academic Integrity

The University of Auckland will not tolerate cheating, or assisting others to cheat, and views cheating in coursework as a serious academic offence. The work that a student submits for grading must be the student's own work, reflecting their learning. Where work from other sources is used, it must be properly acknowledged and referenced. This requirement also applies to sources on the internet. A student's assessed work may be reviewed for potential plagiarism or other forms of academic misconduct, using computerised detection mechanisms.

Class Representatives

Class representatives are students tasked with representing student issues to departments, faculties, and the wider university. If you have a complaint about this course, please contact your class rep who will know how to raise it in the right channels. See your departmental noticeboard for contact details for your class reps.

Copyright

The content and delivery of content in this course are protected by copyright. Material belonging to others may have been used in this course and copied by and solely for the educational purposes of the University under license.

You may copy the course content for the purposes of private study or research, but you may not upload onto any third party site, make a further copy or sell, alter or further reproduce or distribute any part of the course content to another person.

Inclusive Learning

All students are asked to discuss any impairment related requirements privately, face to face and/or in written form with the course coordinator, lecturer or tutor.

Student Disability Services also provides support for students with a wide range of impairments, both visible and invisible, to succeed and excel at the University. For more information and contact details, please visit the [Student Disability Services' website](http://disability.auckland.ac.nz) <http://disability.auckland.ac.nz>

Special Circumstances

If your ability to complete assessed coursework is affected by illness or other personal circumstances outside of your control, contact a member of teaching staff as soon as possible before the assessment is due.

If your personal circumstances significantly affect your performance, or preparation, for an exam or eligible written test, refer to the University's [aegrotat or compassionate consideration page](https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams/aegrotat-and-compassionate-consideration.html) <https://www.auckland.ac.nz/en/students/academic-information/exams-and-final-results/during-exams/aegrotat-and-compassionate-consideration.html>.

This should be done as soon as possible and no later than seven days after the affected test or exam date.

Learning Continuity

In the event of an unexpected disruption, we undertake to maintain the continuity and standard of teaching and learning in all your courses throughout the year. If there are unexpected disruptions the University has contingency plans to ensure that access to your course continues and course assessment continues to meet the principles of the University's assessment policy. Some adjustments may need to be made in emergencies. You will be kept fully informed by your course co-ordinator/director, and if disruption occurs you should refer to the university website for information about how to proceed.

The delivery mode may change depending on COVID restrictions. Any changes will be communicated through Canvas.

Student Charter and Responsibilities

The Student Charter assumes and acknowledges that students are active participants in the learning process and that they have responsibilities to the institution and the international community of scholars. The University expects that students will act at all times in a way that demonstrates respect for the rights of other students and staff so that the learning environment is both safe and productive. For further information visit [Student Charter](https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/student-charter.html) <https://www.auckland.ac.nz/en/students/forms-policies-and-guidelines/student-policies-and-guidelines/student-charter.html>.

Disclaimer

Elements of this outline may be subject to change. The latest information about the course will be available for enrolled students in Canvas.

In this course students may be asked to submit coursework assessments digitally. The University reserves the right to conduct scheduled tests and examinations for this course online or through the use of computers or other electronic devices. Where tests or examinations are conducted online remote invigilation arrangements may be used. In exceptional circumstances changes to elements of this course may be necessary at short notice. Students enrolled in this course will be informed of any such changes and the reasons for them, as soon as possible, through Canvas.