

General Course Information | Ngā Whakamārama

CHEM247 | Waehere Akoranga

Introduction to Analytical Chemistry | Ingoa Akoranga

0.125 EFTS 15 Points
First Semester 2025

Course coordinator | Ingoa Kairuruku Akoranga

Professor Sally Gaw, ext 95904, sally.gaw@canterbury.ac.nz

Description | Whakamahuki

Analytical chemistry underpins industry, medicine, science and environmental management. This course introduces quantitative analytical techniques and demonstrates how. Topics covered include sample collection, sample preparation including separation techniques, instrumental analyses and assessing the reliability of results. Students will gain experience with *in-situ* and laboratory techniques and will demonstrate ethical practice.

Goal of the Course

This course aims to teach students skills that are highly transferable in the world of analytical chemistry. Analytical chemistry underpins industry, medicine, science and environmental management. This course will help students gain awareness of the responsibilities of researchers working in bicultural Aotearoa, NZ, and will develop hands-on analytical skills.

Course Learning Outcomes | Hua Ako

At the end of this course students will be able to:

- Demonstrate understanding of the process of analytical chemistry
- Describe and compare a range of routinely used analytical chemistry methods including underlying theoretical principals, and the advantages and disadvantages
- Select and use appropriate analytical and instrumental methods to prepare, separate and quantify target analytes from a range of matrices
- Critically review and report analytical chemistry results
- Describe how analytical chemistry underpins industry, medicine, science and environmental assessment and management
- Demonstrate ethical practice, especially in relation to sample management and dissemination and communication of results

Graduate Attributes met | Āhuatanga Tāura:

Critically competent in a core academic discipline of their degree

- Bicultural Competence and Confidence (themes | kaupapa (KP))
 - KP 3. Traditional and contemporary realities of Māori society
 - KP 7. Application of bicultural competence and confidence in a chosen discipline and career
- Employable, Innovative, and Enterprising (EIE)
 - EIE 1. Work effectively and professionally with diverse communities
 - EIE 2. Communication
 - EIE 3. Analytical, critical thinking and problem solving in diverse contexts
 - EIE 4. Digital literacy
- Globally Aware (GA)
 - GA 2. Understanding the global nature of one's discipline
 - GA 3. The ability to engage effectively in global and multicultural contexts
- Engaged with the Community (CE)
 - CE 3. Understanding and articulating how the content and/or skills of the subject/programme enhances the community

Contributing staff | Kaimahi Akoranga

Professor Sally Gaw email: sally.gaw@canterbury.ac.nz

Professor Rudi Marquez-Mazlin email: rudi.marquez-mazlin@canterbury.ac.nz

Timetable | Wātaka

Lectures: Two hours of lectures per week. Details to be confirmed on 'My Timetable' and the Web.

Laboratories: Ten 3-hour labs. Details to be confirmed on 'My Timetable' and the Web.

Laboratories start in week 3 of Term 1

Lecture schedule

Teaching week	Topic	Lecture A Tues 9-10	Lecture B Thurs 10-11	Staff member
1	Introduction to analytical chemistry			Sally Gaw
2	Sample collection/ Quality assurance		Assignment tutorial	Sally Gaw
	<i>Analytical techniques for elements (4 lectures)</i>			
3	optical and mass			Sally Gaw
4	optical and mass			Sally Gaw
5	Method selection and validation			
6		Tutorial	Test 1	Sally Gaw
7	<i>Water & sediment sampling</i>			Sally Gaw
	<i>Analytical methods for molecules (6 lectures)</i>			
8	Chromatography			Rudi Marquez
9	Chromatography			Rudi Marquez
10	Chromatography			Rudi Marquez
				Sally Gaw
11	<i>Professional practice</i>			Sally Gaw
12		Tutorial	Test 2	TA

Note due to any COVID-19 disruption some lectures may be online only. You will be informed of the delivery method for each lecture. All lectures will be recorded.

Workload | Mahi ā-Ākonga

(expected distribution of student hours, note 15 points = 150 hours):

Contact time:

54 hours comprised of 24 lectures and ten 3-hour labs

Test preparation: 30 hours

Assignment: 35 hours

Completion of laboratory write-ups: 10 hours

Preparation for laboratory practicals: 5 hours

Recommended reading: 11 hours

Assessment | Aromatawai (method, weight, date due)

Test 1	15%	20 March
Test 2	15%	29 May
Labwork:	40%	week following the lab
Pre-lab Quizzes:	10%	prior to lab
Assignment:	20%	28 April

Generative AI Tools cannot be used for these assessments

In these assessments, you are strictly prohibited from using generative artificial intelligence (AI) to generate any materials or content related to the assessment. This is because students are expected to solve problems and demonstrate knowledge and understanding without the assistance of AI. The use of AI-generated content is not permitted and may be considered a breach of academic integrity. Please ensure that all work submitted is the result of your own human knowledge, skills, and efforts.

Texts and Readings | Tuhinga

To be advised by teaching staff and posted to Learn

GENERAL INFORMATION | TE KIMI MŌHIOHIO 2025

Policy on 'Dishonest Practice' | Ngā Takahitanga me ngā Tinihanga

The University has strict guidelines regarding 'dishonest practice' and 'breach of instructions' in relation to the completion and submission of examinable material. In cases where dishonest practice is involved in tests or other work submitted for credit, a department may choose to not mark such work – see the online guidelines in relation to ['Academic Integrity'](#).

The School of Physical and Chemical Sciences upholds this policy. It considers plagiarism, collusion, copying and ghost writing – all detailed below – to be unacceptable and dishonest practices:

- **Plagiarism | Tārua Whānako** is the presentation of any material (text, data or figures, on any medium including computer files) from any other source without clear and adequate acknowledgement of the source.
- **Collusion** is the presentation of work performed in whole, or in part, in conjunction with another person or persons, but submitted as if it has been completed by the named author alone. This interpretation is not intended to discourage students from having discussions about how to approach an assigned task and incorporating general ideas that come from those discussions into their own individual submissions, but acknowledgement is necessary.
- **Copying** is the use of material (in any medium, including computer files) produced by another person or persons with or without their knowledge and approval. **This includes copying of the lab reports (raw data may be shared within the group if permitted or required by the experiment) – data analysis and interpretation of obtained results MUST be performed individually.**
- **Ghost writing** is the use of other person(s) (whether with or without payment) to prepare all or part of an item of work submitted for assessment.
- **Generative AI Tools: The following shall apply to all assessments in this course, except where a lecturer has specifically stated otherwise in written instructions for an assessment.**

In all assessments, you are strictly prohibited from using generative artificial intelligence (AI) to generate any materials or content related to the assessment. This is because students are expected to solve problems and demonstrate knowledge and understanding without the assistance of AI. The use of AI-generated content is not permitted and may be considered a breach of academic integrity. Please ensure that all work submitted is the result of your own human knowledge, skills, and efforts.

Special consideration of assessment | Ngā Pairuri Motuhake

'[Special Consideration](#)' for an item of assessment is for students who have covered the work involved but have been prevented from demonstrating their knowledge or skills at the time of the assessment due to unforeseen circumstances, whether illness, injury, bereavement, car crash or any other extenuating circumstance *beyond one's control*. Special Consideration for a test/exam may be because a student has not sat it or has done so with impaired performance. Applications can be submitted via the above link and must be made **no later than five working days after the assessment due date**. Note that special consideration is **not available for items worth less than 10% of the overall course mark**. In the case of illness or injury, medical consultation

should normally have taken place either shortly before or within 24 hours after the due date for the required work or test/examination.

Note that you may be required to sit a special exam or your grade may not be changed if there is insufficient evidence of your performance from other invigilated assessment items in the course. **You have the right to appeal any decision.**

It is important to understand that Special Consideration is only available *where course work has been covered*, and the inability to demonstrate this fully is both *no longer possible* AND is due to *unexpected circumstances beyond one's control*. Thus Special Consideration is **NOT available for:**

- essays, assignments or quizzes where an extension of time is available to complete the assessment item (see below for the process to involved);
- missed lectures during the semester;
- experiencing examination anxiety;
- having several examinations or assessments close together;
- known impairment, such as chronic illness (medical or psychological), injury or disability unless medical evidence confirms that the circumstances were exacerbated, despite appropriate management, at the time of assessment;
- mistaking the date or time of an examination (this is a circumstance one can control!);
- failing to turn up to an examination or test because of sleeping in (a circumstance as above!);
- where applications are repeatedly made for the same or similar reason, then the application may be declined on the grounds that the reason is not unexpected;
- where the application is made at the time of the assessment but the supporting documentation is received significantly after this date or after the date results are released; or
- the application is made following the release of results (unless under exceptional circumstances).

Extensions of deadlines | Tononga Wā Āpiti

Where an extension may be granted for an assessment item, this will be decided by application to the course co-ordinator and/or the lecturer concerned.

Late withdrawal from a course

If you are prevented by extenuating circumstances from completing the course after the final date for withdrawing from the course, you may apply for special consideration for late discontinuation. For details on special consideration, or to make an application, refer to the Examinations Office website <http://www.canterbury.ac.nz/exams/>. Applications must be submitted **within five days** of the end of the main examination period for the semester.

Missing of tests | Te Matangaro i ngā Whakamātautau

In rare cases a student will not be able to sit a test. In such cases, the student should consult with the course co-ordinator to arrange alternative procedures. **This must be done well in advance of the set date for the test.**

Past tests and exams

Past tests can be found on our [Chemistry Undergraduate](#) website. Past exams can be found on the [Library website](#).

Submission of reports and assignments

Reports (including lab reports) and assignments should be handed in on time. Extensions will be granted only in exceptional circumstances (such as illness or bereavement). If an extension is required, as early as possible you should request it from the lecturer concerned.

Note: If you do not submit an assignment for assessment, you will be allotted zero marks, which will affect your final result. You should ensure that you pick up marked assignments and keep them until the end of the course as evidence that the work was completed and marked in the case that either is disputed. To guard against accidental loss, it would be prudent to keep photocopies or electronic copies of anything submitted.

Late Work

Acceptance of late work for assessment will be at the discretion of the course coordinator and/or the lecturer concerned. If your assessment is likely to be late, please contact the relevant of these people **before the assessment is due**. Never assume that an extension will be automatically granted – some courses have the policy of no late work being accepted. A commonly exercised policy is to deduct 10% of the total marks for each day that the work is late, where weekends and public holidays also count as such days.

Marks and Grades | Taumata Ako

The following numbers should be considered as a guide to the expected grades under normal circumstances.

Please note that for all invigilated assessments (tests and exams) worth 33% and above, failure to obtain a mark of at least 40% will result in a final grade no higher than an R at 100 and 200 level; in general this requirement will not be applied at 300 level, but if it is then the course coordinator will inform the class and it will result in a final grade no higher than a C–.

Grade:	A+	A	A–	B+	B	B–	C+	C	C–	D	E
Minimum mark %:	90	85	80	75	70	65	60	55	50	40	0

The School reserves the right to adjust this mark/grade conversion, up or down, to achieve consistency of assessments standards.

Reconsideration of Grades

Students should, in the first instance, speak to the course co-ordinator about their marks. If they cannot reach an agreeable solution, or have questions about their grade in a course, students should then speak to the Director of Undergraduate Studies, [Assoc Prof Greg Russell](#). Students can appeal any decision made on their final grade. You can apply at the Registry for reconsideration of the final grade within four weeks of the date of publication of final results. Be aware that there are time limits for each step of the appeals process.

Student Accessibility Services | Te Whaikaha

Students can speak with someone at [Student Accessibility Service](#), phone: 369 3334 (or ext. 93334), email: sas@canterbury.ac.nz.

Academic Advice

[Assoc Prof Greg Russell](#) is the coordinator of undergraduate chemistry courses. His interest is in the academic performance and well-being of all such students. Anyone experiencing problems with their chemistry courses or requiring guidance about their B.Sc. in Chemistry should get in contact with Greg.

Staff-Class Rep Liaison

[Assoc Prof Greg Russell](#) is in charge of liaison with students in chemistry courses. Your class will appoint a student representative to the liaison committee at the start of the semester. Please feel free to talk to the Academic Liaison or the student rep about any problems or concerns that you might have.

Greg Russell (greg.russell@canterbury.ac.nz, tel. 369 5129)
Director of Undergraduate Studies
School of Physical and Chemical Sciences
2025