

General Course Information | Ngā Whakamārama

CHEM247 | Waehere Akoranga

Introduction to Analytical Chemistry | Ingoa Akoranga

0.125 EFTS 15 Points
First Semester 2022

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 email: rudi.marquez@canterbury.ac.nz

Dr Amanda Inglis email: amanda.inglis@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.

Due to COVID-19, the laboratories will not run in Term 1 and will be rescheduled. You will be informed of the revised schedule.

Lecture schedule

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

Teaching week	Topic	Wed 1-2	Thurs 9-10
1	Introduction to analytical chemistry	Gaw	Gaw
2	Sample collection and preparation	Gaw	Assignment tutorial
	<i>Analytical methods for molecules</i>		
3	Chromatography	Inglis/Marquez	Inglis/Marquez
4	Chromatography	Inglis/Marquez	Inglis/Marquez
5	Chromatography	Inglis/Marquez	Inglis/Marquez
	<i>Analytical techniques for elements</i>		
6	Optical and mass	Gaw	Gaw
7		Tutorial	Test 1
	Teaching break		
8	Electrochemical	Gaw	Gaw
9	<i>Method selection and validation</i>	Gaw	Gaw
10	<i>Biological assays</i>	Gaw	Inglis
11	<i>Professional practice in analytical chemistry</i>	Gaw	Gaw
12		Tutorial	Test 2

Workload | Mahi ā-Ākongā

(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% (7th April)

Test 2 15% (3rd June)

Labwork: 40% (tbc)

Pre-lab Quizzes: 10% (tbc)

Assignment: 20% (tbc)

Texts and Readings | Tuhinga

To be advised by teaching staff and posted to Learn

GENERAL INFORMATION 2022

Chemistry Department Policy on 'Dishonest Practice'

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 (['Academic Integrity and Breach of Instruction Regulations'](#)).

The Department of Chemistry upholds this policy. It considers plagiarism, collusion, copying, and ghost writing to be unacceptable and dishonest practices:

- **Plagiarism** 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) (with, or without payment) to prepare all or part of an item of work submitted for assessment.

Additional Information

Special consideration of assessment: If you feel that illness, injury, bereavement or any other critical extenuating circumstance beyond your control has prevented you from completing an item of assessment or affected your performance in that assessment, you may apply for special consideration. Special consideration is not available for items worth less than 10% of the course. Applications for special consideration should be made **within five days** of the due date for the work or examination. In the case of illness or injury, medical consultation should normally have taken place shortly before, or within 24 hours after, the due date for the required work or the date of the test or examination. For details on special consideration, or to make an application, refer to the Examinations Office website <http://www.canterbury.ac.nz/exams/>. **You have the right to appeal any decision.**

Extensions of deadlines: Where an extension may be granted for an assessment item, this will be decided by application to the course co-ordinator.

Late withdrawal from the 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: 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: these can be found on our website using the link below:
www.chem.canterbury.ac.nz/for/undergraduate.shtml

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 will be at the discretion of the course coordinator. Please contact the coordinator if your assessment is likely to be late.

Marks and Grades: The following numbers should be considered as a guide to the expected grades under normal circumstances. The School reserves the right to adjust mark/grade conversions, if necessary.

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, and a C- at 300 level.

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

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](#) (phone 3694228). 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.

Students with Disabilities: Students with disabilities should speak with someone at [Equity and Disability Service](#), phone: 369 3334 (or ext. 93334), email: eds@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.

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Director of Undergraduate Studies
School of Physical and Chemical Sciences
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