School of Physical and Chemical Sciences

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

# General Course Information

## CHEM430
## Research Methods 1: Research Proposal and Ethics

0.125 EFTS 15 Points
First Semester 2026

**Description**
This course comprises a series of workshops of advanced study in contemporary research methodology in the chemical sciences, such as research and professional scientific communication skills including written, visual and oral communication; directed inquiry and problem solving skills; critical analysis and in-depth studies in specific specialised areas of contemporary chemical research.

The topics covered by this course are:

- Writing a research proposal
- Writing a quality assessment plan for research activities
- Ethics of publishing
- Ethics of research

This course is presented in the first semester only. It counts 15 points towards a Bachelor of Science with Honours / Masters of Science / Postgraduate Diploma of Science degree and should be taken in conjunction with other 400-level courses as advised by the 400L coordinator.

**Timetable**
Refer to the online course information system or MyTimetable.

***Workshops*** will be held every week given by various staff in the School of Physical and Chemical Sciences with assistance of staff from the Academic Skills Centre and others.

***Assignments****:* There will be three assignments for this course which constitute the credit for the course. The timing and nature of each assignment will be at the discretion of each lecturer but are generally due at the end of each term. The assignments will take the form of a research proposal and quality assessment plan (Assignment 1), publication quality data (Assignment 2) and an ethics evaluation (Assignment 3).

**NOTE:** If you do not submit an assignment for assessment you will be allotted zero marks, which will severely affect your result. You should ensure that you collect 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. If you submit work electronically, please cc a copy to yourself in lieu of keeping a physical copy

Students should note that, in the Faculty of Science, students are responsible for about three hours of additional study or work on assignments for each hour of lectures or tutorials at the 400-level.

**Course Co-ordinator**
Professor Sarah Masters, School of Physical and Chemical Sciences
JvH 633, email: *sarah.masters@canterbury.ac.nz*
*Email, phone or come and see me **at any time** if you have **any** questions about the course.*

**Assessment**
Assignment 1: 50 % total
Assignment 2: 20 % total
Assignment 3: 30 % total

**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. 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.

**Textbook**
None. Material for assignments and continuing professional development tasks will be provided on LEARN.

**Prerequisites**
There are no set prerequisites for the course.

**Web-based resources**
Various learning resources (workshop material, reference links, discussion forums etc.) for this course are available via the University of Canterbury's *Learn* web site – http://learn.canterbury.ac.nz/. This site will also be used regularly as a means of communication and information distribution for all your Canterbury courses. **You should familiarise yourself with *Learn* as soon as possible**.

**Goals of the Course**
To ensure that students develop a solid portfolio of skills relevant to research and communication in the chemical sciences. Students will develop a range of skills that are relevant to research in the chemical sciences, including written and oral communication skills. Students will undertake studies in a specific specialised area of chemistry that will allow them to develop an in-depth understanding of an area of contemporary research.
More specifically, the goals of each component of the course are:

**Research proposal and research quality assessment**
- To introduce how to write a research proposal
- To discuss how to assess the quality of research data
- To discuss how to ensure research data is publishable
- To prepare a research proposal and data quality assessment plan
- To be able to convert data to publication quality imagery
- To outline how to give an oral presentation
- To construct an oral presentation and give it

**Ethics**
- To understand the importance of ethics in research
- To assess a piece of written research work for veracity
- To critically analyse the discussion of a piece of written work
- To assess when it is appropriate to consult with Māori regarding research projects
- To understand how to consult with Māori regarding research projects
- To assess when it is appropriate to consult with Pasifika regarding research projects
- To understand how to consult with Pasifika regarding research projects
- To assess when it is appropriate to seek ethics approval for human and animal research work
- To understand how to seek ethics approval for human and animal research work

**Summary of the Course Content**

The topics coved by this course are:

***RESEARCH PROPOSAL AND RESEARCH QUALITY ASSESSMENT*** **(TERM 1)**

The purpose of the research proposal is to facilitate thinking about, and focusing upon, plans for the research project and to enable staff to evaluate the proposed research, in terms of academic merit and scope, as indicated in the proposal. The workshops will also enable students to think about how they will ensure the outputs from the project are publishable in a research report / research paper and to think about the health and safety aspects of the project to ensure a safe working environment for them and others around them.

**Lecturers:**
Professor Paul Kruger, paul.kruger@canterbury.ac.nz
Professor Sarah Masters, sarah.masters@canterbury.ac.nz
Professor Sally Gaw, sally.gaw@canterbury.ac.nz
Representative from Academic Skills Centre

***ETHICS AND DATA PRESENTATION*** **(TERM 2)**

Ethics and veracity in research lie at the heart of academic activity. It is vitally important to be able to assess to quality of a piece of work, whether it is a journal article, a research seminar, a public interest piece, or something else. Ethics also play an important part in undertaking research. Knowing when and how to consult with Māori and Pasifika regarding the impact of proposed project work, knowing when to seek ethics approval to use humans and/or animals in research, or data obtained from humans and how to handle this information, is also incredibly important. Students should be able to present the data they acquire in a suitable format.

**Lecturers:**
Professor Deborah Crittenden, deborah.crittenden@canterbury.ac.nz
Professor Ian Shaw, ian.shaw@canterbury.ac.nz
Professor Sarah Masters, sarah.masters@canterbury.ac.nz
Representative from Māori Research Office
Representative from Pasifika Development Office

**Learning Outcomes**

At the end of the research proposal topic, students should be able to:

- Construct a research proposal of suitable length
- Prepare publication quality imagery from a data set
- Demonstrate what elements are required in a research proposal
- Discuss what makes a good research proposal
- Assess the quality of the data
- Demonstrate the basic ethical requirements for conducting research
- Understand the basic ethical requirements for publishing research

At the end of the ethics and data presentation topic, students should be able to:

- Identify errors in a manuscript
- Match data in text to graphical representations
- Explain why data/statements are incorrect
- Construct a review of a manuscript
- Produce a manuscript in the correct format given the raw material
- Understand why Māori consultation is important
- Know how to go about engaging with Māori regarding research
- Understand why Pasifika consultation is important
- Know how to go about engaging with Pasifika regarding research
- Present data in an appropriate format and provide suitable critique of others work

**Continuing Professional Development**

Continuing professional development (CPD) is very important and all CHEM430 students will participate in activities to promote CPD. These include giving an introductory research talk to the School of Physical and Chemical Sciences, attending a session on dealing with data, attending sessions on Intellectual Property, Innovation and Entrepreneurship, and engaging with visiting lecturers and Erskine Teaching Fellows to the School.

All CHEM430 students will participate in regular group meetings appropriate to their research area. These group meetings will involve various activities to be discussed and actioned by each group. These meetings are non-assessed; however, attendance is expected and persistent non-attendance will be noted.

All CHEM430 students will attend the regular School of Physical and Chemical Sciences seminars given by external and internal speakers as advertised. These seminars will be on a wide range of topics given by excellent national and international scientists.

## GENERAL INFORMATION | TE KIMI MŌHIOHIO 2026

***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' (previously termed 'Aegrotat Application') 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 exams***
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.

| **Grade:** | **A+** | **A** | **A−** | **B+** | **B** | **B−** | **C+** | **C** | **C-** | **D** | **E** |
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| **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 Coordinator of 400-level studies, Professor Sarah Masters (phone 369 4229). 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*:** Professor Sarah Masters is the coordinator of 400-level chemistry courses. Her 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 400-level courses should get in contact with Sarah.

Sarah Masters
Coordinator of 400-level Chemistry Courses
School of Physical and Chemical Sciences
2026