



# Course Outline

CHEM1831

Chemistry for Exercise Physiology

School of Chemistry

Faculty of Science

Term 3, 2020

## 1. Staff

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Position	Name	Email	Contact Details
Course Convenor	Siobhan Wills	<a href="mailto:siobhan.wills@unsw.edu.au">siobhan.wills@unsw.edu.au</a>	
Student Services Manager	Michael Gandy	<a href="mailto:m.gandy@unsw.edu.au">m.gandy@unsw.edu.au</a>	9385 4651
Lab Coordinator	Ron Haines	<a href="mailto:r.haines@unsw.edu.au">r.haines@unsw.edu.au</a>	
Lecturer (weeks 1–3)	Neeraj Sharma	<a href="mailto:neeraj.sharma@unsw.edu.au">neeraj.sharma@unsw.edu.au</a>	
Lecturer (weeks 4–8)	Ron Haines	<a href="mailto:r.haines@unsw.edu.au">r.haines@unsw.edu.au</a>	
Lecturer (weeks 8–10)	Luke Hunter	<a href="mailto:l.hunter@unsw.edu.au">l.hunter@unsw.edu.au</a>	

## 2. Course information

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Units of credit: 6

Pre-requisite(s): none

Teaching times and locations: <http://timetable.unsw.edu.au/>

### 2.1 Course summary

Chemistry for Health, Exercise and Medical Science is a one term 6 UoC chemistry course for students with a limited background in high school chemistry. CHEM1831 may be taken as a stand-alone course by students who require only one term of level 1 chemistry for Program 3871. Please consult your Program Advisor as to whether CHEM1831 is suitable for your Program.

### 2.2 Course aims

Designed for students in the Bachelor of Health & Exercise Science program, this course covers the chemistry required to understand atomic and molecular structure, states of matter, thermodynamics, equilibrium chemistry in aqueous solution, redox chemistry of oxygen, introductory kinetics, the chemistry of organic compounds, stereochemistry, functional groups and their reactions especially amines, amides, acids and esters. Case studies and experiments relevant to health and exercise science are also included. The Chemistry in the course will prepare students for the Level II Biochemistry and Anatomy components of their programs.

## 2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Understand concepts of atoms, molecules, molecular structure, bonding, intermolecular forces, oxidation numbers, redox, gas laws, kinetics;
2. Understand the chemical language of symbols, formulae, equations, structures;
3. Understand the practical aspects of chemical quantities: atomic mass, moles, limiting reagent, concentrations;
4. Have a broad view of periodic trends of chemical behaviour;
5. Understand how molecular interactions affect bulk properties of solutions;
6. Understand how chemical equilibria are quantified, and how they are affected by changes in composition and temperature;
7. Apply concepts learned in this course to solve chemical problems;
8. Have an overview of the important structures and reactions of organic molecules

## 2.4 Relationship between course and program learning outcomes and assessments

Course Learning Outcome (CLO)	Program Learning Outcome (PLO)	Related Tasks & Assessment
CLO 1	Students will be able to demonstrate detailed clinical knowledge and skills relevant to cardiopulmonary, metabolic, cancer, mental health, musculoskeletal and neuromuscular rehabilitation.	Weekly quizzes; mid-term test; laboratory classes; final exam
CLO 2	Students will be able to demonstrate detailed clinical knowledge and skills relevant to cardiopulmonary, metabolic, cancer, mental health, musculoskeletal and neuromuscular rehabilitation.	Weekly quizzes; mid-term test; laboratory classes; final exam
CLO 3	Students will be able to demonstrate detailed clinical knowledge and skills relevant to cardiopulmonary, metabolic, cancer, mental health, musculoskeletal and neuromuscular rehabilitation.	Weekly quizzes; laboratory classes; final exam
CLO 4	Students will be able to demonstrate detailed clinical knowledge and skills relevant to cardiopulmonary, metabolic, cancer, mental health, musculoskeletal and neuromuscular rehabilitation.	Weekly quizzes; laboratory classes; final exam
CLO 5	Students will be able to demonstrate detailed clinical knowledge and skills relevant to cardiopulmonary, metabolic, cancer, mental health, musculoskeletal and neuromuscular rehabilitation.	Weekly quizzes; laboratory classes; final exam
CLO 6	Students will be able to engage in independent learning and reflective practice for the betterment of professional clinical practice.	Laboratory classes
CLO 7	Students will be able to engage in independent learning and reflective practice for the betterment of professional clinical practice.	Weekly quizzes; laboratory classes; final exam

## 3. Strategies and approaches to learning

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### 3.1 Learning and teaching activities

The learning and teaching activities in this course consist of multiple teaching methods and modes of instruction which are delivered through a blended approach including Lectures, Tutorials, and Laboratories.

This course has been designed to engage you in learning by contextualising the material to students' prior experiences and knowledge. In addition, course content will be supplemented with interesting examples from research and industry. The laboratory component of this course will enable you to develop a proficiency in core chemistry laboratory skills while engaging in challenging and interesting laboratory practicals. In addition, this component of the course will contribute to the development of your higher-order analytical skills, while providing opportunity for cooperative learning with your peers.

#### 3.1.1 Lectures and workshops (offered online only)

There are 4 hours of lectures and workshops each week. Depending on the lecturer and scheduling such as public holidays, classes will be delivered as either live sessions through Blackboard Collaborate or as video recordings. Lecture notes will be posted on Moodle. You are strongly encouraged to join the live session to receive feedback through online polling and to ask questions pertaining to content. Lecture recordings will be made available via the Lecture Recordings+ link on Moodle. However, there is no guarantee that the lecture recording software will capture the class correctly or even at all.

#### 3.1.2 Tutorials (offered online only)

Each week you'll join a small-group online tutorial (via Moodle) in which you will delve more deeply into the focus topic. You are required to read through the tutorials in advance and identify questions that you would like the tutor to assist with answering. You are also encouraged to ask any further questions you might have regarding the focus topic.

#### 3.1.3 Laboratory Classes (offered face-to-face on-campus only)

The laboratory classes provide an opportunity to learn the concepts and practice the calculations presented in lectures. Laboratory classes are also the place to learn practical skills and they are also the place where those skills are assessed.

You must **READ THE INTRODUCTION IN THE LABORATORY MANUAL** to be aware of all the requirements for passing the laboratory component of this course. Here are some of the main points regarding laboratory classes:

- **The following items of personal protective equipment (PPE) must be worn at all times in the laboratory:**
  - **safety eyewear**
  - **a facemask**
  - **a laboratory coat**
  - **fully enclosed footwear**

**You will not be permitted to work in thongs or open-top shoes or sandals or without a laboratory coat, facemask or safety eyewear.**

- Before attending your first lab, view the COVID-19 Lab Safety Video on Moodle to acquaint yourself with the social distancing guidelines that you must adhere to while working in the lab.
- The schedule of experiments can be found on page 4 of the lab manual.
- All experiments require pre-lab work to be completed before your lab class.
- You must attend the laboratory class shown on your official timetable.
- You must arrive at the laboratory on time or you will be excluded from the class.
- Repeat students must apply to the First Year Laboratory Coordinator if they want exemption

from laboratory classes. Exemption is not automatic and is decided on a case-by-case basis.

## 3.2 Expectations of students

A major difference between high school and university is that you are now expected to take responsibility for your own learning. This means that no-one will chase you up if you start falling behind in your attendance or assessments, let alone your independent study. It is your responsibility to ensure that you keep up to date with the course material, are aware of the assessments times and details and complete all required tasks by the advertised due date.

Occasionally we may be required to make changes to the course details presented in this document for reasons outside of our control (this is especially true during the COVID-19 pandemic). ALL changes will be announced via the important announcements on the Moodle page. You must check your UNSW student email ([z1234567@unsw.edu.au](mailto:z1234567@unsw.edu.au)) and the course Moodle site **AT LEAST EVERY TWO DAYS** to ensure you are up to date with understand your obligations for the course.

Ignorance of announcements or errors of interpretation of a due date or assessment requirement are not valid excuses for non-completion.

As a general rule, you should plan to do about one hour of independent study (e.g. completing assignments, readings and exam preparation) for every face-to-face hour of the course. In addition, you should manage your time so that you can study progressively throughout the term rather than leaving it to the last minute.

### 3.2.1 Lectures

Students are expected to engage with all online lectures each week. You should take notes and participate in problem-solving during lectures. The questions asked in lectures are a valuable source of feedback – they will help you to target the areas that will require further clarification in your personal study time.

### 3.2.2 Tutorials

Attendance at all online tutorials is compulsory as no worked answers to tutorial problems are provided outside of these sessions. Tutorial classes are not graded directly but exam questions are linked to the tutorial material.

The purpose of tutorials is to provide activities for you that consolidate the concepts covered in lectures. You are expected to come prepared by having attempted the assigned pre work. You are expected to engage in tutorials by seeking help and completing work as directed.

### 3.2.3 Laboratories

SEE THE LABORATORY MANUAL FOR MORE DETAILS, including what to do if you are unavoidably absent from a lab class, how to complete assessments, and the criteria for grading your laboratory work.

### 3.3 Academic Misconduct

Students and staff are, of course, governed by the normal laws which regulate our everyday lives. But, in addition, the University has its own code of rules and conduct, and can impose heavy penalties on students who breach them. Penalties range from failure in a subject, loss of privileges, fines, payment of compensation, and suspension, to exclusion from study for a certain period or even permanent expulsion from the University.

It is important to realise, however, that misconduct within the University covers a much wider field than simply behaviour which is offensive or unruly, or which may cause damage to other people or property. Misconduct which may lead to a student being disciplined within the University includes anything regarded as academic misconduct according to current academic usage, as well as any conduct which impairs the reasonable freedom of other persons to pursue their studies or research or to participate in University life.

It is most important that students realise just how broad the definition of Academic misconduct may be. It certainly covers practices such as cheating or copying or using another person's work. Sometimes, however, practices which may have been acceptable at school are considered to be misconduct according to current Academic usage within a University. For example, academic misconduct can occur where you fail to acknowledge adequately the use you have made of ideas or material from other sources (see the UNSW Student Guide for examples).

The following are some of the actions which have resulted in students being found guilty of academic misconduct in recent years:

- impersonation in examinations;
- posting screenshots of digital assessments online;
- seeking answers to assessment questions online through crowd sourcing websites and forums;
- failing to acknowledge the source of material in an assessment
- taking of unauthorised materials into an examination;
- submitting work for assessment knowing it to be the work of another person;
- improperly obtaining prior knowledge of an examination paper and using that knowledge in the examination;
- providing another student with the means to cheat or collude on an assessment task.

Students found guilty of academic misconduct are usually excluded from the University for two years. Because of the circumstances in individual cases, the period of exclusion can range from one term to permanent exclusion from the University.

## 4. Course schedule and structure

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Week	Topic	Learning opportunities	Related CLO
Week 1	Atomic structure, electronic configurations and periodicity, and common chemical reactions.	Lectures (4h); laboratory class (3h)	1–7
Week 2	Bonding	Lectures (4h); tutorial (1h); laboratory class (3h)	1–7
Week 3	Intermolecular forces and solution properties	Lectures (4h); tutorial (1h); laboratory class (3h)	1–7
Week 4	Kinetics	Lectures (2h); tutorial (1h); laboratory class (3h)	1–7
Week 5	Thermochemistry	Lectures (4h); tutorial (1h); laboratory class (3h)	1–7
Week 6	Flexibility Week		
Week 7	Acids/bases and equilibrium	Lectures (4h); tutorial (1h); laboratory class (3h)	1–7
Week 8	Introduction to Organic chemistry	Lectures (4h); tutorial (1h); laboratory class (3h)	1–7
Week 9	Organic chemistry I	Lectures (4h); tutorial (1h); laboratory class (3h)	1–7
Week 10	Organic Chemistry II	Lectures (4h); tutorial (1h); laboratory class (3h)	1–7

Please note the following:

- The times and locations of classes can be found on myUNSW.
- You MUST attend the tutorial and laboratory time shown on your official timetable.
- Students with a timetable clash should submit a “Timetable Clash Request” available from (<http://unsw.to/webforms>).
- Class locations may be changed in response to changes in student numbers. Download a fresh timetable from myUNSW often near the start of term.

## 5. Assessments

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### 5.1 Assessment Tasks

In order to pass this course, you must achieve ALL of the following:

- An overall course mark of  $\geq 50$ ;
- An overall pass ( $\geq 50\%$ ) in the laboratory component;
- Completing all core laboratory skills;
- A minimum mark of 35%, weight-averaged across the mid-term test and the final exam.

Failure to satisfy all of these criteria could result in either a FL or UF (Unsatisfactory Fail) grade being awarded.

Assessment task	Weight	Details
<b>Assessment 1:</b> Laboratory work	20%	<p>The definitive source of information about laboratory assessment is the Laboratory Manual (available on Moodle). A few key points are repeated here:</p> <ul style="list-style-type: none"><li>• Assessment in the laboratory is done on a “skills” basis. You must demonstrate that you’ve acquired all of the “core skills” in order to be eligible to pass the course. The “core skills” will give you 10/20 in one lump sum; the remaining “non-core (graded) skills” will take you from 10/20 up to 20/20 for the laboratory component of the course.</li><li>• If you fail to earn any core skills during the regular lab weeks, you should attend a make-up lab to get a last chance to be awarded your missing core skills.</li><li>• If you miss a laboratory class for any reason, you will be permitted to do a make-up lab which will compensate for an absence from any one lab class. You can attend a maximum of two make-up labs throughout term; see the Laboratory Manual for definitive details.</li><li>• Except for the first experiment, all experiments require pre-lab work to be completed before your lab class.</li><li>• You must attend the laboratory class shown on your official timetable. If you arrive more than 20 minutes late to a laboratory class, you will be refused entry and marked absent.</li><li>• Safety eyewear, a laboratory coat and fully enclosed footwear must be worn in the laboratory. You will not be permitted to work in thongs or open-top shoes or sandals or without a laboratory coat and safety eyewear. In addition, for term 3, 2020, face masks will be compulsory and social distancing requirements listed in the laboratory manual must be complied with.</li></ul>

		<ul style="list-style-type: none"> <li>Repeat students must apply to the first year laboratory coordinator if they want exemption from laboratory classes. Exemption is not automatic and is decided on a case-by-case basis.</li> </ul>
<b>Assessment 2:</b> Online Lecture Preps and revision quizzes	20%	<p>Each week, before the week's lectures begin, you should log on to Moodle and complete an interactive, adaptive, self-paced lecture prep(s). These tutorials are designed to ensure that you are "up to scratch" with the assumed knowledge for the course. Each tutorial concludes with a set of assessable questions.</p> <p>At the end of the week, you should log onto Moodle again to complete a revision quiz. This operates on a similar format to the assessable part of the pre-week activity. At the end of term, the pre-week lab preps and post- week revision quizzes are worth a total of 20% of the marks for the course.</p> <p>Full details of this assessment are on Moodle.</p>
<b>Assessment 3:</b> Mid-term test	10%	<p>The mid-term test for this course is currently planned for <b>Week 5</b> during your regular scheduled lecture timeslot on <b>Thursday 15 October 2020</b>. The official details will be posted on Moodle approximately 1–2 weeks before the date of the examination. If you cannot attend this lecture timeslot due to a permitted timetable clash, please contact <a href="mailto:m.gandy@unsw.edu.au">m.gandy@unsw.edu.au</a> as soon as possible. Permitted clashes do not automatically excuse absences from the test.</p> <p>The mid-term test will be conducted online via Moodle and will consist of ~20 multi-choice questions.</p>
<b>Assessment 4:</b> Final examination	50%	<p>The final examination will cover the entire contents of the course including content from lectures, tutorials and the laboratory component. As a guide, the amount of material on a syllabus topic in the exam will be in proportion to the number of lectures given for that topic. The final exam will be conducted online via Moodle. You will be advised of the date and time of your final exam after Monday week 9.</p>

### Further information

UNSW grading system: <https://student.unsw.edu.au/grades>

UNSW assessment policy: <https://student.unsw.edu.au/assessment>

## 5.2 Assessment criteria and standards

The Laboratory Manual contains detailed criteria for the awarding of each laboratory skill.

The weekly online quizzes and the mid-term test are primarily composed of multichoice questions. For such questions, you must select the one best answer.

Final exam revision material will be made available on Moodle, along with an associated marking rubric.

## 5.3 Submission of assessment tasks

Laboratory reports are completed during lab class and are submitted to your demonstrator at the end of the class for marking. Weekly online lecture prep and revision quizzes, the mid-term test and final exam are accessed and submitted through Moodle.

## 5.4 Feedback on assessment

You will receive near-real-time feedback on your laboratory performance, including details of which skills you have and haven't yet earned. This information is available through Moodle.

You will receive instantaneous feedback on your weekly online quizzes. This feedback will include information on your overall score for each quiz, plus details of which questions you got right and wrong.

The mid-term test will be conducted using paper-based generalised answer sheets. It typically takes up to a week for the results to be processed and communicated via Moodle.

The results of the final exam will not be communicated to you explicitly. Instead, you will receive an overall mark for the course once the results have been finalised.

## 5.5 Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to advise the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: <https://student.unsw.edu.au/special-consideration>

**Important note:** UNSW has a "fit to sit/submit" rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control which affect your ability to study, you do not sit an examination or submit an assessment which does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

## 5.6 Supplementary Assessment

A supplementary examination may be offered in cases where you have applied for and received special consideration. The supplementary exam period for this term is **Monday 11 January to Friday 15 January 2021 inclusive**. The time, date and venue of your test will be confirmed via student email approximately 1 week before the exam date. All students granted a supplementary exam are expected to make themselves available to attend. No alternative dates or times will be guaranteed. A supplementary examination may consist of a written paper and in some cases an oral examination. Averages will not be given in place of a final exam mark or supplementary exam mark.

## 6. Academic integrity, referencing and plagiarism

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**Referencing** is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at <https://student.unsw.edu.au/referencing>

**Academic integrity** is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

- The *Current Students* site <https://student.unsw.edu.au/plagiarism>, and
- The *ELISE* training site <http://subjectguides.library.unsw.edu.au/elise/presentation>

The *Student Conduct and Integrity Unit* provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>.

## 7. Readings and resources

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### 7.1 Textbooks and Notes:

- **For students who have completed HSC chemistry, we recommend:** Blackman, Bottle, Schmid, Mocerino and Wille, "Chemistry," 4th Ed., Wiley. This book is available in print format through the UNSW Bookshop:  
<https://www.bookshop.unsw.edu.au/details.cgi?ITEMNO=9780730363286&16202288>  
or in various formats from Wiley Direct Online:  
<http://www.wileydirect.com.au/buy/chemistry-4th-edition/>
- **For students who have NOT completed HSC chemistry, we recommend:** Hein, Arena, "Foundations of College Chemistry" (14th Ed, or later), Wiley, 2014. This book is available through the UNSW Bookshop, or from Wiley Direct Online:  
<https://www.wileydirect.com.au/buy/foundations-of-college-chemistry-15th-edition/>
- Aylward and Findlay, "SI Chemical Data," 6th Ed. or later.
- Term 3, 2020 Laboratory Manual (available for purchase in print at the UNSW Bookshop; also downloadable from Moodle).
- Term 3, 2020 Tutorial Notes (available on Moodle).

### 7.2 Need Help?

There are several people who can help you with problems. The appropriate person may differ depending on the problem.

- First, check the "Important Announcements" and the "Q&A" forums on Moodle – your question may have been asked by another student and answered before.
- For problems relating to lectures – post your question on Moodle, or contact your lecturer.

- For tutorial problems – post your question on Moodle, or ask your tutor during tutorial classes.
- For laboratory problems – post your question on Moodle, or alternatively ask your lab tutor during your lab classes.
- For course related and/or personal difficulties that may be affecting your performance in first year chemistry – see the Chemistry Student Centre, (+61 (2) 9385 4666).
- For all other enquires (including Moodle issues) – contact Michael, the Student Services Manager ([m.gandy@unsw.edu.au](mailto:m.gandy@unsw.edu.au)).

## 8. Administrative matters

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If you have any administrative questions, try the following sources of information (in order):

- This course outline
- The Moodle site for this course (including the Important Announcements and FAQ sections)
- Chemistry Student Services:
  - Michael Gandy; [m.gandy@unsw.edu.au](mailto:m.gandy@unsw.edu.au); +61 (2) 9385 4651;
  - Anne Ayres; [a.ayres@unsw.edu.au](mailto:a.ayres@unsw.edu.au); +61 (2) 9385 4666.
- Science Student Services:
  - +61 (2) 8263 8102; <https://www.science.unsw.edu.au/contact-us>
- Central Student Services:
  - +61 (2) 9385 8500; <https://nucleus.unsw.edu.au/en/contact-us>

## 9. Additional support for students

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Other avenues of support include:

- The Current Students Gateway: <https://student.unsw.edu.au>
- Academic Skills and Support: <https://student.unsw.edu.au/skills>
- Student Wellbeing, Health and Safety: <https://student.unsw.edu.au/wellbeing>
- Equitable Learning Services: <https://student.unsw.edu.au/els>
- UNSW IT Service Centre: <https://www.myit.unsw.edu.au>