



UNSW Course Outline

CHEM2921 Food Chemistry - 2024

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General Course Information

Course Code : CHEM2921

Year : 2024

Term : Term 1

Teaching Period : T1

Is a multi-term course? : No

Faculty : Faculty of Science

Academic Unit : School of Chemistry

Delivery Mode : In Person

Delivery Format : Standard

Delivery Location : Kensington

Campus : Sydney

Study Level : Undergraduate

Units of Credit : 6

Useful Links

[Handbook Class Timetable](#)

Course Details & Outcomes

Course Description

This course is designed for students enrolled in food science programs specialisations and aims to equip students with a contemporary understanding of the theory and analytical techniques used in the food chemistry/science sector. This course provides an introduction to the chemistry of water, spectroscopy, amino acids, proteins, fats, carbohydrates and vitamins. The laboratory

sessions focus on analysis of major and minor food nutrients, and data interpretation. This includes proximate analysis of the major food groups, together with specialised analyses such as reducing-sugars, saponification value, iodine value, peroxide value, acid value, polarimetry, GLC of fatty acid esters and HPLC of antioxidants and vitamin C.

The course delivers the initial theory via weekly online, pre-recorded lectures. This is followed by weekly in-person workshops and laboratories which provide students with the opportunity to apply the theory to real-world food science contexts.

At the end of this course, students will be ready to take on work placements or internships in the food science sector as the course focuses on modern hand-on methods of food analysis.

Course Aims

This course aims to introduce students to the important chemistry of the major food components (protein, carbohydrate, lipids, and vitamins) and their functions in food systems using authentic learning contexts based on industry examples.

Laboratory classes are designed to reinforce the core concepts covered in lectures and workshops and introduce the principles of chemical and instrumental techniques for the qualitative and quantitative analysis of food composition.

Relationship to Other Courses

This course builds upon the knowledge gained in CHEM1A and CHEM1B, and applies it to food and food components.

The contents of CHEM1A and CHEM1B are taken as assumed knowledge, and some revision material is provided.

Course Learning Outcomes

Course Learning Outcomes
CL01 : Explain the chemical relationship between the properties of bulk foods and their components such as vitamins, fats, lipids, and carbohydrates.
CL02 : Evaluate food stability and content by performing experiments and analysing and reporting the resultant data and findings.
CL03 : Predict how structural and chemical changes to carbohydrates impact their physical and chemical activity and overall impact on food quality and human health.
CL04 : Predict how structural and chemical changes to proteins and vitamins impact their physical and chemical activity and overall impact on food quality and human health.
CL05 : Predict how structural and chemical changes to lipids impact their physical and chemical activity and overall impact on food quality and human health.

Course Learning Outcomes	Assessment Item
CLO1 : Explain the chemical relationship between the properties of bulk foods and their components such as vitamins, fats, lipids, and carbohydrates.	<ul style="list-style-type: none"> • Weekly Quizzes • Laboratory • In-term Tests • Final Examination
CLO2 : Evaluate food stability and content by performing experiments and analysing and reporting the resultant data and findings.	<ul style="list-style-type: none"> • Laboratory
CLO3 : Predict how structural and chemical changes to carbohydrates impact their physical and chemical activity and overall impact on food quality and human health.	<ul style="list-style-type: none"> • Weekly Quizzes • In-term Tests • Final Examination • Laboratory
CLO4 : Predict how structural and chemical changes to proteins and vitamins impact their physical and chemical activity and overall impact on food quality and human health.	<ul style="list-style-type: none"> • Weekly Quizzes • In-term Tests • Final Examination • Laboratory
CLO5 : Predict how structural and chemical changes to lipids impact their physical and chemical activity and overall impact on food quality and human health.	<ul style="list-style-type: none"> • Weekly Quizzes • In-term Tests • Final Examination • Laboratory

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Weekly Quizzes Assessment Format: Individual	5%	Start Date: Not Applicable Due Date: At the start of each lab
Laboratory Assessment Format: Individual	40%	Due Date: Friday the week following the Lab
In-term Tests Assessment Format: Individual	20%	Due Date: Week 5: 11 March - 17 March, Week 9: 08 April - 14 April
Final Examination Assessment Format: Individual	35%	Due Date: In the final exam period

Assessment Details

Weekly Quizzes

Assessment Overview

At the start of each lab, there will be a short quiz on the lecture content related to the lab activity.

Full details on what topics are covered will be provided prior to the lab.

Your mark will be calculated using the best 7 of your 8 quizzes.

These quizzes serve to check your understanding of the lecture content and identify areas for improvement.

General feedback on the quizzes will be provided within 7 days, and the marked quiz, with more specific feedback returned in the next lab.

Course Learning Outcomes

- CL01 : Explain the chemical relationship between the properties of bulk foods and their components such as vitamins, fats, lipids, and carbohydrates.
- CL03 : Predict how structural and chemical changes to carbohydrates impact their physical and chemical activity and overall impact on food quality and human health.
- CL04 : Predict how structural and chemical changes to proteins and vitamins impact their physical and chemical activity and overall impact on food quality and human health.
- CL05 : Predict how structural and chemical changes to lipids impact their physical and chemical activity and overall impact on food quality and human health.

Laboratory

Assessment Overview

There will be 8 lab experiments run across 9 weeks of the term (Wks 1-5, 7-10). You will only be required to complete one lab in any week. Prior to each lab, you will complete a short, online pre-lab quiz focusing on safety in the lab and general information about the lab, due the night before the lab. Each lab will have an associated written report, which is to be submitted one week after the experiment is run.

All laboratories will carry the same weight towards the lab component. Your mark will be calculated using the best 7 of your 8 labs. The mark for each lab will be comprised of 10% from the pre-lab quiz, and 90% from the report.

Feedback on the lab reports will be provided by demonstrators 5-7 working days after submission.

HURDLE: Attendance – You must attend a minimum of 7 of the 8 labs to pass the course.

Course Learning Outcomes

- CL01 : Explain the chemical relationship between the properties of bulk foods and their components such as vitamins, fats, lipids, and carbohydrates.
- CL02 : Evaluate food stability and content by performing experiments and analysing and reporting the resultant data and findings.
- CL03 : Predict how structural and chemical changes to carbohydrates impact their physical and chemical activity and overall impact on food quality and human health.
- CL04 : Predict how structural and chemical changes to proteins and vitamins impact their physical and chemical activity and overall impact on food quality and human health.
- CL05 : Predict how structural and chemical changes to lipids impact their physical and chemical activity and overall impact on food quality and human health.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students can see Turnitin similarity reports.

Hurdle rules

You must attend 7 of 8 labs to be eligible to pass the course.

You must achieve an overall pass (at least 50%, a course mark of 20) in the lab component to be eligible to pass the course.

In-term Tests

Assessment Overview

You will perform two in-term, restricted note tests. These tests are to help you revise and receive feedback on your understanding of the various topics covered by the course, including as preparation for the final exam. prepare for the final exam by staying up to date with the content. Each test is worth 10% of the course total.

- *Test 1:* After the first two topics are taught (water, spectroscopy; amino acids and proteins), typically Week 4 or 5.
- *Test 2:* After Topic 3 (lipids) and half-way through Topic 4 (carbohydrates), typically Week 9.

Each test will be an hour long and will be completed during a scheduled test timeslot.

Questions typically include short and long written answers, data interpretation and manipulation, calculations and drawing.

You will be given written feedback on your attempt once grades are finalized (within 2 weeks from the date of the test).

You may request to view your marked paper once grades have been finalized for each test.

Course Learning Outcomes

- CL01 : Explain the chemical relationship between the properties of bulk foods and their components such as vitamins, fats, lipids, and carbohydrates.
- CL03 : Predict how structural and chemical changes to carbohydrates impact their physical and chemical activity and overall impact on food quality and human health.
- CL04 : Predict how structural and chemical changes to proteins and vitamins impact their physical and chemical activity and overall impact on food quality and human health.
- CL05 : Predict how structural and chemical changes to lipids impact their physical and chemical activity and overall impact on food quality and human health.

Assessment information

Will take place during the timetabled EXM timeslot.

Final Examination

Assessment Overview

The final exam aims to assess your ability to solve contextualized, in-depth food chemistry problems. The 2-hour exam will cover questions from all 4 topics taught during the course including lab content and will take place during the end-of-term examination period

Questions typically include multi-step questions with short and long written answers, drawing, data interpretation and manipulation and calculations.

Marked exams will be available for you to view, if you request it, after grade submissions.

HURDLE: You must score 35% or more in the final exam to pass the course.

Course Learning Outcomes

- CL01 : Explain the chemical relationship between the properties of bulk foods and their components such as vitamins, fats, lipids, and carbohydrates.
- CL03 : Predict how structural and chemical changes to carbohydrates impact their physical and chemical activity and overall impact on food quality and human health.
- CL04 : Predict how structural and chemical changes to proteins and vitamins impact their physical and chemical activity and overall impact on food quality and human health.
- CL05 : Predict how structural and chemical changes to lipids impact their physical and chemical activity and overall impact on food quality and human health.

Hurdle rules

You must achieve a mark of 35% (12.25 course marks) in the final exam to be eligible to pass the course

General Assessment Information

Grading Basis

Standard

Requirements to pass course

To pass the course you must:

- Achieve a total course mark of at least 50,
- Achieve an overall pass in the lab component (50%, course mark of 20),
- Attend at least 7 of 8 lab classes, and
- Achieve a score of 35% (12.25 course marks) in the final Exam.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
Week 2 : 19 February - 25 February	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
	Assessment	Week 1 Lab report due Friday
Week 3 : 26 February - 3 March	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
	Assessment	Week 2 Lab report due Friday
Week 4 : 4 March - 10 March	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
	Assessment	Week 3 Lab report due Friday
Week 5 : 11 March - 17 March	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
	Assessment	Week 4 Lab report due Friday
	Lecture	Last Minute Q&A Session in Wednesday lecture timeslot.
	Assessment	Mid Term Test 1 on Wednesday in Exam Timeslot
Week 6 : 18 March - 24 March	Other	Flexibility Week. No regular classes.
Week 7 : 25 March - 31 March	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
	Assessment	Week 5 Lab report due Friday
Week 8 : 1 April - 7 April	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
	Assessment	Week 7 Lab report due Friday
Week 9 : 8 April - 14 April	Laboratory	4 hour laboratory class. See Moodle for details
	Assessment	Weekly Quiz in lab.
	Workshop	
	Assessment	Week 8 Lab report due Friday
	Lecture	Last minute Q&A Session in Wednesday lecture timeslot
	Assessment	Mid Term Test 2 on Wednesday in Exam Timeslot.
Week 10 : 15 April - 21 April	Workshop	
	Assessment	Week 9 Lab report due Friday

Attendance Requirements

You must attend 7 out of 8 labs to pass the course

Course Resources

Prescribed Resources

Food, The Chemistry of its Components by T.P. Coultate 4th or 5th Edition

Analytical Chemistry of Foods by C.S. James 1st Edition, 1995

Additional Costs

The following PPE must be supplied by students:

- Cotton button up lab coat
- Safety glasses

These can be purchased in the bookshop or grad store on campus or external retailers (eg hardware stores).

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Jeffrey Black				By Appointment	Yes	Yes
Lecturer	Naresh Kumar				By Appointment	No	No
	Jason Harper				By Appointment	No	No

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.

- Maintain the University's reputation and good standing.

For more information, visit the [UNSW Student Code of Conduct Website](#).

Academic Honesty and Plagiarism

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, plagiarism and the use of AI in assessments can be located at:

- The [Current Students site](#),
- The [ELISE training site](#), and
- The [Use of AI for assessments](#) site.

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>

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

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 be advised of 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 that affect your ability to study, you do not sit an examination or submit an assessment that 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.

Faculty-specific Information

Additional support for students

- [The Current Students Gateway](#)
- [Student Support](#)
- [Academic Skills and Support](#)
- [Student Wellbeing, Health and Safety](#)
- [Equitable Learning Services](#)
- [UNSW IT Service Centre](#)
- Science EDI Student [Initiatives](#), [Offerings](#) and [Guidelines](#)

School-specific Information

UNSW Changes to Special Consideration: Short Extension

The School of Chemistry has carefully reviewed all of its assessments to determine whether they

are suitable for automatic short extensions as set out by the UNSW Short Extension Policy. The current deadline structures for all assessment tasks in the School of Chemistry already accommodate the possibility of unexpected circumstances that may lead students to require additional time for submission. **The School of Chemistry has opted out of the UNSW Short Extension provision for all its courses**, and we have already integrated flexibility into our assessment deadlines. This decision is subject to revision in response to the introduction of new course offerings. All students may still apply for Special Consideration for any assessment via the usual procedures.

School Contact Information

Level 1, Dalton Building (F12)

W: www.chemistry.unsw.edu.au

Also see: ***Contacts and Support*** section of the course Moodle page (where applicable)