



# CHEM12077 Food Science & Analysis

## Term 2 - 2022

Profile information current as at 03/05/2024 05:54 am

All details in this unit profile for CHEM12077 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

## General Information

### Overview

In this unit, you will learn theoretical and practical applications in food science and analysis. You will become familiar with laboratory compliance procedures, interpret risks and appropriate risk-minimisation approaches. The theoretical concepts will include an overview of food science, systems and sustainability, food chemistry and composition, food quality and safety, food preservation, food additives, foods and food products, fermentation, microorganisms, biotechnology, food packaging, environmental concerns and processing, and food regulation and labelling. Contents covered in this unit will provide a sturdy basis for studies in food science, systems and sustainability. Contents covered in this unit will enable you to be able to understand the implications of food science and analysis associated with manufacturing, environment, biotechnology and regulations. Accompanying the theory, you will enhance your practical skills by learning the operation and maintenance of common instrumentation used for food analysis, perform wet chemical analysis, data interpretation and appropriate communication of the results.

### Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

### Pre-requisites or Co-requisites

Prerequisites: CHEM11041 OR CHEM11043 or (CHEM11044 and CHEM11045)

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

### Offerings For Term 2 - 2022

- Mixed Mode

### Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

### Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

### Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

## Class and Assessment Overview

### Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

### Class Timetable

#### [Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

#### [Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

### Assessment Overview

#### 1. **Written Assessment**

Weighting: 20%

#### 2. **Practical and Written Assessment**

Weighting: 30%

#### 3. **Take Home Exam**

Weighting: 50%

### Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

## CQUniversity Policies

**All University policies are available on the [CQUniversity Policy site](#).**

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

## Previous Student Feedback

### Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

#### Feedback from SUTE

**Feedback**

Students thoroughly enjoyed the practical component and found it very useful and beneficial through working in small group environment.

**Recommendation**

It is recommended that the high standards set for residential school offered in this unit will be maintained and continued going forward.

#### Feedback from SUTE

**Feedback**

Students found the contents to be interesting, easy to navigate, and relevant to their qualification and future career.

**Recommendation**

It is recommended that the quality of the contents will be maintained through continuous refinement as appropriate and required.

#### Feedback from SUTE

**Feedback**

Students felt that the teaching team to be friendly, helpful, knowledgeable, and prompt in responding to questions via email and Moodle forums.

**Recommendation**

It is recommended that the high standards set for engaging effectively and in timely manner towards supporting student learning will be maintained going forward.

#### Feedback from SUTE, Student Emails and Moodle Forums

**Feedback**

Students felt that their learning experience could be improved by implementing a weekly open Q&A session.

**Recommendation**

This will be addressed through more learner-teacher engagement via the implementation of weekly 1 hour Q&A Zoom session.

## Unit Learning Outcomes

**On successful completion of this unit, you will be able to:**

1. Evaluate the importance of food systems, sustainability, composition, quality and safety
2. Critically discuss the application of food preservation, food product processing, biotechnology and food packaging
3. Discuss the legislation, regulation policies and guidelines relevant to labeling and manufacturing of food
4. Demonstrate skills in manipulation of laboratory apparatus, careful and systematic observation, precise recording and communication of experimental data.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



## Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Written Assessment - 20%	•			
2 - Practical and Written Assessment - 30%		•	•	•
3 - Take Home Exam - 50%	•	•	•	

## Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Communication	•	•	•	•
2 - Problem Solving	•	•	•	•
3 - Critical Thinking	•	•	•	•
4 - Information Literacy	•	•	•	•
5 - Team Work				•
6 - Information Technology Competence	•	•	•	•
7 - Cross Cultural Competence				
8 - Ethical practice				•
9 - Social Innovation				
10 - Aboriginal and Torres Strait Islander Cultures				

## Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Written Assessment - 20%	•	•	•	•		•				
2 - Practical and Written Assessment - 30%	•	•	•	•	•	•		•		
3 - Take Home Exam - 50%	•	•	•							

## Textbooks and Resources

### Textbooks

CHEM12077

#### Prescribed

#### **INTRODUCTION TO FOOD SCIENCE AND FOOD SYSTEMS**

2nd edition (2016)

Authors: Rick Parker, Miriah Pace

Delmar ( Cengage Learning )

Florence , KY , USA

ISBN: 9781435489394

Binding: Hardcover

#### **Additional Textbook Information**

Both paper and eBook copies can now be purchased at the CQUni Bookshop here:

<http://bookshop.cqu.edu.au> (search on the Unit code).

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

**You will need access to the following IT resources:**

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Microsoft Office

## Referencing Style

All submissions for this unit must use the referencing style: [Vancouver](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**Mani Naiker** Unit Coordinator

[m.naiker@cqu.edu.au](mailto:m.naiker@cqu.edu.au)

## Schedule

### **Week 1 - 11 Jul 2022**

Module/Topic	Chapter	Events and Submissions/Topic
Overview of Food Science Systems and Sustainability	1 & 2	

### **Week 2 - 18 Jul 2022**

Module/Topic	Chapter	Events and Submissions/Topic
Food Chemistry and Composition	3 & 5	

### **Week 3 - 25 Jul 2022**

Module/Topic	Chapter	Events and Submissions/Topic
Food Quality and Safety	6 & 26	

### **Week 4 - 01 Aug 2022**

Module/Topic	Chapter	Events and Submissions/Topic
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Food Preservation I  
Heat and Cold 9 & 10

#### Week 5 - 08 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Food Preservation II Drying and Dehydration Radiant and Electrical Energy	11 & 12	

#### Vacation Week - 15 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
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#### Week 6 - 22 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Food Additives	14	<b>Written Assessment</b> Due: Week 6 Monday (22 Aug 2022) 11:45 pm AEST

#### Week 7 - 29 Aug 2022

Module/Topic	Chapter	Events and Submissions/Topic
Foods and Food Products Cereal Grains Legumes Oilseeds Beverages	20 & 24	

#### Week 8 - 05 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Fermentation Microorganisms Biotechnology	13	

#### Week 9 - 12 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Food Packaging	15	

#### Week 10 - 19 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Environmental Concerns and Processing	25	

#### Week 11 - 26 Sep 2022

Module/Topic	Chapter	Events and Submissions/Topic
Food Regulation and Labeling	27	

#### Week 12 - 03 Oct 2022

Module/Topic	Chapter	Events and Submissions/Topic
Review		<b>Practical and Written Assessment</b> Due: Week 12 Friday (7 Oct 2022) 11:45 pm AEST

## Term Specific Information

All the recorded lectures and other learning resources will be posted online. ALL STUDENTS will be required to attend a three-day compulsory residential school at North Rockhampton campus from 21 - 23 September 2022.

## Assessment Tasks

# 1 Written Assessment

## Assessment Type

Written Assessment

## Task Description

As an emerging scientist, you are expected to keep updated with current trends in your field and need to be able to collate, review and critique information related communications in order to identify gaps in knowledge that can be addressed via new research inquiry. As such you are strongly recommended to liaise and communicate with researchers, experts and your peers as you go through the reviewing and literature search process for this assessment. In this assessment you are required to develop a literature review on any one of the nutrients listed below:

- Dietary fibre
- Anthocyanins
- Saturated fatty acids
- Unsaturated fatty acids
- Vitamin A
- Biotin
- Choline
- Folates
- Tocopherols
- Iron
- Selenium
- Manganese
- zinc

Your literature review needs to contain the following information relevant to the nutrient you have chosen:

- Title (not included in word count)
- What are they – definition and physio-chemical properties? (400 words)
- Functions and regulation in the body (500 words)
- Major sources in diet (300 words)
- Recommended dietary intake (100 words)
- Availability of supplements including their efficacy towards human consumption (100 words)
- Health problems associated with deficiencies/toxicities (500 words)
- Conclusion (100 words)
- References (not included in word count)

Include in-text references for all literature cited and a complete reference list at the end. The text must be word processed and submitted as a Microsoft Word document.

Your complete literature review should be between 1500 - 2000 words.

## Assessment Due Date

Week 6 Monday (22 Aug 2022) 11:45 pm AEST

To be submitted via Moodle as a Microsoft Word document

## Return Date to Students

Week 8 Monday (5 Sept 2022)

Via assessment task feedback file in Moodle

## Weighting

20%

## Minimum mark or grade

50 %

## Assessment Criteria

Refer to the marking rubric sheet that will be made available on Moodle

## Referencing Style

- [Vancouver](#)

## Submission

Online

## Submission Instructions

To be submitted via Moodle as a Microsoft Word document. It is your responsibility to make sure that the submission is done by the due date.

## Learning Outcomes Assessed

- Evaluate the importance of food systems, sustainability, composition, quality and safety

### **Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

## **2 Practical and Written Assessment**

### **Assessment Type**

Practical and Written Assessment

### **Task Description**

During the residential school you will be undertaking a range of chemical analysis and qualitative measurements to characterize various constituents in foodstuff and beverage matrices. At the end of the residential school, you will be required to submit a completed preformat proforma for each of the experimental analysis conducted individually. The text must be word processed/written for each report and submitted as a Microsoft Word document.

The reports are compulsory and should be submitted collated into one file. For this assessment task if you do not meet the minimum pass mark, you may not be eligible for a supplementary exam or assessment.

### **Assessment Due Date**

Week 12 Friday (7 Oct 2022) 11:45 pm AEST

To be submitted via Moodle as a Microsoft Word document.

### **Return Date to Students**

Exam Week Monday (17 Oct 2022)

Via assessment task feedback file in Moodle.

### **Weighting**

30%

### **Minimum mark or grade**

50 %

### **Assessment Criteria**

The assessment marking criteria will be based on the marks allocated for each component in the preformat proforma for each experiment.

### **Referencing Style**

- [Vancouver](#)

### **Submission**

Online

### **Submission Instructions**

To be submitted via Moodle as a Microsoft Word document. It is your responsibility to make sure that the submission is done by the due date.

### **Learning Outcomes Assessed**

- Critically discuss the application of food preservation, food product processing, biotechnology and food packaging
- Discuss the legislation, regulation policies and guidelines relevant to labeling and manufacturing of food
- Demonstrate skills in manipulation of laboratory apparatus, careful and systematic observation, precise recording and communication of experimental data.

### **Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Ethical practice

## 3 Take Home Exam

### Assessment Type

Take Home Exam

### Task Description

The take home exam will cover all the content you have studied this term. This assessment will be in the form of a written assessment that will be made available via Moodle during the exam week. You will be allowed 48 hours to complete and upload this take home exam via Moodle as a word document.

In completing this alternative assessment, you should note the following:

- Attempt all questions
- All submissions should be typed and saved as a word document
- Show all calculations as required
- Completed assessment is to be submitted via upload on Moodle page.

The breakdown of topics to be covered in the take home exam and associated marks will be made available on Moodle in Week 12

### Assessment Due Date

The take-home exam will be available for download on a specific day during the University's standard exam period. More details on the due date and time will be provided later via Moodle. This exam will be available for 48 hours ONLY and should be submitted via Moodle as a Microsoft Word document.

### Return Date to Students

Marks will be returned 14 days after the take-home exam is submitted via assessment task feedback file in Moodle.

### Weighting

50%

### Minimum mark or grade

50 %

### Assessment Criteria

The assessment marking criteria will be based on the marks allocated for each question in the take home exam.

### Referencing Style

- [Vancouver](#)

### Submission

Online

### Submission Instructions

To be submitted via Moodle as a Microsoft Word document. It is your responsibility to make sure that the submission is done by the due date

### Learning Outcomes Assessed

- Evaluate the importance of food systems, sustainability, composition, quality and safety
- Critically discuss the application of food preservation, food product processing, biotechnology and food packaging
- Discuss the legislation, regulation policies and guidelines relevant to labeling and manufacturing of food

### Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking

## Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

### What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

### Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

### Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

### What can you do to act with integrity?



#### Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



#### Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



#### Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem