



# CHEM11042 *Fundamentals of Chemistry*

## Term 2 - 2024

Profile information current as at 05/09/2024 02:38 pm

All details in this unit profile for CHEM11042 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

This unit will provide you with the fundamental principles of chemistry that underpin the medical sciences and provide a strong foundation on which you can develop an understanding of biochemistry and molecular science. You will gain an appreciation of the nature of matter, classic atomic structure and how energy is involved in bond formation. These concepts will be developed to explain the forces between molecules that govern chemical interaction. You will be introduced to the chemistry of electrolytes, acids, bases and buffers. This study will be supported by simple calculations to assist you in relating to the pH scale. The study of organic chemistry and molecules central to the life sciences will enable you to develop an understanding of the biochemistry and molecular biology relevant to your specific discipline. The naming and classifying of chemical compounds will enable you to be conversant with accepted scientific terms. Tutorials and on-line activities will complement the theoretical knowledge gained in lectures and provide you with the basic mathematical and analytical tools required in the application of chemistry to your specific discipline.

### Details

Career Level: *Undergraduate*

Unit Level: *Level 1*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

### Pre-requisites or Co-requisites

There are no requisites for this unit.

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 - 2024

- Online

### 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).

### 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. **Online Quiz(zes)**

Weighting: 30%

#### 2. **Written Assessment**

Weighting: 40%

#### 3. **Online Test**

Weighting: 30%

### 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**

Some students provided feedback that the unit was well structured, and appreciated the study guide. Students suggested that they have found the Khan Academy videos really helpful for chemistry.

##### **Recommendation**

I recommend that the chemistry teaching team work on creating extra learning resources, such as providing useful video links on the Moodle site each week. These videos can be used to provide wider learning accessibility for visual and tactile learners.

#### Feedback from SUTE

##### **Feedback**

Some students' suggested reformatting the chemistry study guide to include hyperlinks and bookmarks, allowing for easier navigation within the resource.

##### **Recommendation**

I recommend that the chemistry teaching team collaborates with the Learning Design team to explore the possibility of converting the study guide into hyperlinks or bookmarks on the Moodle site.

#### Feedback from SUTE

##### **Feedback**

A few students still thought the lectures were not helpful, that it was simple presentation from bullet points and there were no clear explanations.

##### **Recommendation**

I recommend that the chemistry teaching team maintains an ongoing process of reviewing and updating learning materials and resources, including videos and the study guide. This will ensure that the materials remain current, relevant and engaging for students.

#### Feedback from SUTE

##### **Feedback**

Some students' feedback was to make the recorded videos more interesting and less 'monotone'. Suggestions were for more examples and in depth explanations.

##### **Recommendation**

I strongly recommend that the chemistry teaching team focus on enhancing the quality of the recorded videos and incorporate additional worked examples into the lectures. Current recordings are out of date, contain technical issues, and do not reflect the high standards we strive to offer to our students. Additionally, the teaching team should aim to provide extra learning resources on a weekly basis, such as links to relevant video resources, catering to the needs of visual and tactile learners. This approach will further enrich the learning experience for students.

#### Feedback from SUTE

##### **Feedback**

Some students still do not believe that chemistry is relevant to their chosen field and need more clarity on how the content relates back to healthcare settings and scenarios and to paramedic science. This also impacted negatively on their engagement with the units learning materials.

##### **Recommendation**

I recommend that the teaching team continues to collaborate with relevant disciplines in the unit redesign process and proactively addresses any potential issues that may arise. Furthermore, the teaching team should foster collaborative learning among students and themselves by facilitating online Q&A sessions and discussion forums. These platforms will enable students to ask questions, seek clarifications, and engage in meaningful discussions, ultimately enhancing the overall learning experience.

## Unit Learning Outcomes

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

1. Apply concepts of atomic structure to explain molecular bonding and nuclear reactivity
2. Apply chemical concepts to healthcare situations
3. Identify categories of organic compounds and their potential chemical interactions
4. Perform basic chemical calculations.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Online Quiz(zes) - 30%	•			
2 - Written Assessment - 40%	•	•		•
3 - Online Test - 30%			•	

### 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				

## Textbooks and Resources

### Textbooks

**There are no required textbooks.**

#### Additional Textbook Information

A study guide will be provided for this unit via the Moodle site. The study guide is the key reference material for this unit.

### IT Resources

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

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

## Referencing Style

All submissions for this unit must use the referencing style: [Vancouver](#)  
For further information, see the Assessment Tasks.

## Teaching Contacts

**Catherine Jones** Unit Coordinator  
[c.e.jones@cqu.edu.au](mailto:c.e.jones@cqu.edu.au)

## Schedule

### Week 1 - 08 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Chemistry Matter Atoms and Molecules The Periodic Table	Chemistry Foundations Study Guide - Topics 1, 2 and 3	

### Week 2 - 15 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Ion Formation Bonding Intermolecular Forces	Chemistry Foundations Study Guide - Topics 4, 5, 6 and 7	<b>Assessment 1 - Online Quiz</b> Opens: Week 2 Friday (19 July 2024) 12:00 pm AEST

### Week 3 - 22 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
The Mole Mole-Mass Conversions Solutions and Dilutions	Chemistry Foundations Study Guide - Topics 8 and 9	

### Week 4 - 29 Jul 2024

Module/Topic	Chapter	Events and Submissions/Topic
Chemical Reactions 1	Chemistry Foundations Study Guide - Topics 10 and 11	<b>Assessment 1 - Online Quiz</b> Closes: Week 4 Monday (29 July 2024) 11:55 pm AEST

**Week 5 - 05 Aug 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Chemical Reactions 2	Chemistry Foundations Study Guide - Topics 11 and 12	<b>Assessment 2 - Questions Document</b> available on Moodle: Week 5 Friday (9 August 2024) 9:00 am AEST

**Vacation Week - 12 Aug 2024**

Module/Topic	Chapter	Events and Submissions/Topic
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**Week 6 - 19 Aug 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Electrolytes Acids and Bases	Chemistry Foundations Study Guide - Topics 13 and 14	

**Week 7 - 26 Aug 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Buffers Introduction to Nuclear Chemistry	Chemistry Foundations Study Guide - Topics 15 and 16	

**Week 8 - 02 Sep 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Organic Chemistry Saturated Hydrocarbons	Chemistry Foundations Study Guide - Topics 17 and 18	<b>Assessment 2 - Calculations and Short Answer Questions</b> Due: Week 8 Friday (6 Sept 2024) 11:55 pm AEST

**Week 9 - 09 Sep 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Unsaturated Hydrocarbons Aromatic Compounds	Chemistry Foundations Study Guide - Topics 19 and 20	

**Week 10 - 16 Sep 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Alcohols Ethers Alkyl Halides Thiols and Amines	Chemistry Foundations Study Guide - Topics 21, 22 and 23	

**Week 11 - 23 Sep 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Aldehydes and Ketones Carboxylic Acids and their Derivatives	Chemistry Foundations Study Guide - Topics 24 and 25	

**Week 12 - 30 Sep 2024**

Module/Topic	Chapter	Events and Submissions/Topic
Prepare for Assessment 3	Review Topics 17-25	<b>Assessment 3 - Timed 3-h Online Test</b> Opens: Week 12 Thursday (3 October 2024) 10:00 am AEST <b>Assessment 3 - Timed 3-h Online Test</b> Closes: Week 12 Friday (4 October 2024) 10:00 am AEST

**Review/Exam Week - 07 Oct 2024**

Module/Topic	Chapter	Events and Submissions/Topic
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**Exam Week - 14 Oct 2024**

Module/Topic	Chapter	Events and Submissions/Topic
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## Assessment Tasks

### 1 Assessment 1 - Online Quiz

**Assessment Type**

Online Quiz(es)

**Task Description**

Assessment 1 - Online Quiz, has been designed to assess your understanding of Topics 1-7 (weeks 1 & 2 lectures and tutorials) presented in this unit. This assessment requires you to apply concepts presented in lectures and tutorials to determine the answers for a series of multiple-choice questions.

Assessment 1 - Online Quiz, opens Week 2 Friday (19 July 2024) at 12:00 pm AEST and closes Week 4 Monday (29 July 2024) 11:55 pm.

The quiz is not timed, and you are allowed two attempts. The highest score of the two attempts will be recorded.

**Note:** Quiz questions are generated randomly, and you will receive different questions on subsequent attempts.

**Number of Quizzes**

1

**Frequency of Quizzes**

Other

**Assessment Due Date**

Assessment 1 - Online Quiz, opens Week 2 Friday (19 July 2024) at 12:00 pm AEST and closes Week 4 Monday (29 July 2024) 11:55 pm.

**Return Date to Students**

Marks will be released after the completion of each attempt.

**Weighting**

30%

**Minimum mark or grade**

50%

**Assessment Criteria**

All questions are of equal weighting. One mark will be awarded for each correct response.

**Referencing Style**

- [Vancouver](#)

**Submission**

Online

**Submission Instructions**

Complete the Online Quiz by following the link on the CHEM11042 Moodle site.

**Learning Outcomes Assessed**

- Apply concepts of atomic structure to explain molecular bonding and nuclear reactivity

### 2 Assessment 2 - Calculations and Short Answer Questions

**Assessment Type**

Written Assessment

**Task Description**

Assessment 2 - Calculations and Short Answer Questions, has been designed to assess your comprehension of the concepts presented in the unit through their application to answer a series of questions. This assessment relates to Topics 8-16 (weeks 3-7 lectures and tutorials). All workings must be provided for answers to calculation questions. Inclusion of correct units and chemical notation is expected. Short answer questions may require you to explain, reason, describe, analyse, or evaluate information and provide an appropriately detailed written response. Marks will be awarded for each question as indicated in the Assessment 2 - Questions Document, which will be available on the CHEM11042 Moodle site. Marks will be deducted for incorrect units in your answers. Assessment 2 - Questions Document will be available on the Moodle site from week 5 of term.

**Assessment Due Date**

Week 8 Friday (6 Sept 2024) 11:55 pm AEST

**Return Date to Students**

Week 11 Friday (27 Sept 2024)

Marks and feedback file will be returned to students via the Moodle site.

**Weighting**

40%

**Minimum mark or grade**

50%

**Assessment Criteria**

Maximum marks available for each question will be indicated in the Assessment 2 - Questions Document, which will be available on the CHEM11042 Moodle site from week 5. Marks will be awarded for each question or partial question as indicated on the Questions Document. No marks will be given for incorrect answers, formulas, incorrect units, or explanations.

**Referencing Style**

- [Vancouver](#)

**Submission**

Online

**Submission Instructions**

Upload your submission as a Microsoft Word document by following the instructions on the Moodle site for CHEM11042.

**Learning Outcomes Assessed**

- Apply concepts of atomic structure to explain molecular bonding and nuclear reactivity
- Apply chemical concepts to healthcare situations
- Perform basic chemical calculations.

## 3 Assessment 3 - Timed Online Test

**Assessment Type**

Online Test

**Task Description**

Assessment 3 - Timed Online Test has been designed to assess your comprehension of concepts presented in this unit. This assessment relates to Topics 17-25 (weeks 8-11 lectures and tutorials). The test is timed. The maximum time to complete the test is 3 hours (180 minutes).

The 3-hour test will be available on the unit Moodle site for a 24-hour period.

It will open at 10 am AEST Thursday 3 October 2024 and must be completed by 10 am AEST Friday 4 October 2024.

The timer begins when you start the test.

The Online Test may include multiple-choice questions, questions with drag and drop style answers or short answer questions. You may be required to upload files to answer some questions. You must follow all instructions given on the Moodle site and within the test itself. Where indicated, you must show your working.

A practice test, to familiarise you with the online functionalities of Moodle quizzes, will be available prior to the real test.

**Assessment Due Date**

The 3-hour Timed Online Test will be available on the unit Moodle site for a 24-hour period. It will open at 10 am AEST Thursday 3 October 2024 and must be completed by 10 am AEST Friday 4 October 2024. The timer begins when you start the test.

**Return Date to Students**

Exam Week Wednesday (16 Oct 2024)

Marks and feedback files will be returned via the Moodle site.

**Weighting**

30%

**Minimum mark or grade**

50%



### Assessment Criteria

Maximum marks available for each question will be indicated in the Online Test. Marks will be awarded for each question or partial question as indicated on the Online Test. No marks will be given for incorrect answers, formulas, explanations, organic nomenclatures, or incorrect organic structures.

### Referencing Style

- [Vancouver](#)

### Submission

Online

### Submission Instructions

Complete the Timed Online Test by following the link on the CHEM11042 Moodle site.

### Learning Outcomes Assessed

- Identify categories of organic compounds and their potential chemical interactions

## 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