



CHEM11042 *Fundamentals of Chemistry*

Term 1 - 2017

Profile information current as at 01/05/2024 03:44 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 1 - 2017

- Distance
- Rockhampton

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: 20%

3. **Examination**

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 Have your say survey via Moodle

Feedback

The majority of students indicated that overall they enjoyed the course, the following aspects were highlighted 1. Delivery of content 2. Approachability of staff and their consistent reliable response to queries 3. Quality of face to face interaction with staff 4. Use of online assessment pieces

Recommendation

Continue best practice

Action

The Unit was revamped this offering with a shift to a scenario based introduction of topics. Best practice in delivery was followed with designated daily morning and afternoon sessions for the Q&A forum.

Feedback from Have your say survey via Moodle

Feedback

Some students studying internally felt there was no (or limited) face to face interaction with staff .

Recommendation

Weekly ISL delivered tutorials were supplied to all campuses offering CHEM11042 internally, which allowed for real time interaction with academic staff, this will continue in the next offering. Additional approaches to increase visibility of staff to students will also be investigated.

Action

Weekly 2 hour workshops were made available to on campus students. All worked solutions for tutorial problems were made available on moodle via pdf documnts but more importantly video recordings using a document camera so that all students were able to benefit from live tutorial instructions.

Feedback from Lecturing Staff & Moodle's EASI CONNECT software

Feedback

Topic focus notes and Health Check quizzes were under utilised

Recommendation

Statistics were and will continue to be presented to students providing evidence that regular use of the health check quizzes (and other resources) is vital in ensuring adequate preparation for final exam. The quizzes are proven to be a vital learning tool. Students tended to neglect the valuable information provided in the topic focus notes. These summaries of topics will be regularly highlighted to students throughout the term.

Action

The weekkly quizzes were used as an assessment item. Students were allowed 3 attempts at each quiz, with the highest grade being recorded. Questions were randomly selected from a bank of questions. This approach for the quizzes not only ensured student participation but also provided an alternative approach for learning.

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



N/A
Level



Introductory
Level



Intermediate
Level



Graduate
Level



Professional
Level



Advanced
Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Online Quiz(zes) - 30%	•		•	•
2 - Written Assessment - 20%		•		
3 - Examination - 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 - Online Quiz(zes) - 30%		•	•	•		•				
2 - Written Assessment - 20%	•	•	•	•		•				
3 - Examination - 50%	•	•	•	•						

Textbooks and Resources

Textbooks

There are no required textbooks.

Additional Textbook Information

You are required to purchase an E-Text:

Blackman et al, Chemistry Core Concepts, 1st edition, 2016 with Wiley Plus Learning Space.

This item can be purchased by accessing the link on the CHEM11042 Moodle site.

The E-book provides animations and short lecture style videos to assist you in your learning and the Wiley Plus Learning Space provides additional quizzes to further reinforce the course material and to assist you to gauge your understanding of the concepts presented.

In addition to the E- textbook, students are required to have a Scientific calculator (preferred brand Casio FX82 ES) and Periodic table (optional)

IT Resources

You will need access to the following IT resources:

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

Referencing Style

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

For further information, see the Assessment Tasks.

Teaching Contacts

Leanne Voss Unit Coordinator

l.voss@cqu.edu.au

Schedule

Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: How this unit runs; assessment and why we study chemistry. Lecture 2: Introduction to matter Lecture 3: Measurement	1.1 Why study chemistry? 1.2 Introduction to matter 3.3 Measurement	All weekly quizzes must be completed by the Wednesday of the following week. i.e. the Week 1 quiz must be completed by 11:55 pm on the Wednesday of week 2.

Week 2 - 13 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: Atomic structure Lecture 2: The Periodic Table and ion formation Lecture 3: Scientific notation and the metric system.	1.4 The structure of the atom 1.5 The Periodic Table of the elements 3.1 Section: Expression of large and small numbers 3.1 Section: Exponents and logarithms 3.2 Section: SI Units	

Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Lecture 1: Molecular formula and the mole	2.1 Representations in chemistry
Lecture 2: Introduction to Lewis dot diagrams	4.4 The mole
Lecture 3: Ionic bonding	6.1 Fundamentals of bonding 6.2 Ionic bonding

Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: Covalent Bonding and Lewis dot diagrams	6.3 Lewis structures	
Lecture 2: VSEPR	6.4 Valence shell electron pair repulsion theory (VSEPR)	
Lecture 3: Intermolecular forces	7.2 Intermolecular forces	

Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: Solutions and concentration terms	10.1 Introduction to solutions and solubility	
Lecture 2: Molarity and stoichiometry	10.2 Section: The concentration of solutions	
Lecture 3: Dilutions	10.2 Section: Diluting a solution	

Vacation Week - 10 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Week 6 - 17 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: Chemical reactions	4.1 Chemical and physical change	
Lecture 2: Energy in reactions	4.2 Chemical equations	
Lecture 3: Equilibrium	4.3 Balancing chemical equations	
	4.6 Stoichiometry, limiting reagents and percentage yield	
	8.3 Enthalpy	
	13.4 Temperature dependence of chemical reactions	
	13.5 Reaction mechanism and catalysis	
	9.1 Chemical equilibria	
	9.2 The equilibrium constant, K, and the reaction quotient, Q	
	9.4 How systems at equilibrium respond to change	

Week 7 - 24 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: Acid base definition and neutralisation reactions	11.1 The Bronsted-Lowry definition of acids and bases	
Lecture 2: pH calculations	11.5 The molecular basis of acid strength	
Lecture 3: Buffers	11.2 Acid-base reactions in water	
	11.6 Buffer solutions	

Week 8 - 01 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: The Ideal Gas equation	7.3 Gases	Poster: Applications of chemistry to Paramedic/Chiropractic scenarios. Due: Week 8 Friday (5 May 2017) 11:45 pm AEST
Lecture 2: Dalton's Law and Henry's Law	7.4 Gas mixtures	
Lecture 3: Nuclear chemistry	Supplementary material	

Week 9 - 08 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Lecture 1: Introduction to organic chemistry and alkanes	2.1 Representations in chemistry
Lecture 2: Alkenes and alkynes	2.2 Section: Naming organic compounds - the nomenclature of alkanes
Lecture 3: Aromatic compounds	14.1 Introduction to hydrocarbons
	14.2 Alkanes
	14.4 Reactions of alkanes
	14.3 Alkenes and alkynes
	14.5 Reactions of alkenes
	14.6 Aromatic compounds

Week 10 - 15 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: Functional groups, aldehydes, ketones and ethers	2.2 Section: Naming organic compounds - functional groups	
Lecture 2: Alcohols	15.2 Alcohols	
Lecture 3: Oxidation of alcohols	15.3 Reactions of alcohols	

Week 11 - 22 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1: Amines	15.4 Amines	
Lecture 2: Carboxylic acids and derivatives	15.6 Carboxylic acids	
Lecture 3: Chiral compounds	15.7 Nomenclature of carboxylic acids and derivatives	
	15.1 Chiral compounds	

Week 12 - 29 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Review		

Review/Exam Week - 05 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 12 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Weekly on-line quizzes

Assessment Type

Online Quiz(zes)

Task Description

This assessment is comprised of weekly on-line quizzes which will aid your comprehension of the concepts presented in each topic of this unit. This assessment requires you to study the material in the relevant topics and apply the concepts presented to answer a series of multiple choice questions..

Each quiz is comprised of 10 multiple-choice questions taken from a question bank. All questions in each quiz are of equal value and each of the 10 quizzes will contribute 3%, totalling 30% for this assessment item.

The quiz is not timed and you are allowed three attempts; the highest score of the three attempts will be recorded. Note that questions are generated randomly and you will receive different questions on subsequent attempts.

There is a minimum mark requirement of 40% for this assessment item. Therefore, you **must** attain 40% in total for this assessment task in order to be eligible to pass the unit overall.

Number of Quizzes

10

Frequency of Quizzes

Weekly

Assessment Due Date

Each quiz will close at 11:55PM on the Wednesday of the following week. i.e. The week 1 quiz will close on the Wednesday of week 2.

Return Date to Students

Quiz results will be released after the quiz has closed.

Weighting

30%

Minimum mark or grade

40%

Assessment Criteria

All questions are of equal weighting. One mark will be awarded for each correct response. Incorrect responses will not incur a penalty.

Referencing Style

- [Turabian](#)

Submission

Online

Learning Outcomes Assessed

- Apply concepts of atomic structure to explain molecular bonding and nuclear reactivity.
- Identify categories of organic compounds and their potential chemical interactions.
- Perform basic chemical calculations.

Graduate Attributes

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

2 Poster: Applications of chemistry to Paramedic/Chiropractic scenarios.

Assessment Type

Written Assessment

Task Description

This assessment requires you to design a professional poster that clearly illustrates the importance of chemistry in a scenario or medical condition that is significant to healthcare, particularly in your chosen field of paramedic or chiropractic science.

The poster should be well presented and include an image or diagram that represents and highlights the significance of the situation chosen.

You are to use your chemical knowledge and conduct research to explain the scenario and also suggest ways of improving, treating or preventing the issue being discussed.

The poster should be designed using PowerPoint application. A template for the poster and a 'how-to' video will be made available on the Moodle site.

Assessment Due Date

Week 8 Friday (5 May 2017) 11:45 pm AEST

Return Date to Students

Week 11 Friday (26 May 2017)

Weighting

20%

Minimum mark or grade

40%

Assessment Criteria

A marking Rubrik will be provided on the Moodle site for this unit.
Marks will be awarded for

- Introduction to the topic
- The use of an appropriate image
- The chemical explanation of the topic
- Discussion on the potential of chemical knowledge to help explain/solve the problem presented
- Overall presentation
- Grammar and spelling
- Referencing

Referencing Style

- [Turabian](#)

Submission

Online

Learning Outcomes Assessed

- Apply chemical concepts to healthcare situations.

Graduate Attributes

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

Examination

Outline

Complete an invigilated examination.

Date

During the examination period at a CQUniversity examination centre.

Weighting

50%

Length

120 minutes

Minimum mark or grade

40%

Exam Conditions

Closed Book.

Materials

Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

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