1. General Course Information

1.1 Course Details

Course Code:	**1001GRC**
Course Name:	**Chemistry of Biological Systems 1**
Trimester:	**Trimester 2, 2024**
Program:	**Diploma of Health Sciences**
Credit Points:	**10**
Course Coordinator:	**Claire Hoffman**
Document modified:	**09/05/24**

Course Description

This course introduces the basic chemical principles that underlie biological systems. Upon completion of this course, students will be able to demonstrate knowledge of selected chemistry concepts, principles and theories, with some application to biological phenomena. The foundation provided in this course will allow students to be able to further develop their chemistry knowledge and skills relevant to health and medical sciences in later years. Students will learn about how matter is classified and measured, atomic structure, bonding, biological molecules, chemical reactions, gases, energy, pH, acids and bases, chemical equilibrium and nuclear chemistry. There will be five laboratory sessions that complement the learning in this course.

Assumed Knowledge

To successfully enrol in this course, you must have completed one of the following courses:

- BRH100 - Essential Mathematics
- BRM100 - Essential Mathematics
- CMH100 - Core Maths Skills
- CME100 - Core Maths Skills
- CMS100 - Core Maths Skills

1.2 Teaching Team

Your teacher/s can be contacted via email as below:

You will also find their email in the Teacher's tile on your Course Site.

Name	Email
Claire Hoffman	Claire.Hoffman@griffithcollege.edu.au

1.3 Meet with your teacher

Your teacher is available each week to meet outside of normal class times. This is called consultation. Times that your teacher will be available for consultation will be found on the Teacher's tile on your Course Site.

1.4 Timetable

Your timetable is available on the Griffith College Digital Campus at My Apps, Timetable.

1.5 Technical Specifications

All students must have access to a computer or suitable mobile device such as laptop or tablet (mobile phones are not suitable). In addition, up-to-date browser access, a reliable high-speed internet connection with enough upload and download capacity, a webcam and headset including microphone are needed.

2. Aims, Outcomes & Generic Skills

2.1 Course Aims

The purpose of this course is to introduce students to the basic chemical principles that underlie biological systems. The course provides prerequisite knowledge for the subsequent course Chemistry of Biological Systems II, in addition to the health science-related courses which follow. The foundation provided in this course will allow students to be able to further develop their chemistry knowledge and skills relevant to health and medical sciences in later years.

2.2 Learning Outcomes

After successfully completing this course, you should be able to:

1. Demonstrate understanding and competency in solving chemistry related problems related to elements and compounds, early atomic theory and structure, nomenclature, quantitative composition of compounds and chemical equations with a biological application.

2. Demonstrate competency in solving chemistry related problems in stoichiometry, thermodynamics, solutions, acids and bases, gases, and nuclear chemistry with a biological application.

2.3 Graduate Capabilities and Employability Skills

For further details on the Graduate Capabilities and Employability Skills please refer to the Graduate Generic Skills and Abilities policy.

Griffith College is committed to producing graduates who are able to demonstrate progress toward the development of a number of generic skills / capabilities that will allow them to successfully continue their studies at the tertiary level. This set of skills includes employability related skills that will ensure graduates are capable in the workplace of the future.

Studies in this course will give you opportunities to begin to develop the following skills:

Graduate Capabilities and Employability Skills			Focus within this course
Interacting with People	Teamwork		✓
	Communication		
	Respect for Culture and Diversity		
Readiness for the Workplace	Problem Solving		✓
	Planning and Organisation		✓
	Creativity and Future Thinking		✓

3. Learning Resources

3.1 Required Learning Resources

Hein, M., Pattison, S., & Arena. (2015). Introduction to general, organic and biochemistry (11th ed.). Hoboken, NJ: John Wiley & Sons Inc. (ISBN: 978-1-118-41389-0)

Griffith College Laboratory Lesson for Chemistry of Biological Systems I. Available on the course site.

Griffith College Content Notes for Chemistry of Biological Systems I. Available on the course site.

3.2 Recommended Learning Resources

Brown T. L. (2015) Chemistry: the central science. Boston: Pearson.

Wilson R. and Brown T. L. (2015) Solutions to exercises: Chemistry: the central science, 13th edition, Brown, LeMay, Bursten. Boston: Pearson

John R. (2017) Chemistry companion and accompanying answer book. Queensland: Isis Publishing.

3.3 College Support Services and Learning Resources

Griffith College provides many facilities and support services to assist students in their studies. Links to information about support resources that are available to students are included below for easy reference.

- Digital Library – Databases to which Griffith College students have access to through the Griffith Library Databases.
- Study Toolbox – there is a dedicated website for this course on the Griffith College Digital Campus.
- Academic Integrity - Griffith College is committed to ensuring academic integrity is understood and maintained by all staff and students. All students learn about academic integrity through engagement with Academic Integrity online modules within the Academic and Professional Studies course.
- Services and Support provides a range of services to support students throughout their studies including academic advice and assignment help from Student Learning Advisors, and personal and welfare support from Student Counsellors.
- Jobs and Employment in the Student Hub can assist students with career direction, resume and interview preparation, job search tips, and more.
- IT Support provides details of accessing support, information on s numbers and internet access and computer lab rules.

3.4 Other Information about your Learning

Preparation and Participation in Learning

You need to prepare before attending your scheduled Learning Experience (In Class). Work through the Learning Content (Before Class) prepared by your teacher which is found on the course site. Make sure you complete the Learning Activities (After Class) set each week. Active participation in your learning will enhance your success. Ask questions when something is unclear or when you want to bring some issue to your teacher's attention; respond to questions to test your knowledge and engage in discussion to help yourself and others learn.

Attendance

You are expected to actively engage in all learning experiences which underpin the learning content in this course. Attendance will be recorded by your teacher in each learning experience to ensure you are meeting the requirements of the program you are studying and/or your visa conditions. You are expected to engage with the learning content and learning activities outside of timetabled class times. You are expected to bring all necessary learning resources to class such as the required textbook and /or Workbook.

Laboratories

ATTENDANCE AT LABORATORIES WILL BE RECORDED AND IS COMPULSORY.

This course has five (5) labs. Each laboratory session runs for two (2) hours as per the laboratory timetable made available on the Griffith College student portal.

Students who are absent from laboratory classes for medical reasons will require a proper medical certificate as indicated by Griffith College policy.

These practical sessions provide learning activities that are essential to the learning outcomes in this course. Students will work in small groups to conduct experiments and develop problem solving skills.

Content and skills covered in these laboratories complements lecture material and will be assessed in the portfolio quizzes and assignments.

Consultation Sessions

Teachers offer extra time each week to assist students outside the classroom. This is known as ‘consultation time.’ You may seek assistance from your teacher on email or in person according to how the teacher has explained this to the class. Attendance during consultation time is optional but you are encouraged to use this extra help to improve your learning outcomes.

Course Learning Materials

Learning materials are made available to you in the course site. The learning materials are arranged in topics. In each topic you will find Learning Content (Before Class), Learning Experiences (In Class) and Learning Activities (After Class). **Learning Content (Before Class)** will be engaged with prior to the scheduled **Learning Experience (In Class)**. This will ensure you are prepared for the scheduled Learning Experience (In Class) by being aware of the content to be covered and therefore will be able to actively participate in the session. **Learning Activities (After Class)** are accessed after the scheduled session for purposes of review, consolidation of learning, and preparation for the Evidence of Learning Tasks (Assessments) in the course.

In addition, **Missed Class** learning material is provided in the course, providing support, interactive tools and directions for students who occasionally cannot attend the weekly scheduled Learning Experience (In Class, either in person or on Zoom – note that some programs do not offer Zoom links) perhaps due to illness or other commitments. The Missed Class learning material should also be used in conjunction with Learning Content (Before Class) and Learning Activities (After Class) resources.

Self-Directed Learning

You will be expected to learn independently. This means you must organise and engage with the course Learning Content (Before Class) even when you are not specifically asked to do so by your teacher. The weekly guide (below) will be helpful to organise your learning. This involves revising the weekly Learning Content (Before Class) and completing the Learning Activities (After Class). It also means you will need to find additional information to evidence your learning beyond that given to you, and to construct your own response to a question or topic. All of this requires careful planning of your time. Expect to spend, on average, at least 10 hours per week including class time for each of your courses.

Program Progression

You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80%, students are engaged in their learning and that GPA is maintained at equal to or greater than 3.5 [please see Griffith College Policy Library - Program Progression Policy - for more information].

International students enrolled in Language Development Modules (LDM100 / LDM200)

Successful completion of LDM100 and LDM200 is **required** to graduate with your Diploma award and progress to your Bachelor. If you do not achieve non-graded passes for these language modules your progression to your Bachelor will be affected. Please attend all your classes and submit your assessment.

Teacher and Course Evaluation

Your feedback is respected and valued by your teachers. You are encouraged to provide your thoughts on the course and teaching, both positive and critical, directly to your teacher or by completing course and teacher evaluations via Griffith College's evaluation tool whenever these are available.

4. Weekly Guide: Learning Content, Learning Experiences and Learning Activities

4.1 Modules for Learning and Weekly Learning Content, Learning Experiences and Learning Activities

The information below lays out how your learning will be organised throughout the trimester:

Week	Learning Content (Before Class)	Learning Experiences (In Class)	Learning Activities (After Class)	Evidence of Learning (Assessment)	Learning Outcome
					
	Module 1				
1	Measurements Content videos Topic notes	Introduction to portfolio; Topic notes activities; Discussion; Topic questions; Weekly exercises	Weekly exercises Portfolio Part 1		1
2	Atoms and Elements Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 1 Weekly exercises		1
3	Atomic Theory, Naming Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 1 Weekly exercises		1
4	Chemical Bonds, Solubility and Molecular Geometry Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 1 Weekly exercises	Portfolio Part 1 Quiz (7%): Measurements, Matter, Atomic Theory & Nomenclature	1
5	Composition of Compounds and Chemical Equations Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 1 Weekly exercises	Portfolio Part 1 Assignment (3%): Measurements, Measurements, Matter, Atomic Theory & Nomenclature	1
	Module 2				
6	Redox, Calculations from Chemical Equations (Stoichiometry) Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 2 Weekly exercises		2

7	Properties of Liquid and Solution Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 2 Weekly exercises	Module 1 Quiz (25%) Tests first half of content	2
8	Acids, Bases and Salts Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 2 Weekly exercises		2
9	Acids, Bases and Salts Chemical Equilibrium, Acid-Base Equilibrium Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 2 Weekly exercises	Portfolio Part 2 Quiz (7%) and Assignment (3%): Redox in biological systems, Stoichiometry and yield in drug synthesis	2
10	Chemical Equilibrium, Acid-Base Equilibrium Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 3 Weekly exercises		2
11	Acid-Base Equilibrium Gaseous State of Matter Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 3 Weekly exercises		2
12	Nuclear Chemistry Review Module 2 Content videos Topic notes	Topic notes activities; Discussion; Topic questions; Weekly exercises	Portfolio Part 3 Weekly exercises	Portfolio Part 3 Quiz (7%) and Assignment(3%): Glucose concentration in drinks, pH in biological systems & Gases around us.	2
Exam Week				Final exam (45%) Tests second half of content	2

4.2 Overview of Lab Sessions: Dates and times to be announced.

Lab Session	Learning Content (Before Class)	Learning Experiences (In Class)	Learning Activities (After Class)	Evidence of Learning (Assessment)	Learning Outcome
					
	Module 1				
1	Measurements Pre-lab questions (lab manual)	Face-to-face Laboratory	Laboratory practical Post-lab questions (lab manual)	Portfolio Part 1	1
2	Identification of Cations and Anions Pre-lab questions (lab manual)	Face-to-face Laboratory	Laboratory practical Post-lab questions (lab manual)	Portfolio Parts 1 and 2	1
	Module 2				
3	Oxidation and Reduction Reactions Pre-lab questions (lab manual)	Face-to-face Laboratory	Laboratory practical Post-lab questions (lab manual)	Portfolio Part 2	2
4	pH Titration Pre-lab questions (lab manual)	Face-to-face Laboratory	Laboratory practical Post-lab questions (lab manual)	Portfolio Part 3	2
5	Gases and Boyle's Law Pre-lab questions (lab manual)	Face-to-Face Laboratory	Laboratory practical Post-lab questions	Portfolio Part 3	2

5. Evidence of Learning (Assessment)

5.1 Evidence of Learning Summary

	Evidence of Learning (Assessment)	Weighting	Learning Outcome	Due Date
1	Module 1 Quiz	25%	1	7
2	Portfolio	30%	1-2	4, 5, 9, 12
3	Final Exam *- Students must obtain at least 40% on this task to pass this course*	45%	2	Exam week

5.2 Evidence of Learning Task Detail

You are required to **submit your own work** for marking. All planning, notes and drafts need to be retained so they can be presented to your teacher if requested.

Tools that generate course content or extensively enhance a student's English language capability are not permitted to be used. Web applications such as ChatGPT, Google Translate, Grammarly and Youdao (or equivalent services) are not permitted for outright assessment creation, translation, or extensive language assistance purposes. In addition, Wikipedia, Baidu, Weibo and WeTalk are not permitted to be used.

Students should follow all teacher directions about the use of Generative Artificial Intelligence (Gen-AI) tools in relation to formative and summative assessment tasks (including how to cite Gen-AI tools, if relevant). It should be noted that Turnitin provides teaching staff with a Gen-AI percentage indicator as well as an Originality Report which detects plagiarism.

1. Evidence of Learning Task 1: Portfolio Part 1

A. Portfolio Part 1 Quiz (7%)

Task Type: Quiz
Due Week: Week 4, To Be Arranged
Weight: 7%, Marked out of 40
Duration: 50 mins
Quiz Type: Closed book, invigilated.
Task Description: Closed book quiz
Criteria and Marking: Students are assessed on Topics 1, 2, 3 & 4
Quiz Format: Online quiz on Campus

B. Portfolio Part 1 (3%)

Task Type: Assignment – Written Assignment
Due Week: Week 5, Friday 2nd August, 11:59pm
Weight: 3%, Marked out of 30
Duration: N/A
Task Description: A series of short-answer questions and a reflective piece
Criteria and Marking: Students are assessed on Topics 1, 2, 3 & 4 and Laboratory 1
Submission: Via the course site

2. Evidence of Learning Task 2: Module 1 Quiz (25%)

Task Type: Quiz
Due Week: Week 7, To Be Arranged
Weight: 25%, Marked out of 55
Duration: 80 mins (plus 10 min perusal)
Quiz Type: Closed book, invigilated.
Task Description: Closed book exam
Criteria and Marking: Students are assessed on Topics 1-7 inclusive
Quiz Format: Paper Exam on Campus

3. Evidence of Learning Task 3: Portfolio Part 2

A. Portfolio Part 2 Quiz (7%)

Task Type: Examination
Due Date: Week 9, To Be Arranged
Weight: 7%, Marked out of 25
Duration: 40 mins
Quiz Type: Closed book, invigilated.
Task Description: Closed book quiz
Criteria and Marking: Students are assessed on Topics 8 & 9
Quiz Format: Online quiz on Campus

B. Portfolio Part 2 (3%)

Task Type: Assignment – Written Assignment
Due Week: Week 9, Friday 6th September, 11:59pm
Weight: 3%, Marked out of 30
Duration: N/A
Task Description: A series of short-answer questions and a reflective piece
Criteria and Marking: Students are assessed on Topics 8 & 9 and Laboratory 2
Submission: Via the course site

4. Evidence of Learning Task 4: Portfolio Part 3

A. Portfolio Part 3 Quiz (7%)

Task Type: Quiz
Due Week: Week 12, To Be Arranged
Weight: 7%, Marked out of 35
Duration: 50 mins
Quiz Type: Closed book, invigilated
Task Description: Closed book quiz
Criteria and Marking: Students are assessed on Topics 10-13 inclusive
Quiz Format: Online quiz on Campus

B. Portfolio Part 3 (3%)

Task Type: Written Assignment
Due Week: Week 12, Friday 27th September, 11:59pm
Weight: 3%, Marked out of 30
Duration: N/A
Task Description: A series of short-answer questions and a reflective piece
Criteria and Marking: Students are assessed on Topics 10-13 inclusive and Laboratory 4
Submission: Via the course site

5. Evidence of Learning Task 5: Final Exam - Module 2 (45%)

Task Type: Examination
Due Week: Final Exam Week
Weight: 45%, Marked out of 70
Duration: 2 hrs (plus 10 min perusal)
Exam Type: Closed book, invigilated
Task Description: Closed book exam
Criteria and Marking: Students are assessed on Topics 8-14 inclusive
Exam Format: Paper Exam On Campus

In order to pass this Course, students must:

A. Attend and attempt all assessment items; AND
B. Demonstrate assurance of learning of all learning outcomes through graded Evidence of Learning Tasks; AND
C. Obtain at least 40% in the final exam

5.3 Late Submission

An Evidence of Learning Task submitted after the due date, without an approved extension from the teacher, will be penalised. The standard penalty is the reduction of the mark allocated to the Evidence of Learning Task by 5% of the maximum mark applicable for the Evidence of Learning Task, for each calendar day that the task is late. Evidence of learning tasks submitted more than seven calendar days after the due date are awarded zero marks.

Please refer to the Griffith College website - Policy Library > Assessment Policy for guidelines and penalties for late submission.

5.4 Other Information about Evidence of Learning

Retention of Originals

You must be able to produce a copy of all work submitted if so requested. Copies should be retained until after the release of final results for the course.

Requests for extension

To apply for an extension of time for an evidence of learning task, you must submit an Application for Extension of Assignment form to your teacher at least 24 hours before the date the assignment is due. Grounds for extensions are usually: serious illness, accident, disability, bereavement or other compassionate circumstances and must be able to be substantiated with relevant documentation [e.g. Griffith College Student Medical Certificate]. Please refer to the Griffith College website – Policy Library for guidelines regarding extensions and deferred Evidence of Learning Tasks.

Return of Evidence of Learning Tasks

1. Marks awarded for in-trimester evidence of learning tasks, except those being moderated externally with Griffith University, will be available on the Student Portal within fourteen [14] days of the due date. This does not apply to the final evidence of learning task in this course (marks for this task will be provided with the final course result).

2. Students will be advised of their final grade through the Student Portal. Students can review their final exam papers after student grades have been published. Review of final exam papers will not be permitted after the final date to enrol.

3. Marks for **all** evidence of learning tasks, including the final exam (if applicable), will be recorded in the Moodle Course Site and made available to students through the Moodle Course Site.

The sum of your marks of evidence of learning *tasks in this course does not necessarily imply your final grade for the course. Standard grade cut off scores can be varied for particular courses, so you need to wait for the official release of grades to be sure of your grade for this course.*

6. Policies & Guidelines

Griffith College assessment-related policies can be found in the Griffith College Policy Library which include the following policies:

Assessment Policy, Special Consideration, Deferred Assessment, Alternate Exam Sittings, Medical Certificates, Academic Integrity, Finalisation of Results, Review of Marks, Moderation of Assessment, Turn-it-in Software Use. These policies can be accessed within the Policy Library

Academic Integrity Griffith College is committed to maintaining high academic standards to protect the value of its qualifications. Academic integrity means acting with the values of honesty, trust, fairness, respect and responsibility in learning, teaching and research. It is important for students, teachers, researchers and all staff to act in an honest way, be responsible for their actions, and show fairness in every part of their work. Academic integrity is important for an individual's and the College's reputation.

All staff and students of the College are responsible for academic integrity. As a student, you are expected to conduct your studies honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is considered a breach of academic integrity and is unacceptable.

Some students deliberately breach academic integrity standards with intent to deceive. This conscious, pre-meditated form of cheating is considered to be one of the most serious forms of fraudulent academic behaviour, for which the College has zero tolerance and for which penalties, including exclusion from the College, will be applied.

However, Griffith College also recognises many students breach academic integrity standards without intent to deceive. In these cases, students may be required to undertake additional educational activities to remediate their behaviour and may also be provided appropriate advice by academic staff.

As you undertake your studies at Griffith College, your teachers and academic advisors will provide you with guidance to understand and maintain academic integrity; however, it is also your responsibility to seek out guidance if and when you are unsure about appropriate academic conduct.

In the case of an allegation of a breach of academic integrity being made against a student he or she may request the guidance and support of a Griffith College Student Learning Advisor or Student Counsellor.

Please ensure that you are familiar with the Griffith College Academic Integrity Policy; this policy provides an overview of some of the behaviours that are considered breaches of academic integrity, as well as the penalties and processes involved when a breach is identified.

For further information please refer to the Griffith College website - Policy Library > Academic Integrity Policy

Reasonable Adjustments for Evidence of Learning Tasks – The Disability Services policy

The Disability Services policy (accessed within the Policy Library) outlines the principles and processes that guide the College in making reasonable adjustments to evidence of learning tasks for students with disabilities while maintaining academic robustness of its programs.

Risk Assessment Statement

There are no out of the ordinary risks associated with this course.

Note: For all Diploma level programs, Griffith College acknowledges content derived from Griffith University.