1. General Course Information

1.1 Course Details

Course Code:	1001GRC
Course Name:	Chemistry of Biological Systems 1
Trimester:	Trimester 1, 2020
Program:	Diploma of Health Sciences
Credit Points:	10
Course Coordinator:	Tessa Daal
Document modified:	12 January 2020

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:

- BRH100 - Essential Mathematics
- BRM100 - Essential Mathematics

1.2 Teaching Team

Your lecturer/tutor can be contacted via the email system on the portal.

Name	Email
Dr Michael Hahn	michael.hahn@portal.griffithcollege.edu.au

1.3 Staff Consultation

Your lecturer/tutor is available each week for consultation outside of normal class times. Times that your lecturer/tutor will be available for consultation will be given in the first week of lectures. A list of times and rooms will be published on the Griffith College Portal under the “Support and Services/Teacher Consultation Times” link.

1.4 Timetable

Your timetable is available on the Griffith College Portal at Class Timetable in Student and Services.

1.5 Technical Specifications

All students must have access to a computer or suitable mobile device.

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 knowledge and understanding of selected concepts, principles and theories of chemistry, with some application to chemical phenomena;
2. Demonstrate competency in simple analytical laboratory skills;
3. Apply principles of chemistry to problem solving tasks.

2.3 Generic skills

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

Griffith College aims to develop graduates who have an open and critical approach to learning and a capacity for lifelong learning. Through engagement in their studies, students are provided with opportunities to begin the development of these and other generic skills.

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

Generic Skills and Capabilities	Taught	Practised	Assessed
Acquisition of discipline knowledge and skills with critical judgement	✓	✓	✓
Communication and collaboration	✓	✓	✓
Self-directed and active learning	✓	✓	
Creative and future thinking	✓	✓	✓
Social responsibility and ethical awareness	✓	✓	
Cultural competence and awareness in a culturally diverse environment	✓	✓	

3. Learning Resources

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3.1 Required Resources

Hein, M., Pattison, S., & Arena. (2015). Introduction to general, organic and biochemistry (11th ed.). Hoboken, NJ: John Wiley & Sons Inc.

Printed Griffith College Laboratory Manual for Chemistry of Biological Systems I. Available on the Course site.

Printed Griffith College Lecture Notes for Chemistry of Biological Systems I. Available from Griffith University Campus Bookshop G40.

3.2 Recommended Resources

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

John R. (2014) Chemistry companion. Queensland: Isis Publishing.

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

3.3 College Support Services and Learning Resources

The College provides many facilities and support services to assist students in their studies. Links to information about College 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.

MyStudy – there is a dedicated website for this course via MyStudy on the Griffith College Portal.

Academic Integrity Tutorial - this tutorial helps students to understand what academic integrity is and why it matters. You will be able to identify types of breaches of academic integrity, understand what skills you will need in order to maintain academic integrity, and learn about the processes of referencing styles.

Services and Support provides a range of services to support students throughout their studies including personal support such as Counselling; Academic support; and Welfare support.

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 Learning Information

Attendance

You are expected to attend all lectures and tutorials and to actively engage in learning during these sessions. You are expected to bring all necessary learning resources to class such as the required textbook and /or Workbook. In addition, you may BYOD (bring your own device) to class such as a laptop or tablet. This is not a requirement as computer lab facilities are available on campus, however, the use of such devices in the classroom is encouraged with appropriate and considerate use principles being a priority.

Preparation and Participation in Class

In order to enhance learning, prepare before lectures and tutorials. Read the relevant section of your text book before a lecture, and for a tutorial read both the textbook and the relevant lecture notes. If you have been given tutorial exercises, make sure you complete them. Active participation in lectures and tutorials will improve your learning. Ask questions when something is unclear or when you want to bring some issue to your lecturer or tutor's attention; respond to questions to test your knowledge and engage in discussion to help yourself and others learn.

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 Materials

Lecture notes will be made available to you in MyStudy on the Griffith College Portal and you are advised to either print these out and bring them to each class so that extra notes can be added or BYOD (bring your own device) and add extra notes digitally.

Self-Directed Learning

You will be expected to learn independently. This means you must organise and learn the course content even when you are not specifically asked to do so by your lecturer or tutor. This involves revising the weekly course material. It also means you will need to find additional information for some assessment items beyond that given to you in textbooks and lecture notes, 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%, 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].

Teacher and course Evaluation

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

4. Learning and Teaching Activities

Classes for Chemistry of Biological Systems I include the following:

* **Lectures:** 3 hours per week
* **Tutorials/Workshops:** 2 hours per week
* **Laboratories:** Five two (2) hours laboratory sessions throughout the trimester. The laboratory course will include the following topics;

    - Measurements
    - Identification of Cations and Anions
    - Oxidation and Reduction Reactions
    - pH Titration
    - Gases and Boyle's Law

With the laboratory timetable made available on the Griffith College student portal.

Note: ATTENDANCE AT LABORATORIES IS COMPULSORY. 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. Students are expected to attend their scheduled laboratory class except in extenuating circumstances.

An attendance roll will be maintained for all laboratories. Students must read the Laboratory Safety requirements prior to attending their first laboratory and comply with the dress and behaviour codes as described in the laboratory rules located in the lab manual. Students **MUST WEAR LABORATORY COATS AND CLOSED IN SHOES FOR ALL LABORATORIES.** Students will be required to bring their laboratory manuals to laboratories. Content covered in these laboratories complements lecture material and hence will be assessed in both laboratory reports and examinations.

IMPORTANT: All students must undertake the on-line health and safety training prior to being permitted entry into laboratories. As part of your studies you are required to complete the following online Health and Safety Induction modules before you commence your formal learning activities.

1. **Student Basic Health and Safety Induction module (no need to print off completion certificate)**
2. **Health Lab Safety Induction module (no need to print off completion certificate)**

Required Support Materials (available from Griffith University Campus Bookshop G40):

* Laboratory gown
* Timer
* Marker pens
* Safety glasses

Please Note: It is only necessary to purchase one set of lab support materials for use across your Diploma program.

4.1 Weekly Learning Activities

Week	Topic	Activity	Readings	Learning Outcomes
1	Measurement, Matter, Temperature	Lecture, Tutorial, Workshop	Chapter 1 & 2	1, 3
2	Atoms, Elements & Compounds	Lecture, Tutorial, Workshop	Chapter 1,3,4	1, 3
3	Electronic Structure & Bonding Basics Nomenclature	Lecture, Tutorial, Workshop	Chapter 5,6,10	1, 3

4	Chemical Bonding & Intermolecular Forces	Lecture, Tutorial, Workshop	Chapter 4	1, 3
5	Stoichiometry	Lecture, Tutorial, Workshop	Chapter 7,8	1, 3
6	Stoichiometry and Chemical Reactions	Lecture, Tutorial, Workshop	Chapter 7,8,17	1, 3
7	Chemical reactions & Quantities in Aqueous Solutions	Lecture, Tutorial, Workshop	Chapter 9	1, 3
8	Solution Stoichiometry.	Lecture, Tutorial, Workshop	Chapter 13,14	1, 3
9	Acids, Bases and Salts	Lecture, Tutorial, Workshop	Chapter 15	1, 3
10	Chemical Equilibrium, Acids – Base Equilibrium	Lecture, Tutorial, Workshop	Chapter 16	1, 3
11	Gases, Nuclear Chemistry	Lecture, Tutorial, Workshop	Chapter 12,18	1, 3
12	Revision	Lecture, Tutorial, Workshop	All chapters covered in the course	1, 3
Laboratory content				
Week	**Topic**	**Activity**	**Learning Outcomes**	
3	Measurements	Laboratory	1-3	
5	Identification of Cations and Anions	Laboratory	1-3	
8	Oxidation and Reduction Reactions	Laboratory	1-3	
9	pH Titration	Laboratory	1-3	
11	Gases and Boyle's Law	Laboratory	1-3	

5. Assessment Plan

5.1 Assessment Summary

Item	Assessment Task	Weighting	Learning Outcomes	Due Date
1	Mid trimester exam	18%	1, 3	7
2	Course quiz	12%	1, 3	11
3	Lab Quizzes × 3	20%	1-3	4, 9, 12
4	Final Examination *- Students must pass this assessment with a mark of at least 40 out of 100 to pass the course*	50%	1, 3	Exam Period

5.2 Assessment Detail

1. **Mid trimester exam**

   Rationale: The mid-trimester exam is intended to test the student's understanding, interpretation and application of the chemical principles studied and developed in the course.

   Assessment strategy: this closed book exam will consist of multiple-choice questions (approx. 40%) and short answer questions (approx..60%).

   Duration: 70 minutes.

   Marking criteria: The mid trimester examination will be marked against established model answers and undergo a full moderation process.

2. **Laboratory quizzes**

   Rationale: The online laboratory quizzes (3×) contain self assessment activities.

   Assessment strategy: The material covered in lab 1 will be assessed in lab quiz 1. The material covered in lab 2 and lab 3 will be assessed in lab quiz 2. The material covered in lab 4 and lab 5 will be assessed in lab quiz 3. All Lab quizzes will consist of multiple-choice questions.

   Duration: Lab quizzes range from 15 to 30 minutes.

   Marking criteria: Short laboratory quizzes will be marked against moderated model answers.

3. **Course quiz**

   Rationale: The online course quiz is intended to test the student's understanding, interpretation and application of the chemical principles studied and developed in the course. The course quiz contains self-assessment activities.

   Assessment strategy: The online course quiz will be in the form of multiple-choice questions.

   Duration: 45 minutes

   Marking criteria: The course quiz will be marked against established and moderated model answers.

4. **End-of trimester exam**

   Rationale: The end-of-trimester exam is intended to test the student's understanding, interpretation and application of the chemical principles studied and developed in the course.

   Assessment strategy: The end-of-trimester exam will consist of multiple-choice questions (50%) and short answer questions (50%).

   Duration: 180 minutes.

   Marking criteria: The end-of-trimester examination will be marked against established model answers and undergo a full moderation process.

Requirements to Pass the Course:

In order to pass this course and in addition to meeting the laboratory requirements, students must:

1) **attend and attempt all forms of assessment and must demonstrate a reasonable degree of**

competence in the required course objectives as examined in each form of assessment, AND
2) obtain at least 40% (40/100) in the end of trimester examination, AND
3) Achieve an overall course result (sum of all assessments) of 50%.

5.3 Late Submission

An assessment item submitted after the due date, without an approved extension from the Course Coordinator, will be penalised. The standard penalty is the reduction of the mark allocated to the assessment item by 5% of the maximum mark applicable for the assessment item, for each working day or part working day that the item is late. Assessment items submitted more than five working 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 Assessment Information

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 assignment, 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 assessment.

Return of Assessment Items

1. Marks awarded for in-trimester assessment items, 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 assessment item in this course (marks for this item 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 exam papers after student grades have been published (see relevant Griffith College Fact Sheet for allocated times at Support> Factsheets). Review of exam papers will not be permitted after the final date to enrol.

3. Marks for **all** assessment items 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 overall assessment items 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 Sitting, Medical Certificates, Academic Integrity, Finalisation of Results, Review of Marks, Moderation of Assessment, Turn-it-in Software Use. These policies can be accessed using the 'Document Search' feature 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 lecturers, tutors 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 Assessment – The Disability Services policy

The Disability Services policy (accessed using the Document Search' feature with the Policy Library) outlines the principles and processes that guide the College in making reasonable adjustments to assessment 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.