1. General Course Information

1.1 Course Details

Course Code:	1021SCG
Course Name:	Chemistry 1A
Trimester:	Trimester 2, 2024
Program:	Diploma of Science
Credit Points:	10
Course Coordinator:	Dr Gretel Heber
Document modified:	16/05/2024

Course Description

Chemistry is known as the central science, in that it is important to our understanding interactions that occur in all the other scientific disciplines through the study of matter, its properties, reactions and associated energies. This course introduces the fundamental terminology, concepts and methods of general chemistry. Students will explain chemical concepts and solve problems (quantitative and qualitative) involving stoichiometry, atomic and molecular structure, properties, thermodynamics and equilibrium. Fundamental concepts of matter underpin understanding and problem solving in biomolecular, biological, biotechnical, chemical, environmental, engineering, forensic, materials and medicinal sciences. Consequently, Chemistry 1A is a core course in the study of these fields. Skills that will be developed include academic language/reporting, scientific methodology and approaches, quantitative literacy, critical reasoning (explaining macro phenomena using chemical concepts), laboratory techniques and safe work practices.

Learning will be structured across three modules, as follows:

Module 1: Basic concepts, terminology and stoichiometry
Module 2: Atomic and molecular structure
Module 3: Physical chemistry

Assumed Knowledge

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

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

1.2 Teaching Team

Your teacher can be contacted via the email system on the portal.

Name	Email
Gretel Heber	Gretel.heber@staff.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

This course will introduce core concepts, theory and experimental methods of chemistry. Students will solve conceptual, quantitative chemical and experimental problems in the fields of the chemical, physical, biological, environmental, engineering, biomolecular, health and materials sciences. The relationships between chemical and macromolecular properties of substances that we experience will be explored.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1. Develop understanding of the underlying principles of chemistry and apply these to explain the behaviour and properties of substances and materials in our universe.
2. Demonstrate competence in conducting calculations to solve chemical problems in a range of contexts.
3. Build on research and critical thinking skills to analyse multifaceted problems in the context of an assignment.
4. Perform simple experimental procedures and apply workplace health and safety practices in the chemical laboratory.

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

Non-programmable scientific calculator.

In trimesters with in-laboratory assignments, safety glasses, lab coat and appropriate footwear are also required for compulsory in laboratory activities. Laboratory safety glasses and lab coats can be purchased from the campus bookshop or safety supply stores.

3.2 Recommended Learning Resources

Brown, Lemay, Bursten et al. (2022) Chemistry: The Central Science (15e, GE), Pearson*.

Griffith College 1021SCG Laboratory Manual (in trimesters running laboratories). When laboratory assignments are scheduled at Nathan, hardcopies of these Manual are available from the Campus bookshop (M09) as well as from the course site. The laboratory manual and course notes are available from the Griffith College portal. The textbook should be used in conjunction with content notes and other materials provided in the learning experience sessions and via the course web site as a major source of detailed information about the course material. It provides detailed diagrams, illustrations and problems that should be valuable aids in your learning.

A scientific calculator is recommended for laboratory classes, learning experience and quizzes. **Graphics calculators are not permitted in any quiz or examination**.
BYO device: online quizzes will be run in Pearson and a Windows/Mac device is recommended.

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 aboutsupport 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 LibraryDatabases.
- 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 byall 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 academicadvice 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 interviewpreparation, 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.

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 Modules. In each Module 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.

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 course Learning Content (Before Class) and completing the Learning A ctivities (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 or LDH100 / LDH200)

Successful completion of LDM100 and LDM200 or LDH100 and LDH200 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

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	Matter, terminology and nomenclature	Team problem solving questions, Lab 1, build an atom, Online mini lessons and associated activities, Lab 1	Textbook Chapter 1-2, Homework, Maths support, Lab 1,	Module 1 Assignment, quiz, homework and EOT exam	1
2	Conservation of mass, introduction to chemical quantitation (equations and the mole)	Practice problem solving questions, team work, mole carnival, online mini lessons and associated activities, Lab 2	Textbook chapters 2, 3, Formative concept check, Homework,	Module 1 Assignment, quiz, homework and EOT exam	**1, 2**

3	Stoichiometry, empirical formulae, solutions.	Online mini lessons; Practice problem solving, PhEt cheese sandwich, Lab 3	Textbook chapters 3, 4, Homework,	Module 1 Assignment, quiz, homework and EOT exam	1-3
4	Solution stoichiometry, special reaction equations.	Practice problem solving, peer teaching, PhEt molarity, Peer presentation, quiz, Lab 4	Textbook chapters 3, 4, Homework, online mini lessons and associated activities	Module 1 Assignment, quiz, homework and EOT exam	1-3
	Module 2				
5	Atomic structure (electronic structure of atoms), periodic properties	Practice ChemTube3D, falstad atom viewer, Kahoot	Textbook chapter 6,7, Homework, online mini lessons and associated activities	Module 2 quiz, homework and EOT exam	1, 2
6	Periodic properties, bonding and Lewis structures	Practice problem solving, online mini lessons and associated activities, Kahoot	Textbook chapters 7, 8, Homework	Module 2 quiz, homework and EOT exam	1, 2
7	Molecular structures and intermolecular forces	Practice problem solving, molview, online mini lessons and associated activities, Kahoot	Textbook chapter 8,9,11, Homework, online mini lessons and associated activities	Module 2 quiz, homework and EOT exam	
	Module 3				
8	Gases and thermodynamics	Practice problem solving, online mini lessons and associated activities, Gases sim, Kahoot	Textbook chapters 5, 10, Homework	Module 3 assignment , quiz, homework and EOT exam	1-3
9	Thermodynamics	Practice problem solving, heat capacity sim, hot and cold packs, Greenhouse effect online mini lessons and associated activities, Lab 5	Textbook chapter 5, 19, homework	Module 3 assignment , quiz, homework and EOT exam	1-4
10	Introduction to equilibrium	Practice problem solving, equilibrium sim, Kahoot, online mini lessons and associated activities	Textbook chapter 15, Homework	Module 3 assignment , quiz, homework and EOT exam	1-3
11	Solutions, acids and bases	Practice problem solving, acids and bases sim, online mini lessons and associated activities	Textbook chapter 13, 16, Homework	Module 3 assignment , quiz, homework and EOT exam	1-3

12	Revision	Exam preparation, exam strategies, Practice exam	Practice exam	Exam	1-4

5. Evidence of Learning (Assessment)

5.1 Evidence of Learning Summary

	Evidence of Learning (Assessment)	Weighting	Learning Outcome	Due Date
1	Laboratory assignments, (lab work/reports: 20 marks, pre-lab assignments 5 marks). Students must pass this assessment with a mark of at least 12.5 out of 25 to pass the course.	25%	**1, 2, 3, 4**	Progressive weeks 1-12
2	Homework	10%	**1 - 3**	Progressive weeks 1-12
3	Module 1 quiz A (hurdled) Module 1 quiz B	10% 5%	**1 - 3**	Week 3 Week 6
4	Module 2 quiz	5%	**1 - 3**	Week 8
5	Module 3 quiz	5%	**1 - 3**	Week 11
6	EOT exam (hurdled)	40%	**1-3**	Week 13

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: Laboratory Reports (25%)

Task Type: Practical Assignment – Written Assignment
Due Date: As timetabled
Weight: 25%, Marked out of: 25
Assessment type: f2f in the lab, practical and written, no reattempt.
Length: N/A
Duration: 20 hours

Task Description: Students undertake practical work and write a lab report. Pre-lab questions
Criteria and Marking: Students are assessed on their work, calculations and ability to analyse their results

Submission: during practical laboratories

2. . Evidence of Learning Task 2: Homework (10% in total)

Task Type: Online homework completion in Pearson Mastering.
Due Date: the week following the relevant content.
Weight: 10%, Marked out of 10
Length: Untimed assignments
Duration: (approximately 1 hour per week)

Task Description: Short answer questions and calculations.
Criteria and Marking: Students are assessed on the accuracy of their calculations and answers.
Submission: Pearson Mastering online (Assignment A), paper quiz and Turnitin (Assignment B).

3. Evidence of Learning Task 3: Module 1 Assessment (15% in total)

Task Type: Quiz - Module 1 quiz A (10%) (Hurdled - 40%), Quiz B (5%)– short answer
Due Date: As timetabled, week 3: Quiz A
As timetabled, week 6: Quiz (online)
Weight: 15%, Marked out of 15 (A) and 20 (B)
Length: 70 mins
Duration: Quiz – timed 30 mins (A), 40 mins (B)

Task Description: Multiple choice and short answer questions, 45% hurdle, no reattempts.
Criteria and Marking: Students are assessed on the accuracy of their calculations and answers
Submission: Pearson Mastering online (quiz)

4. Evidence of Learning Task 4: Module 2 quiz (5%)

Task Type: Quiz
Due Date As timetabled, week 8
Weight: 5% quiz, Marked out of 20 (quiz)
Length: N/A
Duration: 40 mins

Quiz type: closed book, invigilated, 1 attempt.
Task Description: Students analyse assigned atomic and molecular structures.
Criteria and Marking: Students are assessed on their ability to solve structure problems.
Quiz Format: Online quiz

5.Evidence of Learning Task 5: Module 3 Assessment (5% total)

Task Type: Quiz (5%) – online quiz
Due Date: As timetabled, week 11
Weight: 5%, Marked out of: 20
Length:N/A
Duration: 40 mins

Task Description: Students demonstrate proficiency in thermochemical and equilibrium calculations and link water structure to its properties in regulating climate, 1 attempt at each.
Criteria and Marking: Students are assessed on their understanding of concepts and ability to undertake correct calculations. Ability to extrapolate learning to world problems.
Submission: Online quiz

6. Evidence of Learning Task 6: EOT exam (40%)

Task Type: Exam
Due Date: Exam Week
Weight: 40%, Marked out of: 60
Length: N/A
Duration: 120 mins
Exam type: closed book, invigilated, 1 attempt.

Task Description: EOT exam will consist of a mixture of multiple choice and short answer questions across the three modules. Hurdled at 40% (i.e. students must achieve 24 out of 60 to be eligible to pass Chemistry 1A)
Criteria and Marking: Understanding of concepts and quantitative literacy.
Exam format: On Campus

In trimesters with in-laboratory assignments, reports are pro-forma type reports in the laboratory manual, and are due before the end of the assigned laboratory session. You are required to achieve 12.5/25 in the laboratory assignments. All experiments are compulsory and satisfactory attendance and performance is required for successful completion of the course.

EOT exam: Will test understanding and stoichiometric calculations across all three modules. It will consist of 40 marks MC and 20 marks short answer. Sample EOT exams will be available for practice and self-assessment.

In order to pass this Course, students must:

A. **attend and attempt all assessment items; AND**
B. **meet all the laboratory requirements, AND**
C. **obtain at least 40% on the Module 1 quiz A, AND**
D. **obtain at least 40% on the EOT exam, AND**
E. **achieve an overall course result (sum of all assessments) of at least 50%**

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 item, 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 Evidence of Learning Items

1. Marks awarded for in-trimester evidence of learning 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 evidence of learning 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 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 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 of evidence of learning *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 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 (accessed within 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: Griffith College acknowledges content derived from Griffith University in Diploma level courses, as applicable.