



Queensland, Australia

<b>Course Code:</b>	<b>1001MSC</b>
<b>Course Name:</b>	<b>Essentials of Chemistry &amp; Physics</b>
<b>Semester:</b>	<b>Semester 1, 2016</b>
<b>Program:</b>	Diploma of Health Sciences
<b>Credit Points:</b>	10
<b>Course Coordinator:</b>	Tessa Daal
<b>Document modified:</b>	06 Feb 2016 10:23:29

#### Teaching Team

Your lecturer/tutor can be contacted via the email system on the portal.	
<b>Name</b>	<b>Email</b>
Brock Grant	
Dr Michael Hahn	<a href="mailto:michael.hahn@staff.griffithcollege.edu.au">michael.hahn@staff.griffithcollege.edu.au</a>
Tessa Daal	<a href="mailto:tessa.daal@staff.griffithcollege.edu.au">tessa.daal@staff.griffithcollege.edu.au</a>

#### 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 "myTimetable" link.

#### Prerequisites

There are no prerequisites for this course

#### Brief Course Description

Essentials of Chemistry & Physics is a 10 Credit Point course situated within the first semester of the Diploma of Health Science. The Diploma of Health Science is designed to provide students with a pathway to:

- \* further university studies in the Health Sciences, or
- \* direct employment.

This course introduces the basic physical and chemical principles that underlie biological systems. Upon completion of this course, students will be able to demonstrate knowledge of selected chemistry and physics 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 and physics 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, nuclear chemistry, acids and bases and chemical equilibrium. There will be six laboratory sessions.

#### Rationale

#### Aims

The purpose of this course is to introduce students to the basic physical and chemical principles that underlie biological systems. The course provides prerequisite knowledge for the subsequent courses, 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 and physics knowledge and skills relevant to health and medical sciences in later years.

## Learning Outcomes

Upon completion of this course you will be able to:

1. demonstrate knowledge and understanding of selected concepts, principles and theories of chemistry and physics, with some application to chemical and biological phenomena;
  2. demonstrate competency in simple analytical laboratory skills;
  3. apply chemical principles to problem solving tasks.
- 

## Texts and Supporting Materials

### Required Texts:

1. Hein, M, Pattison, S., & Arena. (2014). Introduction to general, organic and biochemistry (11th ed.). Hoboken, NJ: John Wiley & Sons Inc.
2. Printed Griffith College laboratory manual for Essentials of Chemistry and Physics
3. Printed Griffith College lecture notes for Essentials of Chemistry and Physics

### Recommended Texts/References:

Either of the following text versions:

1. Brown, T. L., Lemay, H. E., Bursten, B. E. & Murphy, C. J. (2006). *Chemistry, The Central Science* (10th Ed). Frenchs Forest: Prentice Hall
2. Brown, T. L., Lemay, H. E., Bursten, B. E. & Burdge, J. A. (2002). *Chemistry, The Central Science* (9th Ed). Frenchs Forest: Prentice Hall
3. Richard, John (2011). *Chemistry Companion*. Isis Publishing

The Laboratory Rules document available on the course site via the Griffith College Student Portal.

### Required Support Materials (available from Griffith University Bookshop):

- \* Laboratory coat
- \* Laboratory kit

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

---

## Organisation and Teaching Strategies

The teaching methods in this course aim to provide students with the necessary tools to develop a strong foundation in chemical principles.

Teaching of the course will include lectures, laboratories tutorials and workshops throughout the semester. Lectures are primarily to provide students with guidance toward an understanding of the qualitative concepts of foundation chemistry, although all requisite quantitative principles are also introduced. Students will gain practical skills, and develop competence in problem solving in a hands-on practical manner through laboratory sessions. Tutorials and workshops are designed to assist students in understanding fundamental chemistry content covered in weekly lectures (e.g. stoichiometry/chemical calculations etc) and also to assist students with reviewing key course concepts in preparation for examinations.

### Class Contact Summary

Classes for Essentials of Chemistry & Physics include the following:

- \* **Lectures:** 3 hours per week (week 1 - 13 inclusive)
- \* **Tutorials/Workshops:** 2 hours per week (week 1 -12 inclusive)
- \* **Laboratories:** 2 hours per week (weeks 2, 5, 7, 9, 11, 13).

**Note: ATTENDANCE AT LABORATORIES AND LABORATORY TUTORIALS 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; 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 and be familiar with the contents of the Laboratory Rules booklet.**

### Attendance

100% attendance is expected for all classes. You are reminded that your attendance in class will be marked for all elements. To receive full attendance, you must be present in the classroom on all occasions.

You are expected to bring work done at home to class for group and individual discussion. Further development of ideas is expected during tutorial time.

### Preparation and Participation in Class

You are expected to read your text book and the lecture notes plus attempt any tutorial/workshop exercises before class so that each week you can actively contribute to your learning and the learning of others in your classes. You are expected to ask and answer questions and to initiate discussions and stimulate debate in group and class situations.

### Consultation Times

Attendance during consultation times is optional but you are encouraged to use this extra help to improve your learning outcomes.

### Course Materials

Lecture notes will be available for purchase from the Griffith University Bookshop and the lecture slides will also be available to you on the 1001MSC MyStudy course site on the Griffith College student portal. You are advised to bring the lecture notes to each class so that extra notes can be added.

### Independent Study

Independent study requires that you spend time outside classes engaged in research necessary to complete your assignments. Research includes reading the required text books, using library and internet facilities. For this 10 CP course, you will need to spend at least 10 hours per week engaged in activities that will help your learning and fulfil the course objectives. Thus, provided you have well used the formal contact hours each week, you would then complete any remaining hours engaged in independent study.

### 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 in any semester [please see Griffith College Policy and procedures Library - Program Progression Policy - for more information].

### Content Schedule

Laboratory aims and summary of activities:

**Week 2:** Experiment 1 - Measurements

**Week 5:** Experiment 2 - Identification of Anions

**Week 7:** Experiment 3 - Oxidation and Reduction Reactions

**Week 9:** Experiment 4 - pH Titration

**Week 11:** Experiment 5 - Volumetric Techniques

**Week 13:** Experiment 6 - Gases and Boyle's Law

### Weekly Teaching Schedule

Week	Topic	Activity	Readings
1	Introduction to Essentials of Chemistry & Physics; Measurement, Matter, Temperature	Lecture	Chapter 1 & 2
	Measurement, Matter, Temperature	Lecture	
	Introduction to the course and assessment.	Workshop	
	Introduction to the course and assessment.	Tutorial	
2	Atoms, Elements, Compounds, Nomenclature	Lecture	Chapter 1,3,4
	Atoms, Elements, Compounds, Nomenclature	Tutorial	
	Atoms, Elements, Compounds, Nomenclature	Workshop	
	Experiment 1 – Measurements	Laboratory	
3	Electronic Structure & Bonding Basics	Lecture	Chapter 5,6,10
	Electronic Structure & Bonding Basics	Tutorial	
	Electronic Structure & Bonding Basics	Workshop	
4	Chemical Bonding & Intermolecular Forces	Lecture	Chapter 4
	Chemical Bonding & Intermolecular Forces	Tutorial	
	Chemical Bonding & Intermolecular Forces	Workshop	
5	Introduction to Biological Molecules, Stoichiometry	Lecture	Lecture notes Chapter 7kins, Book 1: Chapter 7
	Introduction to Biological Molecules, Stoichiometry	Tutorial	
	Introduction to Biological Molecules, Stoichiometry	Workshop	
	Experiment 2 - Identification of Anions	Laboratory	
6	Stoichiometry, Chemical Reactions and Redox	Lecture	Chapter 7,8,17
	Stoichiometry, Chemical Reactions and Redox	Tutorial	
	Stoichiometry, Chemical Reactions and Redox	Workshop	
7	Quantities and Chemical Reactions in Aqueous Solutions	Lecture	Chapter 9
	Quantities and Chemical Reactions in Aqueous Solutions	Tutorial	
	Quantities and Chemical Reactions in Aqueous Solutions	Workshop	
	Experiment 3 - Oxidation and Reduction Reactions	Laboratory	
8	Thermodynamics- liquid and heat, Solution Stoichiometry.	Lecture	Chapter 13,14
	Thermodynamics- liquid and heat, Solution Stoichiometry.	Tutorial	
	Thermodynamics- liquid and heat, Solution Stoichiometry.	Workshop	

9	Acids, Bases and Salts	Lecture	Chapter 15
	Acids, Bases and Salts	Tutorial	
	Acids, Bases and Salts	Workshop	
	Experiment 4 – pH Titration	Laboratory	
10	Chemical Equilibrium	Lecture	Chapter 16
	Chemical Equilibrium	Tutorial	
	Chemical Equilibrium	Workshop	
11	Acids –Base Equilibrium	Lecture	Chapter 16
	Acids –Base Equilibrium	Tutorial	
	Acids –Base Equilibrium	Workshop	
	Experiment 5 –Volumetric Techniques	Laboratory	
12	Gases, Nuclear Chemistry,	Lecture	Chapter 12, 18
	Gases, Nuclear Chemistry,	Tutorial	
	Gases, Nuclear Chemistry,	Workshop	
13	Revision	Lecture	
	Revision	Tutorial	
	Experiment 6 - Gases and Boyle's Law	Laboratory	
14	Final Exam Block	Examination	

## Assessment

This section sets out the assessment requirements for this course.

### Summary of Assessment

Item	Assessment Task	Weighting	Relevant Learning Outcomes	Due Date
1	Mid semester exam	18%	1,3	7
2	Course quiz	12%	1,3	11
3	Final exam <i>- Students must pass this assessment with a mark of at least 40 out of 100 to pass the course</i>	50%	1,3	14
4	Lab Quizzes x3 <i>- Students must pass this assessment with a mark of at least 150 out of 300 to pass the course</i>	20%	2,3	7, 11, 13

### Assessment Details

#### 1. Mid semester exam

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

A detailed explanation of assessment expectations will be provided during class and where necessary on the course site on the student portal.

Assessment details: The 50 minute mid-semester examination, will be in the form of multiple choice (approx. 60%) and short answer questions (approx. 40%).

Closed book

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

#### 2. Laboratory quizzes

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

Assessment details: Lab quizzes will be in weeks 7, 11 and 13. One lab quiz in each of these weeks. The material covered in lab 1 and lab 2 will be assessed in lab quiz 1.

The material covered in lab 3 and lab 4 will be assessed in lab quiz 2.

The material covered in lab 5 and lab 6 will be assessed in lab quiz 3.

All Lab quizzes will consist of multiple choice questions. Students must pass this assessment with a mark of at least 10 out of 20 to pass the course.

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

### 3. Course quiz

Rationale: The course quiz is intended to test the student's understanding, interpretation and application of the chemical principles studied and developed in the course. A detailed explanation of assessment expectations will be provided during class and where necessary on the course site on the student portal. The course quiz contains self assessment activities.

Assessment details: The course quiz will be 45 minutes long and in the form of multiple choice questions.

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

### 4. End-of semester exam

Rationale: The end-of-semester exam is intended to test the student's understanding, interpretation and application of the chemical principles studied and developed in the course. A detailed explanation of assessment expectations will be provided during class and where necessary on the course site on the student portal.

Assessment details: The end-of-semester exam will be three hours long and in the form of multiple choice and short answer questions. Closed book.

Marking criteria: The end-of-semester 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 50% overall for their three laboratory quizzes, AND
- 3) obtain at least 40% (40/100) in the end of semester examination, AND
- 3) Achieve an overall course result (sum of all assessments) of 50%

#### Submission and Return of Assessment Items

Normally you will be able to collect your assignments in class within fourteen [14] days of the due date for submission of the assignment.

#### 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.

#### Extensions

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 Medical Certificate]. Please refer to the Griffith College website - Policy Library - for guidelines regarding extensions and deferred assessment.

#### Assessment Feedback

Your assessment will be marked so that you can learn from your work. Feedback will be provided so that you can see the level you have reached in any skill. Your tutor will give you comments on your work and will be happy to discuss your assessment further, if you wish. You may see your tutor in his/her consultation time.

Marks awarded for assessment items will also be available on the Griffith College Student Portal within fourteen [14] of the due date for submission of the assessment.

#### Generic Skills

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	Taught	Practised	Assessed
Written Communication	Yes	Yes	Yes
Oral Communication		Yes	
Information Literacy	Yes	Yes	Yes
Secondary Research		Yes	Yes
Critical and Innovative Thinking	Yes	Yes	Yes
Academic Integrity	Yes	Yes	Yes
Self Directed Learning		Yes	Yes
Team Work		Yes	Yes
Cultural Intelligence		Yes	
English Language Proficiency		Yes	Yes

#### Additional Course Generic Skills

#### Additional Course Information

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 on the Griffith College portal whenever these are available.

Student feedback on their courses can be found by going to 'Student Feedback' under Support in the Griffith College Student Portal.

---

### **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.

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 Academic Integrity Policy on the Griffith College website – Policy Library.

### ***Risk Assessment Statement***

This course follows Griffith College and Griffith University Workplace Health and Safety Laboratory guidelines.

The aim of workplace health and safety is to make sure that people do not get sick or injured at the workplace. The legislation dealing with this in Queensland is called the Workplace Health and Safety Act, 1995. Anyone who can affect workplace health and safety has an obligation under this Act.

As a student, you have an obligation to yourself and others to undertake activities in a safe manner. You must follow instructions which are provided for safety. You must not put yourself or anyone else at risk. Care especially needs to be taken when you are performing activities which can affect others. Please refer to the Laboratory Rules document available on the course site via the Griffith College Student Portal.

Please refer to the Laboratory Rules for Diploma of Health Science available on the course site via the Griffith College Student Portal.

**Students must wear closed in shoes to all laboratory sessions for workplace health and safety reasons.**

---

Copyright © - Griffith College

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