1. General Course Information

1.1 Course Details

Course Code:	1014BPS
Course Name:	Fundamentals of Biochemistry
Trimester:	Trimester 1, 2020
Program:	Diploma of Science
Credit Points:	10
Course Coordinator:	Brock Grant
Document modified:	28th November 2019

Course Description

1014BPS provides an introduction to biochemistry with the primary aim to examine in detail an integrated view of the molecular organisation of cells and the chemical properties of the major classes of biological molecules.

Assumed Knowledge

To successfully enrol in this Course, you must have completed the following Course:

- 1021SCG Chemistry 1A

1.2 Teaching Team

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

Name	Email
Brock Grant	Brock.grant@staff.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

1014BPS serves to integrate the relevance of chemistry & its importance in living systems, addressing in detail a holistic view of the molecular organisation of cells and the chemical properties of the major classes of biological molecules; the properties of water and biological acids, bases and buffers, and the chemical properties of proteins, nucleic acids, carbohydrates, lipids and their function. The 1014BPS course will then expand upon the previously taught modules, covering enzymatic reactions, membrane organisation and transport.

1014BPS offers students the essential and foundational knowledge of biochemistry, with relation to the biological/biomedical sciences providing students the essential basis for further studies in advanced biochemistry, and related biological/biomedical sciences offered in the School of BPS Griffith University and other health and science programs offered by Griffith University and Griffith College.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1. Evaluate the properties of non-covalent interactions within biomolecules & its function within living organisms.
2. Assess changes in proteins under varying environmental conditions.
3. Relate the structure-function relationship of various biological molecules to their function.
4. Analyse experimental data concerning enzyme kinetics under various conditions.

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	Taught	Practised	Assessed
Knowledge and skills with critical judgement	✓	✓	✓
Communication and collaboration skills	✓	✓	✓
Self-directed and active learning skills	✓	✓	
Creative and future thinking skills	✓	✓	
Social responsibility and ethical awareness	✓		
Cultural competence and awareness in a culturally diverse environment		✓	

3. Learning Resources

3.1 Required Resources

Lecture notes, workshop problem sets and other activities to assist your learning of the material will be placed on the Griffith College Portal and will be required for all timetabled classes. 1014BPS course notes also contain resources such as self-assessment tests and links to other resources.

3.2 Recommended Resources

1. Fundamentals of Biochemistry: Life at the Molecular level - Voet and Pratt, 4th edition, Wiley.
2. Lehninger Principles of Biochemistry, 6th edition (2012) by Nelson and Cox.

Both are available from the Griffith University Bookshop.

Although both textbooks are highly recommended, they are not a compulsory component of this course.

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

4.1 Weekly Learning Activities

Week	Topic	Activity	Readings	Learning Outcomes
1	Module 1: Non-covalent interactions, pH and buffers	Lec/Tute/Workshop	Lehninger Chapter 2 Wiley Chapter 2	1
2	Module 2: Amino acids, peptide bonds & charge on a peptide	Lec/Tute/Workshop	Lehninger Chapter 3, 4 Wiley Chapter 3, 4	1,2
3	Module 2: Protein structure	Lec/Tute/Workshop	Lehninger Chapter 3, 4 Wiley Chapter 3, 4	1,2,3
4	Module 3: Fibrous proteins, tertiary and quaternary structure	Lec/Tute/Workshop	Lehninger Chapter 5 Wiley Chapter 5	1,2,3
5	Module 3: Globular Proteins, Haemoglobin and Myoglobin	Lec/Tute/Workshop	Lehninger Chapter 5 Wiley Chapter 6	1,2,3
6	Module 4: Enzymes as biological catalysts	Lec/Tute/Workshop	Lehninger Chapter 6 Wiley Chapter 11	1,2,3
7	Module 4: Enzyme Kinetics	Lec/Tute/Workshop	Lehninger Chapter 6 Wiley Chapter 12	1,2,3,4
8	Module 5: Carbohydrates Polysaccharides	Lec/Tute/Workshop	Lehninger Chapter 7, 10 Wiley Chapter 8	1,3
9	Module 5: Lipids	Lec/Tute/Workshop	Lehninger Chapter 7,10 Wiley Chapter 9	1,3
10	Module 6: Membranes & Membrane Proteins	Lec/Tute/Workshop	Lehninger Chapter 11 Wiley Chapter 9, 10	1,2,3
11	Module 6: Membrane permeability and transport	Lec/Tute/Workshop	Lehninger Chapter 11 Wiley Chapter 10	1,2,3
12	Revision and End of Trimester Exam Preparation	Lec/Tute/Workshop	As above	1,2,3,4

5. Assessment Plan

5.1 Assessment Summary

Item	Assessment Task	Weighting	Learning Outcomes	Due Date
1	Course Quiz 1 (Module 1 & 2)	8%	1,2,3	Week 4
2	Take-home Assignment 1	12.5%	1,2,3	Week 5
3	Course Quiz 2 (Module 3 & 4)	8%	1,2,3,4	Week 8
4	Take-home Assignment 2	12.5%	1,2,3,4	Week 11
5	Course Quiz 3 (Modules 5 and 6)	8%	1,3	Week 12
6	Online Weekly Quizzes	6%	1,2,3,4	Week 2 - 11
7	End of Trimester Exam - *Students must achieve a passing grade of at least 40% on their end of trimester exam to pass the course.*	45%	1,2,3,4	Exam Block

5.2 Assessment Detail

Course Quiz 1 - Module 2

Task Description:
Students will sit a summative quiz examining student understanding of the content taught within module 2, measuring student understanding of

1. Water and its weak interactions within aqueous systems
2. Ionisation of water, pH and weak acids & bases
3. Chemical buffering against pH changes within biological systems
4. Structure and properties of amino acids
5. The relationship between pH and amino acids
6. Properties and the formation of peptide bonds
7. Calculation of peptide charge in varying pH environments
8. Determining the isoelectric point and calculating charge of a peptide in various pH levels
9. The structural organisation of proteins

Take-home Assessments 1 & 2

Task Description:
Take-home assessments are compulsory. There will be two take-home assessments, each worth 12.5% of the final grade which must be submitted by the due date at the beginning of weeks 5 and 11. This method of assessment gives students practice at problem solving and application of theoretical knowledge in an open-book situation, whilst helping to consolidate the subject material from each module. Feedback on these assessments will be given during the following lecture periods.
While students are encouraged to discuss problems with each other, everyone must hand in an assignment that is entirely their own work. Any instances of collusion, copying and plagiarism, and copying and pasting from the internet will be reported to the academic integrity officer.

Course Quiz 2 - Module 3 & 4

Task Description:
Students will sit a summative quiz examining student understanding of the content taught within modules 3 & 4, measuring student understanding of

1. The function of proteins & the reversible binding of a ligand to a protein (with emphasis on the function of myoglobin and hemoglobin)
2. Homeostatic response to the regulation of body O_2 & CO_2 levels, with focus on how oxygen is transported around the body and how binding of ligand affects protein-ligand binding via conformational changes.
3. How enzymes function and support biological systems.
4. Enzyme kinetics with respect to an enzymes reaction rate and binding affinities

Task Description:
Students will sit a summative quiz examining student understanding of the content taught within modules 5 & 6, measuring student understanding of

1. Monosaccharides, disaccharides and polysaccharides
2. Glycoconjugates and their role in biological systems
3. Lipids and their role in storage, structure and cell signalling
4. The composition and function of biological membranes
5. Membrane dynamics
6. Solute transport across membranes.

Online Weekly Quizzes

Task Description:

For week 2 - 11, students will be required to log onto the Griffith Collage portal and complete a short weekly quiz. After learning the course content in class, students will be given one week to complete the online open book quiz. The combined 10 quizzes are comprised of 100 marks total and has a final weighing of 6%

End of Trimester Exam

Task Description:

The end of trimester examination will consist of a mixture of multiple choice and short answer questions measuring student understanding of course content presented in module 1 – module 6

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.