



The University of Southern Queensland

## Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.  
Please consult the web for updates that may occur during the year.

### Description: Biochemistry 2

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
BIO	3301	78206	2, 2008	ONC	1.00	Toowoomba

<b>Academic group:</b>	FOSCI
<b>Academic org:</b>	FOS002
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	010901

### STAFFING

Examiner: Robert Learmonth

Moderator: Mark Sutherland

### REQUISITES

Pre-requisite: BIO2201

### RATIONALE

Biochemistry 2 further develops the approaches, concepts and skills imparted in Biochemistry 1. It focuses on structures and functions of membranes, transport of molecules in biological systems, and on the organisation and control of biochemical reactions of metabolism within organisms. Biochemistry 2 is central to studies of biotechnology, bioinformatics and biomedical science, and important in studies of plants, animals and microorganisms.

### SYNOPSIS

This course focuses on advanced study of membranes, transport of ions and molecules, and integration and control of metabolism in animals, plants and micro-organisms. Control of metabolic reactions is considered from the level of individual enzymes, to cells, to integration throughout the whole organism.

### OBJECTIVES

On successful completion of this course students will be able to:

1. demonstrate a knowledge of the current understanding of the structure and function of membrane lipids and proteins (Mid-semester Test; Exam);
2. relate the operation of membranes to structure and function of their components (Mid-semester Test; Exam);
3. explain the principles governing the coordination and regulation of biochemical pathways and metabolism at levels from the cell to the whole organism (Mid-semester Test; Exam);
4. show an understanding of the cellular mechanisms of action of hormones (Mid-semester Test; Exam);

5. demonstrate familiarity with the application and limitations of the major preparative and analytical tools of the biochemist (Reports on Laboratory Work);
6. demonstrate an awareness of the application of biochemistry in contemporary biological and biophysical sciences (Reports on Laboratory Work; Mid-semester Test; Exam).

## TOPICS

	Description	Weighting (%)
1.	Metabolism - central pathways, glycogen and fatty acid metabolism	12.00
2.	Metabolic control at the cellular level	8.00
3.	Integration of metabolism at the whole body level - coordination of metabolism of organs	23.00
4.	Hormones - types, mechanisms and role in metabolic control	15.00
5.	Membranes - structure, functions, transport	27.00
6.	Biochemical research and emerging fields.	15.00

## TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Learmonth, RP 2008, *Biochemistry 2 Course and Practical Manual*,  
(will be provided to enrolled students)

Nelson, DL & Cox MM 2005, *Lehninger Principles of Biochemistry*, 4th edn, WH Freeman & Co, New York.  
(ISBN 0 7167 4339 6)

Pechenik, JA 2007, *A Short Guide to Writing About Biology*, 6th edn, Longman, Boston.

## REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Alberts, B et al 2002, *Molecular Biology of the Cell*, 4th edn, Garland Press, New York.

Berg, JM, Tymoczko, JL & Stryer, L 2007, *Biochemistry*, 6th edn, WH Freeman, Basingstoke, Palgrave.

Elliott, WH & Elliott, DC 2005, *Biochemistry and Molecular Biology*, 3rd edn, Oxford University Press, Oxford.

Mathews, CK, Van Holde, KE & Ahern, KG 2000, *Biochemistry*, 3rd edn, Benjamin/Cummings Publishing Company,  
(Pearson Educ)

Osgood, M & Ocorr, K 2005, *The Absolute, Ultimate Guide to Lehninger Principles of Biochemistry*, 4th edn, WH Freeman & Co, New York.

Voet, D, Voet, JG & Pratt, CW 2006, *Fundamentals of Biochemistry*, 2nd edn, John Wiley & Sons, New York.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	3.00
Laboratory or Practical Classes	28.00
Lectures	26.00
Private Study	108.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
REPORTS ON LAB WORK	20.00	30.00	21 Jul 2008 (see note 1)
1HR CLOSED MID-SEM TEST	80.00	20.00	21 Jul 2008 (see note 2)
2 HR CLOSED EXAM	120.00	50.00	END S2 (see note 3)

### NOTES

1. Report on Metabolites in Fed and Fasted Rats is due on 18/08/08. Protein Purification Project is due on 6/10/08.
2. Examiner to advise date of mid semester test during week 11 (29 September - 3 October 2008).
3. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

## IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:  
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration. To maximise their chances of satisfying the objectives of the practical component of the course, students should attend and actively participate in the laboratory sessions in the course.
- 2 Requirements for students to complete each assessment item satisfactorily:  
To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item. To complete the practical component satisfactorily, students must submit all of the nominated practical reports and obtain at least 50% of the marks available for each report submitted.

- 3 Penalties for late submission of required work:  
If students submit assignments after the due date without (prior) approval of the examiner then a penalty of 5% of the total marks gained by the student for the assignment may apply for each working day late up to ten working days at which time a mark of zero may be recorded. No assignments will be accepted after model answers have been posted.
- 4 Requirements for student to be awarded a passing grade in the course:  
To be assured of receiving a passing grade a student must achieve at least 50% of the total weighted marks available for the course.
- 5 Method used to combine assessment results to attain final grade:  
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.
- 6 Examination information:  
In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.
- 7 Examination period when Deferred/Supplementary examinations will be held:  
Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester 3 following this course.
- 8 University Regulations:  
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL  
<http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

## **ASSESSMENT NOTES**

- 9 In order to attend laboratory classes, students must provide and wear appropriate personal protective equipment. This shall include a laboratory coat, closed in shoes, and safety glasses. Such equipment must be approved by supervising staff. Failure to provide and wear the appropriate safety equipment will result in students being excluded from classes.
- 10 Students may be required to provide a copy of assignments submitted for assessment purposes. Such copies should be dispatched to USQ within 24 hours of receipt of a request to do so.