



The University of Southern Queensland

Course specification

Description: Biochemistry 2

| Subject | Cat-nbr | Class | Term | Mode | Units | Campus |
|---------|---------|-------|---------|------|-------|-----------|
| BIO | 3301 | 54265 | 2, 2006 | ONC | 1.00 | Toowoomba |

| | |
|-----------------------------------|--------|
| Academic group: | FOSCI |
| Academic org: | FOS002 |
| Student contribution band: | 2 |
| ASCED code: | 010901 |

STAFFING

Examiner: Robert Learmonth

Moderator: Bernadette McCabe

REQUISITES

Pre-requisite: BIO2201

RATIONALE

Biochemistry 2 is designed to provide an opportunity to further develop the attitudes, concepts and skills initiated in Biochemistry 1. It focuses on structures and functions of proteins and membranes, and on the organisation and control of biochemical reactions in 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 protein and membranes, 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 proteins;
2. relate the operation of membranes to structure and function of their components;
3. explain the principles governing the regulation of biochemical pathways and metabolism at the cellular level and whole organism level;
4. show an understanding of the cellular mechanisms of action of hormones;
5. demonstrate a familiarity with the application and limitations of the major analytical tools of the biochemist;

6. demonstrate an awareness of the application of biochemistry in contemporary science, particularly in biotechnology and cell biology.

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. | Biotechnology, bioinformatics proteomics, metabolomics and current research. | 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).

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

Pechenik, JA 2004, *A Short Guide to Writing About Biology*, 5th 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 2002, *Biochemistry*, 5th 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 and Ocorr, K 2005, *The Absolute, Ultimate Guide to Lehninger Principles of Biochemistry*, 4th edn, WH Freeman & Co, New York.

Voet, D & Voet, JG 2004, *Fundamentals of Biochemistry*, 3rd edn, John Wiley & Sons, New York.

STUDENT WORKLOAD REQUIREMENTS

| ACTIVITY | HOURS |
|---------------------------------|--------|
| Examinations | 3.00 |
| Laboratory or Practical Classes | 26.00 |
| Lectures | 26.00 |
| Private Study | 110.00 |

ASSESSMENT DETAILS

| Description | Marks out of | Wtg(%) | Due date |
|-------------------------|--------------|--------|-----------------------------|
| REPORTS ON LAB WORK | 20.00 | 30.00 | 25 Jul 2006 (see note 1) |
| 1HR CLOSED MID-SEM TEST | 20.00 | 20.00 | 25 Jul 2006 (see note 2) |
| 2 HR CLOSED EXAM | 100.00 | 50.00 | END S2 (see note 3) |

NOTES

1. Report on Metaboliites in Fed and Fasted Rats is due on 25/08/06. Protein Purification Project is due on 13/10/06.
2. Examiner to advise date of mid semester test during week 12 (9-13 October 2006).
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 then a penalty of 5% of the total marks available for the assignment will apply for each working day late.
- 4 Requirements for student to be awarded a passing grade in the course:
To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by: (i) satisfactorily completing the examination and

assignments; and (ii) obtaining at least 50% of the total weighted marks available for all summative assessment items. Students who do not qualify for a Passing grade may, at the discretion of the Examiner, be awarded a Supplementary Examination and/or assigned additional work to demonstrate to the Examiner that they have achieved the required standard. It is expected that such students will have gained at least 45% of the total marks available for all summative assessment items.

- 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 despatched to USQ within 24 hours of receipt of a request to do so.