



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: Systems Physiology

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
BIO	2203	74208	1, 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>	010999

### STAFFING

Examiner: Guang Liu

### REQUISITES

Pre-requisite: BIO2103

### RATIONALE

The unifying theme of this course is the physiology of whole organs and organ systems within the human body. It provides a basic understanding of the functions of each system and the ways in which the various systems interact in the healthy body.

### SYNOPSIS

This course provides the essential details of the physiology of the major systems of the human body including the musculo-skeletal, nervous, endocrine, blood, immune, circulatory, respiratory, renal, digestive and reproductive systems. The anatomy of each of the body organs will also be considered to the extent necessary to explain the structural arrangements within various systems.

### OBJECTIVES

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

1. demonstrate an understanding of the anatomy and physiology of the musculo-skeletal and other supporting tissue systems (Closed Test, Assignment);
2. demonstrate an understanding of the ways in which hormones influence the processes of individual cells and whole body systems (Closed Test, Assignment, Exam);
3. demonstrate an understanding of the anatomy and physiology of the cardiovascular, respiratory, renal and nervous systems (Assignment, Exam);
4. demonstrate an understanding of the properties and functions of blood and other fluids which surround tissues cells (Exam, Assignment);
5. demonstrate an understanding of the ways in which the body is protected from injury by undesirable organisms and chemicals by its immune systems (Assignment, Exam);
6. describe the anatomy and physiology of the digestive system (Assignment, Exam);

7. demonstrate an understanding of reproduction and growth (Assignment, Exam);
8. demonstrate skills and knowledge required to perform laboratory experiments safely with appropriate equipment (Assignment, Reports on Labs and Tutes).

## TOPICS

	Description	Weighting (%)
1.	<b>HUMAN BODY ORGANISATION:</b> Organ systems of the body, their major components and function. Homeostasis.	2.00
2.	<b>THE NERVOUS SYSTEM:</b> Physiology of polarised cells, nerve impulses and synapses; Gross anatomy of the human nervous system; Functions of major nervous system components; The concepts of brain centres, the major sensory impulse destinations and motor impulse origins; Role of the nervous system for functional control of other body systems; Interactions between the nervous and endocrine systems.	19.00
3.	<b>PHYSIOLOGY OF THE MUSCULO-SKELETAL AND SUPPORTING TISSUES:</b> Membrane Potentials; Physiology of voluntary muscle cells; Functional anatomy of the voluntary muscle systems; Control and coordination of the voluntary muscles; Physiology of bone.	17.00
4.	<b>ENDOCRINE SYSTEM:</b> Cellular actions of hormones; The major metabolic hormones; Anterior and posterior pituitary hormones; Control of hormone secretion.	8.25
5.	<b>BLOOD AND THE IMMUNE SYSTEMS:</b> Components of blood, including the functions of its cell types, its proteins and its major small solutes; Blood as a vehicle for the immunological defence systems; The lymphoid tissues and their products.	8.25
6.	<b>THE CIRCULATORY SYSTEM:</b> Anatomy and functions of the heart and vascular systems; Intrinsic and extrinsic controls of cardiovascular function.	12.50
7.	<b>THE RESPIRATORY SYSTEM:</b> Anatomy of the lungs and respiratory tree; Mechanics and controls of breathing; Internal and external respiration.	8.25
8.	<b>THE RENAL SYSTEM:</b> Anatomy of the kidneys; Formation and processing of glomerular filtrate; Hormones and the kidneys; Anatomy and functions of the urinary tract.	8.25
9.	<b>DIGESTIVE PHYSIOLOGY:</b> Anatomy of the digestive tract and associated organs; Sources and functions of digestive secretions; Controls of digestive secretions and tract motility; Absorption from the digestive tract.	8.25
10.	<b>REPRODUCTIVE PHYSIOLOGY:</b> Outline of anatomy of the male and female reproductive organs; Female reproductive physiology including the menstrual cycle, oogenesis and effects of pituitary and gonadal hormones; Male reproductive physiology	8.25

including spermatogenesis and the effects of hormones;  
Fertilization; Gestation and parturition.

### **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).

Jenkins, G & Tortora, G 2006, *Anatomy and physiology: from science to life*, 6th edn, John Wiley & Sons, New York.

(ISBN: 047081280X Pack includes textbook, DVD & WileyPlus Access card for online access)

Pechenik, JA 2006, *A short guide to writing about biology*, 6th edn, Longman, Boston.

(ISBN 0 321 15981 0)

Watson, M & Hoey, A 2005, 'Physiology 1 practical manual and exercises' (Available: USQ S tudydesk).

### **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.

Berne, RM et al 1998, *Physiology*, 4th edn, Mosby, St Louis.

Bray, JJ et al (eds) 1999, *Lecture notes on human physiology*, 4th edn, Blackwell Science, Malden, Mass.

Kandel, E, Schwartz, J & Jessell, T 2006, *Principles of neural science*, 5th edn, Appleton & Lange, Norwalk, Conn.

Marieb, EN 2006, *Human anatomy and physiology*, 7th edn, Benjamin/Cummings Publishing Co, Redwood City, California.

Martini, FH 2005, *Fundamentals of anatomy and physiology*, 7th edn, Prentice Hall, Upper Saddle River, New Jersey.

Schmidt, RF & Thews, G 1989, *Human physiology*, 2nd edn, Springer-Verlag, Berlin.

Vander, AJ, Sherman, JA & Luciano, DS 2001, *Human physiology*, 8th edn, WCB McGraw-Hill, Boston.

### **STUDENT WORKLOAD REQUIREMENTS**

ACTIVITY	HOURS
Examinations	2.00
Laboratory or Practical Classes	27.00
Lectures	24.00
Private Study	103.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
1 HR MID SEMESTER CLOSED TEST	50.00	20.00	03 Mar 2008 (see note 1)
REPORTS ON LAB AND TUTES	50.00	15.00	03 Mar 2008 (see note 2)
1500 WORD ASSIGNMENT	50.00	15.00	03 Mar 2008 (see note 3)
PT A 2 HOUR CLOSED EXAM M/C	60.00	30.00	END S1 (see note 4)
PT B 2 HOUR CLOSED EXAM	40.00	20.00	END S1 (see note 5)

### NOTES

1. Examiner to advise details of the date for the 1hr Closed Test
2. Examiner to advise details of the due dates for the reports on lab and tutes.
3. Examiner to advise the due date of the 1,500 word assignment
4. Examination dates will be available during the Semester. Please refer to the examination timetable when published.
5. 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 maximize 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 assignments satisfactorily, students must obtain at least 50% of the marks available for each assignment. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination. To complete the practical component satisfactorily, students must submit all the nominated practical reports and obtain at least 50% of the marks available for each report submitted. Written practical reports must be submitted within two teaching weeks (normally 14 days) of completion of the experimental work.
- 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 (or grades) 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 in week two of Semester 2 of the current academic year.
  - 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 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner. Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.
- 10 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.