

**GRIFFITH UNIVERSITY GOLD COAST CAMPUS
SCHOOL OF HEALTH SCIENCES**

SEMESTER II 2004 OUTLINE

COURSE NAME:	Physiological Science I
COURSE NO:	1011HSC
SEMESTER:	2, 2004
CREDIT POINTS:	10
EXPECTED ENROLMENT:	420
COURSE STATUS:	Limited
PRE-REQUISITES:	PES = 1010HSC Principles of Physiology HSC = 1010HSC Principles of Physiology BOH= 1010HSC Principles of Physiology BIOMED/PHARM SCI = 1005HSC Cell Biology

NOTE: A PASS CONCEDED GRADE (PC) FOR ANY OF THE ABOVE COURSES **DOES NOT** SATISFY AS A PRE-REQUISITE.

COURSE CONVENOR: Dr Glenn Harrison
G05 2.21, Ph: 555 28529, g.harrison@griffith.edu.au

TEACHING TEAM: Dr. Glenn Harrison
Prof. Lewis Adams
Tutors
Laboratory Demonstrators

CONTACT TIME: 37 hours lectures
6 hours tutorials
15 hours practicals
58 hours total contact

LECTURE TIMES:	Monday	Lecture 1	11AM-12PM	LT2
	Wednesday	Lecture 2	6-8PM	LT3
	Thursday	Lecture 1 Repeat	12-1PM	LT1
	Friday	Lecture 2 Repeat	1-3PM	LT1

NOTE: STUDENTS NEED TO ATTEND ONLY ONE GROUP OF THREE (3) LECTURES PER WEEK.

1. COURSE DESCRIPTION

Students will build upon the knowledge gained in Principles of Physiology (1010HSC) &/or Cell Biology (1005HSC). The focus will be on gaining a sound understanding of the general physiology of three major organ systems: muscular, cardiovascular and respiratory. Topics will include the excitatory and conductive system of skeletal muscle and the heart, cardiac output, control of the circulation and microcirculation, blood, rheology & haemostasis, blood pressure control and respiratory physiology with emphasis on the role of the cardiopulmonary system in exercise/aging.

2. COURSE RATIONALE

Physiological Science I has been designed to provide students with a sound knowledge and understanding of the function and regulation of selected body systems. It builds upon fundamentals learned in the course Principles of Physiology (1010HSC). A systems approach is adopted and discussed within the theme of regulation. This course is a pre-requisite for 2013HSC Physiological Science II, and provides essential foundation knowledge for Exercise and Health Science students.

NOTE TO STUDENTS WHO **HAVE NOT COMPLETED** 1010HSC "PRINCIPLES OF PHYSIOLOGY" (OR WERE GIVEN CREDIT) It is strongly recommended that these students obtain a course outline for 1010HSC from the GU WEB and/or purchase a copy of the 1010HSC POP LECTURE NOTES from the Convenor (available after 19th July) to confirm the material covered in this pre-requisite course.

3. COURSE OBJECTIVES

This course will enable students to:

- (a) demonstrate an understanding of the physiology of selected body systems, namely:
 - skeletal muscle
 - blood cells, haemostasis
 - cardiovascular system (cardiac, vascular, lymphatic physiology)
 - respiratory system
- (b) understand and appreciate integrated control of cardiac output and blood pressure by the cardiovascular system
- (c) understand lung anatomy / function and link the heart and lungs in the control of exercise responses and the effect of aging
- (d) appreciate proper data acquisition and handling, and experimental design in physiological studies
- (e) maintain an adequate written record of laboratory experiments and evaluate the significance of the results taking into account sources and magnitudes of experimental variances.

4. TEACHING STRATEGIES

Physiology I will be presented in lecture, tutorial and laboratory practical format. Lectures will provide essential theoretical knowledge and concepts. Laboratory and tutorial sessions will provide opportunity to apply and integrate this knowledge. Teaching materials including lecture files, laboratory notes and other material will be distributed on the web-based student portal "learning at griffith" as in 1010HSC POP.

5. ATTENDANCE

Attendance at lectures is strongly recommended. *It is the responsibility of students who miss lectures to obtain the material covered in lectures as lecture notes will not necessarily be provided by the lecturer after his/her lecture series.*

ATTENDANCE AND GENERAL INFORMATION FOR LABORATORY SESSIONS

Laboratory sessions are designed to re-enforce and assist in understanding the theoretical content of the course. Students should therefore involve themselves as much as possible in all laboratory activities. *Attendance at laboratory sessions is compulsory.*

All students must attend laboratory sessions wearing appropriate clothing for the laboratory activity, *this includes a protective laboratory coat and closed in shoes.*

Equipment used in laboratory sessions is often expensive and susceptible to damage. Responsible conduct is therefore expected at all times. Any damage or malfunctioning of equipment should be reported immediately.

6. ASSESSMENT

- (1) Mid Semester examination of 50 minutes duration on **FRIDAY 3RD SEPTEMBER 1-3PM (WEEK 6) in Lecture Theatre 1**, worth 20% of the final grade, will include multiple choice questions, and cover material presented weeks 1-4 (*up to and including Blood lectures*).
- (2) A Final Examination will be held in the official examination period of Semester 2. The final examination format will include multiple choice questions, short/long answer questions and calculations. The final examination will be worth 55% of the final grade and will cover **ONLY** material presented after the mid-semester exam (weeks 4–13).

IMPORTANT NOTE: STUDENTS MUST ATTAIN A 45% MARK FOR THE FINAL EXAM (24.75/55) TO GAIN AN OVERALL PASS OR ABOVE FOR THE 1011HSC COURSE.

Students who fail to achieve 45% for the final exam but have a final course grade of >45% will be offered a Supplementary Exam (SP Grade). If the supplementary exam is successfully passed, a PASS GRADE is awarded for 1011HSC. If the supplementary examination is failed, a final grade of PASS CONCEDED is awarded (note however that a PC grade does not meet the requirements of a prerequisite for 2013HSC Physiological Science II).

- (3) The five practical sessions &/or PhysioEx4.0 exercises will be assessed for attendance and laboratory reports, representing 15% of the total assessment (3% each).

- (4) Attendance and performance in the 6 tutorials (assessed by quiz and/or problems) will be assessed, representing 10% of the total assessment.

NOTE ON MEDICAL CERTIFICATES: Provision of a *valid* medical certificate for a laboratory/tutorial session only gains students 50% (1/2) of the assessment value for that session. Further marks can be obtained for successfully attempting the item to the best of the students ability.

The allocation of grades for the course 1011HSC will be according to Griffith University and School of Health Science policy. There will be no scaling of marks, rather absolute marks will determine the grades as outlined below.

85 - 100	High Distinction	(HD)
75 - 84	Distinction	(D)
65 - 74	Credit	(C)
50 - 64	Pass	(P)
45 - 49	Pass Conceded	(PC)
< 45	Fail	(F)

Students who obtain a PASS CONCEDED (PC) will be offered a supplementary exam (SP grade) which if successfully completed will change grade from PC to PASS.

7.0 LABORATORY SESSIONS (Start week 3)

Laboratory Handouts/instructions will be available prior to each laboratory session on **1011HSC “Learning at Griffith” website ONLY** (no hard copies available in the laboratory), students are to print out their own copy and bring to the session. Answers to questions are to be placed in the spaces available and the completed lab report handed in to your demonstrator as directed.

Lab I (Weeks 3/4): Toad Skeletal Muscle Preparation + PhysioEx 4.0 Simulation.

Lab II (Weeks 5/6): Blood & hematological testing, sheep heart anatomy.

Lab III (Weeks 7/8): Toad Heart Preparation, Starlings Law, Effect of Cardioactive Drugs + PhysioEx 4.0 Simulation

Lab V (Weeks 10/11): Measurement of blood pressure and the ECG in humans.

Lab VI (Weeks 12/13): Respiratory Physiology, lung function and volumes + PhysioEx 4.0 Simulation

PLEASE NOTE: Cardiovascular Dynamics (PhysioEx 4.0 Activity 5) is to be conducted at home and handed in to your TUTOR in week 11.

8.0 TUTORIAL SESSIONS (Weeks 3,5,7,9,11,13) Assessment items conducted in tutorials (eg: quizzes/case studies) can only be conducted in the same week and will not be available in the following week. Tutors will make material available at “Learning at Griffith” group pages for 1011HSC website.

9.0 1011HSC LECTURE TIMETABLE

WEEK	TEACHING WEEK	TOPIC	LECTURER
26/7	1	1. Course Introduction & Review 2. Skeletal Muscle I 3. Skeletal Muscle II	Harrison Harrison Harrison
2/8	2	1. Skeletal Muscle III 2. Skeletal Muscle IV 3. Smooth & Cardiac Muscle	Harrison Harrison Harrison
9/8	3	1. Control of Body Movement I 2. Blood I 3. Blood II	Harrison Harrison Harrison
16/8	4	1. Blood III (Haemostasis) 2. Blood IV (Haemostasis) 3. Intro to Cardiopulmonary System	Harrison Harrison Harrison
23/8	5	MONDAY LECTURE 1. Cardiac Anatomy WEDNESDAY 25th AUGUST THURSDAY LECTURE 1. Cardiac Anatomy FRIDAY 27TH AUGUST (SHOW HOLIDAY)	Harrison NO LECTURE Harrison NO LECTURE
30/8	6	MONDAY 1. Cardiac Electrophysiology WEDNESDAY 1st SEPTEMBER THURSDAY 1. Cardiac Electrophysiology FRIDAY 3rd SEPTEMBER MID SEMESTER EXAM 1-3PM LT1	Harrison NO LECTURE Harrison
6/9	7	1. Heart Contraction & ECG 2. Cardiac Output & the Cardiac Cycle 3. Arteries, Capillaries, Veins, Lymphatics I	Harrison Harrison Harrison
13/9	8	1. Arteries, Capillaries, Veins, Lymphatics II 2. Rheology I 3. Rheology II / Control of Vascular Function I	Harrison Harrison Harrison
20/9	9	1. Control of Vascular Function II 2. Blood Pressure Regulation 3. Orthostatic Intolerance	Harrison Harrison Harrison
4/10	10	1. Introduction to Pulmonary System 2. Pulmonary Anatomy 3. Ventilation and Respiratory Volumes I	Adams Adams Adams
11/10	11	1. Ventilation and Respiratory Volumes II 2. Pulmonary Circulation and blood flow 3. Gas Exchange I	Adams Adams Adams
18/10	12	1. Gas Exchange II 2. Ventilation and Respiratory Volumes 3. Regulation of Respiration I	Adams Adams Adams
25/10	13	1. Regulation of Respiration I II 2. Response of Cardiopulmonary to Exercise 3. Cardiopulmonary Aging & Disease/ Review	Adams Harrison Harrison

10.0 REQUIRED TEXT(S)

Prescribed Textbook: Rhodes and Pflanzer. "*Human Physiology*" 4th Edition Thompson Learning 2003.
+
Stabler and Zao "PhysioEx 4.0 Laboratory Simulations in Physiology" Pearson Education 2003.

NOTE: ALL STUDENTS MUST HAVE "*PHYSIO EX4.0 LABORATORY SIMULATIONS IN PHYSIOLOGY*" CONTINUING 1010POP STUDENTS SHOULD ALREADY HAVE, NEW STUDENTS CAN PURCHASE SEPARATELY FROM BOOKSHOP.

Students are advised that lecturers may use material and figures from other physiology textbooks. To cover the material of Physiology I and II over the next two semesters it will be necessary and advisable to have access to two physiology textbooks. Some other Physiology textbooks used by lecturers include:

Marieb "*Human Anatomy & Physiology*" 5th Edition

Ganong "*Review of Medical Physiology*"

Stuart, Ira, Fox "*Human Physiology*" <http://www.mhhe.com/biosci/ap/foxhumphys/>

Rhodes and Pflanzer "*Human Physiology*"

Berne and Levy "*Physiology*"

Johnson "*Essential Medical Physiology*"

Atini "*Fundamentals of Anatomy and Physiology*"

11.0 COURSE EVALUATION

In the last week of the 1011HSC course, you will be asked to complete a course evaluation, which allows you to provide comments to the teaching staff about your experiences in Physiological Science I. These comments are anonymous and are used to improve the course in future years.

THANK YOU AND WELCOME TO 1011HSC PHYSIOLOGICAL SCIENCE I



DR GLENN HARRISON