8846 PHYSIOLOGY 232
Semester Two, 2012

Unit study package number: 08846
Mode of study: Internal
Tuition pattern summary: Lecture: 1.5 Hours, 2.0 Times Weekly
Laboratory: 2.0 Hours, 1.0 Times Weekly.*
Credit value: 25 on the successful completion of this unit
Pre-requisite units: Human Biology 134
OR
Integrated Systems Anatomy & Physiology 100
Co-requisite units: Nil
Anti-requisite units: Nil
Additional Requirements: Nil
Result type: Grade: Mark
Approved incidental fees: All fee information can be obtained through the Fees Centre. Visit fees.curtin.edu.au for details.

*Average over semester. Laboratory times vary depending upon the particular practical exercise

Scheduled times and Venues: Lectures: Monday: 10.30-12.00pm; Room 307.103.
Friday: 4.00-5.30pm; Room 302.002.
Practical: Thursday: 9.00–1.00pm, Room 405.229;
Thursday: 2.00–6.00pm, Room 405.229.

Unit Coordinator:
Name: Dr Phil Bourne
Phone: (08) 9246 9238
Email: P.Bourne@curtin.edu.au
Building : Room: 308.221
Consultation times: Anytime office door open.

Administrative contact:
Name: Ms Janette McLeod
Phone: (08) 9246 7374
Email: J.McLeod@curtin.edu.au
Building : Room: 308.122

Learning Management System: FLECS - Blackboard (oasis.curtin.edu.au)
**Syllabus**

**Cardiovascular Physiology:** Blood; Composition & function of plasma constituents; Haemostasis; Intrinsic & extrinsic pathways for blood clotting; Electrical activity of the Heart; Cardiac cycle; Control of HR & SV; Intrinsic & extrinsic regulation of blood flow/pressure. Dynamics of blood flow; Capillary exchange; Circulatory patterns & special regulation of the CVS. Hypotension, hypertension & circulatory shock. **Respiratory Physiology:** Respiratory mechanics; Gas transport & release; Alveolar ventilation & blood flow; O$_2$ & CO$_2$ transport; Chemoreceptors & respiratory control; Acid-base balance. Hyper- & hypocapnia; Regulation of ventilation; Hypoxia & exercise. **Renal Physiology:** Glomerular filtration; factors affecting GFR; Tubular reabsorption & secretion; Plasma clearance; Renal circulation; Countercurrent mechanisms; Urea recycling; Water & salt reabsorption. Diuresis. **Fluid & Electrolyte Balance:** Na$^+$ & K$^+$ balance; Acid-base balance; Body fluid compartments. Regulation/integration of acid-base balance.

**Introduction**

Physiology is the study of the functions of an organism. This unit looks at important physiological processes which occur within body systems which are essential for life. The importance of the CVS in maintaining blood pressure to ensure there is a suitable driving force to provide all organs and tissues with an adequate blood supply; the responsibility of the respiratory system to obtain O$_2$ from the external environment and to ensure sufficient quantities reach the respiring tissues and the renal system, which functions to filter from the blood any noxious or foreign substance and to also ensure that body fluid composition and acid-base status is maintained within homeostatic limits.

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**Unit Learning Outcomes**

On successful completion of this unit students can:

1. Demonstrated an integrated knowledge of the physiology of the cardiovascular, respiratory and renal systems and their contribution to the normal processes of life.

2. Demonstrated practical laboratory skills to investigate and evaluate the mechanisms and metabolic processes of human physiological phenomena.

3. Worked collaboratively in the laboratory to demonstrate the competent use of physiological measuring equipment, including problem-solving and computer skills, for the collection of valid scientific data.

4. Demonstrated effective written communication skills to describe, explain and critically evaluate physiological data, together with the appropriate citation of supporting information obtained from reviewing the current literature.

5. Integrated the content of this unit with other existing units from the course to appreciate how the study of human biology leads to a better understanding of both the normal and abnormal mechanisms and processes of life.
Laboratory Classes:

Students are reminded that **attendance of practical classes is compulsory**. Absenteeism for reasons other than medical, which must be supported with a medical certificate, will only be granted in exceptional circumstances, with prior communication. Students who absent themselves from practical classes without valid medical certificates may find that their evaluation marks for their continuous assessment are adjusted *pro rata*.

Physiology-based labs will be held in the Physiology Laboratory, Room 405.229. University safety regulations require that students wear **white lab coats** and suitable **closed-top shoes** for all practicals held in the laboratory area. Mobile phones must be **TURNED OFF** during the laboratory session. Failure to comply with these rules may result in exclusion from the laboratory class. A statement on University regulations about Laboratory Safety Policy can be viewed at [http://www.edusafe.edu.au/curtin/policies/labsafety.html](http://www.edusafe.edu.au/curtin/policies/labsafety.html).

Learning Resources

**Essential Texts:**

- **Silverthorn, DU (2010).** Human Physiology: An Integrated Approach (5th ed.); *Pearson Education Inc., publishing as Benjamin Cummings, San Francisco, USA.*

**Recommended Texts:**

You do not have to purchase the following textbooks but you may like to refer to them.

- **#Silverthorn, DU and Hill, RD (2010).** Student Workbook: Human Physiology: An Integrated Approach, (5th ed.); *Pearson Education Inc., publishing as Benjamin Cummings,*


*Recommended purchase from the University Bookshop*
READING LIST: All held in closed reserve in the library


Fishman, AP (1997). The Respiratory System. American Physiological Society, Bethesda, Maryland, USA.


Detailed information on assessment tasks

1. The Topic Tests will consist of MCQ and SAQ based upon lecture content.
2. Practical assessment is based upon 5 practicals. For each, a prelab and lab worksheet/report must be completed and handed in for marking at the conclusion of your lab session. Failure to present either worksheet will result in total loss of marks for that component (see handout).
3. The final examination will be a 3 hour extended-answer paper based on the lecture and practical material. There will be some choice. It will be a closed book exam, and conducted during the official university examination period.

Fair assessment through moderation

Moderation describes a quality assurance process to ensure that assessments are appropriate to the learning outcomes, and that student work is consistently evaluated by assessors. Minimum standards for the moderation of assessment are described in the Assessment Manual, available from policies.curtin.edu.au/policies/teachingandlearning.cfm

Late penalties

This ensures that the requirements for submission of assignments and other work to be assessed are fair, transparent, equitable, and that penalties are consistently applied.

1. All assessments which students are required to submit will have a due date and time specified on the Unit Outline.
2. Accepting late submission of assignments or other work will be determined by the unit coordinator or Head of School and will be specified on the Unit Outline.
3. If late submission of assignments or other work is not accepted, students will receive a penalty of 100% after the due date and time ie a zero mark for the late assessment.
4. If late submission of assignments or other work is accepted, students will be penalised by ten percent per working day for a late assessment submission (eg a mark equivalent to 10% of the total allocated for the assessment will be deducted from the marked value for every day that the assessment is late). This means that an assignment worth 20 will have two marks deducted per working day late. Hence if it was handed in three working days late and marked as 12/20, the student would receive 6/20. An assessment more than seven working days overdue will not be marked. Work submitted after this time (due date plus seven days) may result in a Fail - Incomplete (F-IN) grade being awarded for the unit.

Pass requirements

ALL ASSESSMENTS MUST BE COMPLETED AND PRESENTED FOR MARKING TO PASS THIS UNIT. Please note that it is the responsibility of the student to have all requested reports submitted by the due dates. Failure to fulfill this obligation without adequate reason may result in the loss of marks allocated for that particular assessment. Similarly, students are reminded that absenteeism from scheduled assessment and laboratory practicals must be supported with a valid medical certificate. Students choosing not to do so, will forfeit the mark allocated for that particular assessment.
Referencing style
Students should use the Chicago referencing style when preparing assignments. More information can be found on this style from the Library web site: library.curtin.edu.au/research_and_information_skills/referencing

Plagiarism
Plagiarism occurs when work or property of another person is presented as one's own, without appropriate acknowledgement or referencing. Plagiarism is a serious offence. For more information refer to academicintegrity.curtin.edu.au

Plagiarism Monitoring
Work submitted may be subjected to a plagiarism detection process, which may include the use of systems such as ‘Turnitin’. For further information see http://academicintegrity.curtin.edu.au/students/turnitin.cfm.

Additional information
Enrolment:
It is your responsibility to ensure that your enrolment is correct - you can check your enrolment through the eStudent option on OASIS, where you can also print an Enrolment Advice.

Supplementary/Deferred Exams:
Supplementary and deferred examinations granted by School of Biomedical Sciences will be held week beginning November 19th, 2012. Notification to students will be made after the School of Biomedical Sciences Board of Examiners meeting via the Official Communications Channel (OCC) in OASIS. It is the student’s responsibility to check their OASIS account for official Curtin correspondence on a weekly basis. If your results show that you have been awarded a supplementary or deferred exam you should immediately check your OASIS email for details.

Student Rights and Responsibilities
It is the responsibility of every student to be aware of all relevant legislation and policies and procedures relating to his or her rights and responsibilities as a student. These include:

- the Student Charter
- the University's Guiding Ethical Principles
- the University's policy and statements on plagiarism and academic integrity
- copyright principles and responsibilities
- the University's policies on appropriate use of software and computer facilities

Information on all these things is available through the University's “Student Rights and Responsibilities” website at: students.curtin.edu.au/rights.

Recent unit changes
We welcome feedback as one way to keep improving this unit. Students are encouraged to give unit feedback through eVALUate, Curtin’s online student feedback system (http://evaluate.curtin.edu.au/info/index.cfm).

http://evaluate.curtin.edu.au/info/dates.cfm
## PHYSIOLOGY 232 LECTURE SCHEDULE

**Semester 2, 2012**

*Monday 10.30-12.00pm, Room 307.103; Friday 4.00-5.30pm, Room: 302.002.*

<table>
<thead>
<tr>
<th>Week No.</th>
<th>Date</th>
<th>Lecture Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>16 July</td>
<td>CVS Physiology</td>
</tr>
<tr>
<td>2.</td>
<td>23 July</td>
<td>CVS Physiology</td>
</tr>
<tr>
<td>3.</td>
<td>30 July</td>
<td>CVS Physiology</td>
</tr>
<tr>
<td>4.</td>
<td>06 August</td>
<td>CVS Physiology</td>
</tr>
<tr>
<td>5.</td>
<td>13 August</td>
<td>CVS Physiology</td>
</tr>
<tr>
<td>6.</td>
<td>20 August</td>
<td>Respiratory Physiology</td>
</tr>
<tr>
<td>7.</td>
<td><strong>27 August</strong></td>
<td><strong>WEEK FREE FROM CLASS CONTACT</strong></td>
</tr>
<tr>
<td>8.</td>
<td>03 September</td>
<td>Respiratory Physiology</td>
</tr>
<tr>
<td>9.</td>
<td>10 September</td>
<td>Respiratory Physiology</td>
</tr>
<tr>
<td>10.</td>
<td>17 September</td>
<td>Renal Physiology</td>
</tr>
<tr>
<td>11.</td>
<td>24 September</td>
<td>Renal Physiology</td>
</tr>
<tr>
<td>12.</td>
<td>01 October</td>
<td>Fluid &amp; Electolyte Balance</td>
</tr>
<tr>
<td>13.</td>
<td>08 October</td>
<td>Fluid &amp; Electolyte Balance</td>
</tr>
<tr>
<td>14.</td>
<td><strong>15 October</strong></td>
<td><strong>STUDY WEEK</strong></td>
</tr>
<tr>
<td>15.</td>
<td><strong>22 October</strong></td>
<td><strong>EXAMINATIONS</strong></td>
</tr>
<tr>
<td>16.</td>
<td><strong>29 October</strong></td>
<td><strong>EXAMINATIONS</strong></td>
</tr>
</tbody>
</table>
PRACTICAL SCHEDULE FOR SEMESTER 2, 2012

**Groups A & C:** Thursdays: 9.00 – 1.00pm, Room 405.229  
**Groups B & D:** Thursdays: 2.00 – 6.00pm, Room 405.229

Physiology-based labs will be held in the Physiology Laboratory, Room 405.229. University safety regulations require that students wear white lab coats and suitable closed-top shoes for all practicals held in the laboratory area. Mobile phones must be TURNED OFF during the laboratory session. Failure to comply with these rules may result in exclusion from the laboratory class.

<table>
<thead>
<tr>
<th>Week</th>
<th>Week Beginning</th>
<th>GROUP A (am) or B (pm) Practical Topics</th>
<th>GROUP C (am) or D (pm) Practical Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16.07.12</td>
<td>Introduction to the ECG (www)</td>
<td>NO PRACTICAL THIS WEEK</td>
</tr>
<tr>
<td>2</td>
<td>23.07.12</td>
<td>*Electrical Activity of the Heart</td>
<td>Introduction to the ECG (www)</td>
</tr>
<tr>
<td>3</td>
<td>30.07.12</td>
<td>CVS Dynamics (PhysioEx)</td>
<td>Electrical Activity of the Heart</td>
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<tr>
<td>4</td>
<td>06.08.12</td>
<td>Cardiovascular Homeostasis</td>
<td>CVS Dynamics (PhysioEx)</td>
</tr>
<tr>
<td>5</td>
<td>13.08.12</td>
<td>Respiratory mechanics (PhysioEx)</td>
<td>Cardiovascular Homeostasis</td>
</tr>
<tr>
<td>6</td>
<td>20.08.12</td>
<td>Respiratory Ventilation</td>
<td>Respiratory mechanics (PhysioEx)</td>
</tr>
<tr>
<td>7</td>
<td>27.08.12</td>
<td>WEEK FREE</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>03.09.12</td>
<td>Exercise Physiology (www)</td>
<td>Respiratory Ventilation</td>
</tr>
<tr>
<td>9</td>
<td>10.09.12</td>
<td>Physiology of Exercise</td>
<td>Exercise Physiology (www)</td>
</tr>
<tr>
<td>10</td>
<td>17.09.12</td>
<td>Nephron (PhysioEx)</td>
<td>Physiology of Exercise</td>
</tr>
<tr>
<td>11</td>
<td>24.09.12</td>
<td>Water Diuresis</td>
<td>Nephron (PhysioEx)</td>
</tr>
<tr>
<td>12</td>
<td>01.10.12</td>
<td>NO PRACTICAL THIS WEEK</td>
<td>Water Diuresis</td>
</tr>
<tr>
<td>13</td>
<td>08.10.12</td>
<td>NO PRACTICAL THIS WEEK</td>
<td>NO PRACTICAL THIS WEEK</td>
</tr>
<tr>
<td>14</td>
<td>15.10.12</td>
<td></td>
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<tr>
<td>15/16</td>
<td>22 Oct-02 Nov.</td>
<td>WRITTEN THEORY EXAMINATION DURING THIS PERIOD</td>
<td></td>
</tr>
</tbody>
</table>

*Practicals in **bold type** are those that will be assessed with completed worksheets/reports which are to be handed-in for marking; no extensions are permissible. For each, a prelab (to be handed-in at the start of the lab) and lab worksheet/report must be completed by the due date and presented for marking. Failure to hand-in either worksheet will result in total loss of marks for that component (see additional handout).