Unit Outline
HUMB2006 Exercise Physiology
Semester 1, 2017

Unit study package code: HUMB2006
Mode of study: Internal
Tuition pattern summary: Note: For any specific variations to this tuition pattern and for precise information refer to the Learning Activities section.
Lecture: 1 x 2 Hours Weekly
Practical: 1 x 2 Hours Weekly
This unit does not have a fieldwork component.
Credit Value: 25.0
Pre-requisite units:
314152 (v.0) Exercise Science for Health 100 or any previous version
OR
REHT1001 (v.0) Exercise Science for Health or any previous version
AND
314163 (v.0) Bachelor of Science (Exercise, Sports and Rehabilitation Science) or any previous version
OR
B-EXSPRH (v.0) Bachelor of Science (Exercise, Sports and Rehabilitation Science) or any previous version
Co-requisite units: Nil
Anti-requisite units: Nil
Result type: Grade/Mark
Approved incidental fees: Information about approved incidental fees can be obtained from our website. Visit fees.curtin.edu.au/incidental_fees.cfm for details.
Unit coordinator:
Title: Dr
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Email: Angela.Spence@curtin.edu.au
Location: Building: 408 - Room: 3540
Teaching Staff:
Name: Carly Brade
Phone: 08 9226 3620
Email: Carly.Brade@curtin.edu.au
Location: Building: 408 - Room: 3540
Administrative contact:
Name: Suzanne James
Phone: 08 9266 3608
Email: S.James@curtin.edu.au
Location: Building: 408 - Room: 3506

Acknowledgement of Country
We respectfully acknowledge the Indigenous Elders, custodians, their descendants and kin of this land past and present. The Centre for Aboriginal Studies aspires to contribute to positive social change for Indigenous Australians through higher education and research.

Syllabus

This unit develops a deeper understanding of healthy and trained individuals’ physiological responses to acute and chronic exercise. Aerobic, anaerobic and resistance modes of exercise will be examined. Following appropriate selection of exercise tests, submaximal exercise responses and maximal exercise capacities are assessed and the results interpreted and reported.

Introduction

Welcome to Exercise Physiology HUMB2006. On behalf of the teaching staff, we hope you find this unit to be interesting and relevant to your studies in exercise science. While this is a challenging unit, we have taken a holistic approach to the unit design, which includes theoretical and practical learning content and assessment items aimed at developing your knowledge and skills in the area. The study of exercise physiology is a broad topic incorporating elements from scientific disciplines, hence a large quantity of materials are presented. A diligent and regular study pattern coupled with engaged participation in class throughout the semester is expected and encouraged. Regular practice of skills outside of class times is required to develop the required level of competence. It is also recommended that students spend approximately 12 hours of study (inclusive of lectures, practical sessions, tutorials, individual and group study) per week for this unit. This unit is fundamental to many units in the course hence failure of this unit will cause delays in your course completion. Please refer to the Pass Requirements for more detail.

Unit Learning Outcomes

All graduates of Curtin University achieve a set of nine graduate attributes during their course of study. These tell an employer that, through your studies, you have acquired discipline knowledge and a range of other skills and attributes which employers say would be useful in a professional setting. Each unit in your course addresses the graduate attributes through a clearly identified set of learning outcomes. They form a vital part in the process referred to as assurance of learning. The learning outcomes tell you what you are expected to know, understand or be able to do in order to be successful in this unit. Each assessment for this unit is carefully designed to test your achievement of one or more of the unit learning outcomes. On successfully completing all of the assessments you will have achieved all of these learning outcomes.

Your course has been designed so that on graduating we can say you will have achieved all of Curtin’s Graduate Attributes through the assurance of learning process in each unit.

<table>
<thead>
<tr>
<th>On successful completion of this unit students can:</th>
<th>Graduate Attributes addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Contrast the metabolic, cardiovascular, pulmonary and neuromuscular systems adaptation to the stress of exercise in normal healthy individuals with that of trained individuals</td>
<td>📏💡</td>
</tr>
<tr>
<td>2 Apply and interpret results of common physiological tests</td>
<td>📈💡</td>
</tr>
<tr>
<td>3 Compare and contrast between acute and chronic responses to exercise stress in healthy and trained individuals</td>
<td>📈💡</td>
</tr>
</tbody>
</table>
### Curtin’s Graduate Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply discipline knowledge</td>
<td></td>
</tr>
<tr>
<td>Thinking skills</td>
<td>(use analytical skills to solve problems)</td>
</tr>
<tr>
<td>Communication skills</td>
<td></td>
</tr>
<tr>
<td>Technology skills</td>
<td></td>
</tr>
<tr>
<td>International perspective</td>
<td>(value the perspectives of others)</td>
</tr>
<tr>
<td>Cultural understanding</td>
<td>(value the perspectives of others)</td>
</tr>
<tr>
<td>Information skills</td>
<td>(confidence to investigate new ideas)</td>
</tr>
<tr>
<td>Learning how to learn</td>
<td>(apply principles learnt to new situations) (confidence to tackle unfamiliar problems)</td>
</tr>
<tr>
<td>Professional Skills</td>
<td>(work independently and as a team) (plan own work)</td>
</tr>
</tbody>
</table>

Find out more about Curtin’s Graduate attributes at the Office of Teaching & Learning website: [ctl.curtin.edu.au](http://ctl.curtin.edu.au)

### Learning Activities

The outcomes for this unit will be achieved by a combination of lecture, tutorial, practical, workshop classes, and directed independent learning.

**Lectures**: 1 x 2 hour lecture scheduled weekly.

**Practicals/Tutorials/Workshop/DIL**: 1 x 2 hour class scheduled weekly.

Unit Guide and Workbook: A combined lecture guide and laboratory workbook is available for this unit. The guide and workbook is divided into topics, each of which describes the mode of study used to cover the content, indicates required prior knowledge, specific readings, and outlines activities to direct the learning in order to achieve the learning outcomes specified for that topic. Students are expected to bring the unit guide and workbook to all classes and complete all components of the unit guide and workbook to ensure that all available information for each topic is covered. This will assist with guiding student learning throughout the semester in preparation for the final examination. Items described as directed independent learning are to be completed in students own study time outside of class. At the discretion of the lecturer, lecture notes may be provided as .pdf documents available from FLECS-Blackboard. All materials presented in the unit guide and workbook is examinable.

In addition, the following general objectives are provided to assist students in achieving the unit learning outcomes. During the various components of this unit students should aim to demonstrate the ongoing development of:

- Verbal communication skills:
  - to obtain information when interacting with clients for the purpose of applying assessment and analysis techniques
  - for demonstrating and teaching movement and assessment tasks
  - for providing relevant feedback to clients and colleagues
- Written communication skills
- Observation skills
- Peer learning skills and strategies
- Self-assessment skills
- Skills in time management and work time assessment

### Learning Resources

#### Essential texts

The required textbook(s) for this unit are:

- The required textbook(s) for this unit are:
  - The text is available from the Curtin University Bookshop. The preferred format is hard copy.
  - (ISBN/ISSN: 9781451191554))

#### Other resources
1. Recommended Text
You are not required to purchase the following textbook(s), however you may wish to refer to them for additional information:

2. Online Resources
Exercise Physiology (HUMB2006) online unit in FLECS-Blackboard.

3. Unit Guide and Workbook
Exercise Physiology Guide and Workbook. The guide provides background information, activities and directed reading for the various topics covered. Students should refer to the Program Calendar in this unit outline to determine which topics are to be covered each week.

4. Additional Unit Materials
Reference texts (key references are listed in the Guide and Workbook, are available via the Curtin Library)

Assessment
Assessment schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Value %</th>
<th>Date Due</th>
<th>Unit Learning Outcome(s) Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>20 percent</td>
<td>Week: Week 9 TBC Day: Wed - Fri Time: Students to book with Assessment Centre</td>
<td>1,3</td>
</tr>
<tr>
<td>Practical examination</td>
<td>30 percent</td>
<td>Week: Examination Period Day: TBA Time: TBA</td>
<td>2</td>
</tr>
<tr>
<td>Written examination</td>
<td>50 percent</td>
<td>Week: Examination Period Day: TBA Time: TBA</td>
<td>1,2,3</td>
</tr>
</tbody>
</table>

Detailed information on assessment tasks

1. The assessment item will be in the form of an invigilated e-Test, to be completed in Academic Week 9 and will comprise of multiple choice questions covering contents presented during the first six (6) weeks of lectures, practicals and tutorial sessions, readings and the unit guide and workbook. Students are required to book their assessment via the Assessment Centre directly. Results for this assessment will be posted on Grade Centre of the Blackboard unit and general feedback will be available in Week 11.

2. The Practical Examination will be held during the University’s end of semester examination period and will draw on materials and practical skills learnt throughout the semester. Students are reminded that the required skills for the examination need to be practised throughout the semester, during practical/tutorial classes and outside of class time as required, to ensure confidence and competence for successful completion during the examination.

Details of the practical examination are summarised below:
Examination duration: 15 minutes (5 minutes reading time). In the event of a FAIL grade, students may have an additional attempt to pass the practical exam during the supplementary examination period at the discretion of the Unit Coordinator and Board of Examiners. Failure to pass the practical examination in a second attempt will result in a FAIL grade for the unit. In the event that the correct safety and infection control protocols are not followed, the result will be an automatic FAIL grade.

Examiners will judge the student based on the following broad areas:
Demonstration of professionalism and confidence.
Client interaction, clarity of instructions, and client care.
Skills in performing the requirements of the task, within an acceptable timeframe.
Safety, cleanliness and equipment care.
Knowledge of the task including a degree of knowledge with respect to the importance and expected empirical data.

Examinable tasks
The examination can consist of a combination of any/all of the following tasks:
Adult pre-exercise screening and anthropometry.
Assessment of lung function using spirometry.
Assembly of a Hans-Rudolph valve for metabolic cart exercise testing.
Measurement of blood pressure via auscultation.
Measurement of heart rate via telemetry.
Lactate Pro use, fingertip blood sampling and measurement of blood lactate.
Accu-Chek use, fingertip blood sampling and measurement of blood glucose.
Electrocardiography electrode placement, skin preparation and heart rate calculation.

Safety Competencies
Due to the nature of practical examinations, it is possible that students may demonstrate the majority of practical skills to an adequate standard but have some risk management issues identified during their exam performance. Risk management is an important aspect of clinical practice, and therefore this is not a passing performance. In this event, students may be offered the opportunity to complete a “Safety Competency”. A safety competency requires the student to independently identify their safety issue/s and rectify them during a demonstration of the relevant practical skills. A student who satisfactorily completes the safety competency may be able to avoid the need for a supplementary examination. Therefore, safety competencies are scheduled prior to the Board of Examiners meeting in the week after the exam period. Students will need to make themselves available at the specified times in the week following the practical examinations if they wish to take up this opportunity. If a student does not take up this opportunity or is unavailable at the scheduled time they will receive a failed grade, and may be offered a supplementary examination at the discretion of the Board of Examiners.

3. A two (2) hour Written Examination will be held during the University’s end of semester examination period and will consist of multiple choice questions, short answer questions and extended answer questions related to theoretical and conceptual knowledge in exercise physiology and practical skills. Questions can be derived from lectures, practical classes and tutorials as well as unit guide and workbook content, inclusive of directed readings as indicated. The written examination is prepared by the Unit Coordinator in consultation with tutors and other staff involved in teaching the unit. Written examinations are subject to a review process whereby the paper is reviewed by the unit co-examiner and one other staff member from the School of Physiotherapy and Exercise Science to ensure that the questions use clear language, are appropriate for the level of the course, and adequately assess the unit objectives.

Pass requirements
Assessments for this unit will consist of various modes of assessment as listed under Assessment Tasks. Students must achieve the following criteria in order to pass this unit:
A mark of 50% or greater for the Practical Examination
A mark of 50% or greater for the Written Examination
An overall mark of 50% or greater for the Unit
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 evaluated consistently by assessors. Minimum standards for the moderation of assessment are described in the Assessment and Student Progression Manual, available from policies.curtin.edu.au/policies/teachingandlearning.cfm

Late assessment policy

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 students are required to submit will have a due date and time specified on this Unit Outline.
2. Late submission of assessments is not accepted in this unit. Students will receive a zero mark for any assessment item submitted late.

Assessment extension

A student unable to complete an assessment task by/on the original published date/time (eg examinations, tests) or due date/time (eg assignments) must apply for an assessment extension using the Assessment Extension form (available from the Forms page at students.curtin.edu.au/administration/) as prescribed by the Academic Registrar. It is the responsibility of the student to demonstrate and provide evidence for exceptional circumstances beyond the student's control that prevent them from completing/submitting the assessment task.

The student will be expected to lodge the form and supporting documentation with the unit coordinator before the assessment date/time or due date/time. An application may be accepted up to five working days after the date or due date of the assessment task where the student is able to provide an acceptable explanation as to why he or she was not able to submit the application prior to the assessment date. An application for an assessment extension will not be accepted after the date of the Board of Examiners' meeting.

Deferred assessments

If your results show that you have been granted a deferred assessment you should immediately check OASIS for details.

Deferred examinations/tests will be held from 10/07/2017 to 14/07/2017. Notification to students will be made after the Board of Examiners’ meeting via the Official Communications Channel (OCC) in OASIS.

Supplementary assessments

Supplementary assessments, if granted by the Board of Examiners, will have a due date or be held between 10/07/2017 and 14/07/2017. Notification to students will be made after the Board of Examiners’ meeting via the Official Communications Channel (OCC) in OASIS.

It is the responsibility of students to be available to complete the requirements of a supplementary assessment. If your results show that you have been granted a supplementary assessment you should immediately check OASIS for details.

Reasonable adjustments for students with disabilities/health circumstances likely to impact on studies

A Curtin Access Plan (CAP) is a document that outlines the type and level of support required by a student with a disability or health condition to have equitable access to their studies at Curtin. This support can include alternative exam or test arrangements, study materials in accessible formats, access to Curtin’s facilities and services or other support as discussed with an advisor from Disability Services (disability.curtin.edu.au). Documentation is required from your treating Health Professional to confirm your health circumstances.

If you think you may be eligible for a CAP, please contact Disability Services. If you already have a CAP please provide it to the Unit Coordinator at the beginning of each semester.
Referencing style
The referencing style for this unit is APA 6th Ed.
More information can be found on this style from the Library web site:

Copyright
© Curtin University. The course material for this unit is provided to you for your own research and study only. It is subject to copyright. It is a copyright infringement to make this material available on third party websites.

Academic Integrity (including plagiarism and cheating)
Any conduct by a student that is dishonest or unfair in connection with any academic work is considered to be academic misconduct. Plagiarism and cheating are serious offences that will be investigated and may result in penalties such as reduced or zero grades, annulled units or even termination from the course.

Plagiarism occurs when work or property of another person is presented as one’s own, without appropriate acknowledgement or referencing. Submitting work which has been produced by someone else (e.g. allowing or contracting another person to do the work for which you claim authorship) is also plagiarism. Submitted work is subjected to a plagiarism detection process, which may include the use of text matching systems or interviews with students to determine authorship.

Cheating includes (but is not limited to) asking or paying someone to complete an assessment task for you or any use of unauthorised materials or assistance during an examination or test.

From Semester 1, 2016, all incoming coursework students are required to complete Curtin’s Academic Integrity Program (AIP). If a student does not pass the program by the end of their first study period of enrolment at Curtin, their marks will be withheld until they pass. More information about the AIP can be found at:
https://academicintegrity.curtin.edu.au/students/AIP.cfm

Refer to the Academic Integrity tab in Blackboard or academicintegrity.curtin.edu.au for more information, including student guidelines for avoiding plagiarism.

Information and Communications Technology (ICT) Expectations
Curtin students are expected to have reliable internet access in order to connect to OASIS email and learning systems such as Blackboard and Library Services.

You may also require a computer or mobile device for preparing and submitting your work.

For general ICT assistance, in the first instance please contact OASIS Student Support:
oasisapps.curtin.edu.au/help/general/support.cfm

For specific assistance with any of the items listed below, please contact The Learning Centre:
life.curtin.edu.au/learning-support/learning_centre.htm

- Using Blackboard, the I Drive and Back-Up files
- Introduction to PowerPoint, Word and Excel
Additional information

Personal Hygiene and Infection Control: Exercise Physiology Practical Classes

Please ensure that you use the hand washing facilities provided both at the commencement and completion of laboratory sessions that involve patient/student handling. During practical classes that necessitate exercise participation, students are expected to be dressed appropriately for exercise (no denim is allowed). Shower facilities are available and students are expected to make use of these, along with adequate personal hygiene, prior to and following completion of practical sessions.

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.

Student Rights and Responsibilities

It is the responsibility of every student to be aware of all relevant legislation, policies and procedures relating to their rights and responsibilities as a student. These include:

- the Student Charter
- Values and Signature Behaviours
- 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.

Student Equity

There are a number of factors that might disadvantage some students from participating in their studies or assessments to the best of their ability, under standard conditions. These factors may include a disability or medical condition (e.g. mental illness, chronic illness, physical or sensory disability, learning disability), significant family responsibilities, pregnancy, religious practices, living in a remote location or another reason. If you believe you may be unfairly disadvantaged on these or other grounds please contact Student Equity at eesj@curtin.edu.au or go to http://eesj.curtin.edu.au/student_equity/index.cfm for more information

You can also contact Counselling and Disability services: http://www.disability.curtin.edu.au or the Multi-faith services: http://life.curtin.edu.au/health-and-wellbeing/about_multifaith_services.htm for further information.

It is important to note that the staff of the university may not be able to meet your needs if they are not informed of your individual circumstances so please get in touch with the appropriate service if you require assistance. For general wellbeing concerns or advice please contact Curtin's Student Wellbeing Advisory Service at: http://life.curtin.edu.au/health-and-wellbeing/student_wellbeing_service.htm

Recent unit changes

Students are encouraged to provide unit feedback through eVALUate, Curtin’s online student feedback system. For more information about eVALUate, please refer to evaluate.curtin.edu.au/info/.

To view previous student feedback about this unit, search for the Unit Summary Report at https://evaluate.curtin.edu.au/student/unit_search.cfm. See https://evaluate.curtin.edu.au/info/dates.cfm to find out when you can eVALUate this unit.

Recent changes to this unit include:

Opportunity for feedback is available to all students in consultation with the teaching staff.
### Program calendar

<table>
<thead>
<tr>
<th>Academic Week</th>
<th>Date Beginning</th>
<th>Lesson Type</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td>27th Feb</td>
<td>Lecture</td>
<td>1. Introduction to Exercise Physiology, Biochemistry and Energy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical/Tutorial</td>
<td>2. Introduction to Laboratory Methods</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Common Physiological Testing Methodologies</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>4. Review: ESSA Pre-exercise Health Screening</td>
</tr>
<tr>
<td><strong>Week 2</strong></td>
<td>6th Mar</td>
<td>Lecture</td>
<td>5. Muscle Structure and Function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical</td>
<td>6. Exercise and Carbohydrates 1</td>
</tr>
<tr>
<td><strong>Week 3</strong></td>
<td>13th Mar</td>
<td>Lecture</td>
<td>7. Sources of Energy 1 Carbohydrates, Lipids and Proteins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical/Tutorial</td>
<td>8. Exercise and Carbohydrates 2</td>
</tr>
<tr>
<td><strong>Week 4</strong></td>
<td>20th Mar</td>
<td>Lecture</td>
<td>9. Sources of Energy 2 ATP and Phosphocreatine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical/Tutorial</td>
<td>10. Resting Oxygen Consumption (VO₂)</td>
</tr>
<tr>
<td><strong>Week 5</strong></td>
<td>27th Mar</td>
<td>Lecture</td>
<td>11. Glycolysis 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tutorial</td>
<td>12. Daily Energy Consumption Calculation</td>
</tr>
<tr>
<td><strong>Week 6</strong></td>
<td>3rd Apr</td>
<td>Lecture</td>
<td>13. Glycolysis 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DIL</td>
<td>14. Muscle Structure and Function Literature Review</td>
</tr>
<tr>
<td><strong>Week 7</strong></td>
<td>10th Apr</td>
<td>Tuition Free Week</td>
<td></td>
</tr>
<tr>
<td><strong>Week 8</strong></td>
<td>17th Apr</td>
<td>Tuition Free Week</td>
<td></td>
</tr>
<tr>
<td><strong>Week 9</strong></td>
<td>24th Apr</td>
<td>Lecture</td>
<td>15. Energy Release from Lipids and Proteins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DIL</td>
<td>16. High Protein and High Fat Diets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessment</td>
<td>Mid-Semester invigilated eTest</td>
</tr>
<tr>
<td><strong>Week 10</strong></td>
<td>1st May</td>
<td>Lecture</td>
<td>17. Hormonal Control during Exercise</td>
</tr>
</tbody>
</table>
## Practical

### Assessment

Field Based Testing Competency

<table>
<thead>
<tr>
<th>Week 11</th>
<th>8th May</th>
<th>Lecture</th>
<th>19. Overview of the Cardiorespiratory System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Practical</td>
<td>20. Cardiorespiratory Function 1: Spirometry</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21. Cardiorespiratory Function 2: Blood Pressure</td>
</tr>
<tr>
<td>Week 12</td>
<td>15th May</td>
<td>Lecture</td>
<td>22. The Ventilatory Response to Exercise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical</td>
<td>23. Measurement of Maximal Oxygen Consumption ($V_O^{2\max}$) 1</td>
</tr>
<tr>
<td>Week 13</td>
<td>22nd May</td>
<td>Lecture</td>
<td>24. The Cardiovascular Response to Exercise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tutorial</td>
<td>25. Measurement of Maximal Oxygen Consumption ($V_O^{2\max}$) 2</td>
</tr>
<tr>
<td>Week 14</td>
<td>29th May</td>
<td>Lecture</td>
<td>26. Integrative Physiology during Exercise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical /Tutorial</td>
<td>27. Resting Electrocardiography (ECG)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28. Blood Pressure Measurement During Exercise</td>
</tr>
</tbody>
</table>

| Week 15 | 5th Jun | Study Week |
| Week 16 | 12th Jun | Examinations |
| Week 17 | 19th Jun | Examinations |