MEDI321: Advanced Exercise Physiology

Subject Outline
Autumn, 2016
On-Campus
Wollongong

Subject Information
Credit Points: 8
Pre-requisite(s): SHS 221 or MEDI221
Co-requisite(s): Nil
Restrictions: This subject has restricted entry. Students from other specialisations must seek academic approval to enrol in this subject, or you may be removed from the subject.
Contact Hours: 2 x 1-hr Lectures; 4 x 3-hr Laboratories (run in 3-week cycles)

Subject Contacts
Subject Coordinator/Lecturer
Name: Nigel Taylor
Location: Building 41, Room 311
Telephone: Personal consultation only
Email: Personal consultation only
Consultation mode and times: Monday 8-10 AM or by appointment

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Name: Mrs Elizabeth Taylor
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Technical Officer
Name: Miss Petra Olbrechtova
Location: Building 15, Room G03
Telephone: 61 2 4221 4636
Email: petra.olbrechtova@uow.edu.au

Student Support and Advice
For general enquiries please contact StudentHub 41:
Location: 41.138B
Telephone: 61 2 4221 3492
Email: smah-students@uow.edu.au
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Section A: General Information

Subject Objectives

On successful completion of this subject, students will be able to:

1. Demonstrate an understanding of the influence of genetics in the expression of physical power, either directly or via its influence upon other physiological functions;
2. Identify the links within the oxygen transport chain, and discuss the action and interaction of these links in relation to the cause(s) of maximal exercise limits;
3. Differentiate between the anatomical and physiological characteristics of men and women, as they relate to exercise;
4. Understand the role of exercise upon menstrual function;
5. Demonstrate anatomical and physiological comprehension of the process of menopause;
6. Be conversant with the manner in which ageing data are presented: e.g., survival curves and age-specific mortality rates;
7. Differentiate between primary and secondary ageing process, and provide examples of each;
8. Understand the primary biological changes in the ageing process, with specific attention to: energy metabolism, maximal aerobic power and cardiovascular, respiratory and skeletal muscle function;
9. Understand the role of body core temperature change in the heat adaptation process;
10. Understand the general process of human heat acclimation in terms of sudomotor and vasomotor function.

Subject Description

This subject is designed to serve those with a specific undergraduate focus in human exercise physiology, and for those wishing to undertake postgraduate studies in exercise physiology, or within areas for which such knowledge is considered to be a pre-requisite.

Most physiology subjects within the School of Medicine deal with human function in relatively unstressed states. Yet, from an evolutionary perspective, man evolved as a being preoccupied with outdoor, physical activity. While we have now become adapted to a more sedentary lifestyle, exercise still provides a stimulus that pushes physiological function to extreme levels, providing a unique window through which the impact of stress upon human function may be explored. Therefore, an examination of physiological functions during rest and exercise across a wide range of environmental conditions, and of how these functions may adapt through repeated exposures, forms an integral part of a sound physiological curriculum.

The aim of this subject is to develop an understanding of physiological function under stress, across both age and health spectra. As such, this subject may well be described as Stress or Work Physiology. While the majority of the content will focus upon the average person (male and female), subject matter will cover both ends of the health spectrum (from disease states to the elite performer), several age groups (adolescent, adult, menopausal and the elderly), and the transition stages between these groups. The two Exercise Physiology subjects aim at providing both descriptions and explanations of functional changes accompanying both acute and chronic physical activity, often undertaken under extreme environmental states.

eLearning Space

This subject has materials and activities available via eLearning. To access eLearning you must have a UOW user account name and password, and be enrolled in the subject. eLearning is accessed via SOLS (student online services). Log on to SOLS and then click on the eLearning link in the menu column. For information regarding the eLearning spaces please use the following link:
http://uowblogs.com/moodlelab/files/2013/05/Moodle_StudentGuide-1petpo7.pdf

Lecture, Tutorial, Laboratory Times

All timetable information is subject to variation. Check the latest information on the university web timetable via the Timetable link on the Current Students webpage or log into SOLS to view your


### Readings, References and Materials

#### Textbooks

The following text(s) will need to be purchased by students enrolled in this class.


#### Prescribed Readings (includes eReadings)

Each laboratory activity has essential reading. This material is available via Moodle.

Lecture notes will also be made available (in advance) via Moodle.

The eReadings for this subject are designed to support laboratory and lecture content and these are available through the Library website.

#### Materials

Nil

#### Recommended Readings

The following references complement the prescribed readings and textbooks:


Ashcroft. *Life at the extremes: the science of survival.*


Houston, C.S., Cymerman, A., and Sutton, J.R. *Operation Everest II.*


Masoro, E.J. *Handbook of physiology. Section 11: Aging.*


Nunn, J.F. *Nunn's applied respiratory physiology.*

Pandolf et al. *Human performance and environmental medicine at terrestrial extremes.*

Rippe. *Lifestyle Medicine.*

Plowman and Smith. *Exercise physiology for health, fitness and performance.*

Wasserman et al. *Principles of exercise testing and interpretation.*

West, J.B. *Respiratory physiology - the essentials.*

Wilmore and Costill. *Physiology of sport and exercise.*

Wells, C. *Women, sport and performance.*

### Recent Changes to this Subject

Nil
List of Topics Covered

The following topics will be covered in this subject.

Lecture Topics

- Altitude Adaptation
- Women & Exercise
- Limits to Exercise
- Age & Exercise
- Heat Adaptation

Laboratory Topics

- Maximal Exercise
- Efficiency
- Cold Immersion
- Altitude

A Timetable of Topics will be available from the eLearning site in week 1 of session.
# Section B: Assessment

## Assessment Summary

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Form of Assessment</th>
<th>Due Date</th>
<th>Return/Feedback Due Dates</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment 1</td>
<td>Mid-Session Exam</td>
<td>Week 10</td>
<td>Within 21 days of due date</td>
<td>20%</td>
</tr>
<tr>
<td>Assessment 2</td>
<td>Written Report: Group Seminar</td>
<td>Week 5</td>
<td>Within 21 days of due date</td>
<td>21%</td>
</tr>
<tr>
<td>Assessment 3</td>
<td>Oral Presentation: Group Seminar</td>
<td>Weeks 11-13: see timetable for details</td>
<td>Within 21 days of the last seminar</td>
<td>5%</td>
</tr>
<tr>
<td>Assessment 4</td>
<td>Laboratory Report(s)</td>
<td>Friday of last week of lectures before 16:00 hours</td>
<td>Release of results</td>
<td>20%</td>
</tr>
<tr>
<td>Assessment 5</td>
<td>Lab/Seminar Participation</td>
<td>Continuous</td>
<td>Release of results</td>
<td>4%</td>
</tr>
<tr>
<td>Assessment 6</td>
<td>Final Oral Exam</td>
<td></td>
<td>Release of results</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Total Marks** 100%

## Details of Assessment Tasks

### Assessment 1

- **Mid-Session Exam**
  - Due date: In second lecture of week 10
  - Weighting: 20%
  - Submission: Examinations papers and answers must be submitted at the conclusion of the examination.
  - Type of Collaboration: Individual Assessment
  - Length: 50 min
  - Style and format: Multiple choice
  - Subject Learning Outcomes: 1-8
  - Marking Criteria: Negative grading will not be used

### Assessment 2

- **Written Report: Group Seminar**
  - Due date: Week 5
  - Weighting: 21%
  - Submission: These must be handed personally to the subject co-ordinator.
  - Type of Collaboration: Group Project
  - Length: Ten types pages plus references
  - Details: Each group will hand in two type-written reports (at the same time). One will be an one-page summary, whilst the other is a 10-page report (plus references)
  - Style and format: As described in lectures
  - Subject Learning Outcomes: 1-5 and 8-10
  - Marking Criteria: Clarity of writing, logical flow and structuring of ideas, knowledge of subject matter within the topic. Ability to develop clear and well-supported arguments and discussion from the primary data and other published materials. Quality and breadth of supporting publications.
<table>
<thead>
<tr>
<th>Assessment 3</th>
<th>Oral Presentation: Group Seminar</th>
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</thead>
<tbody>
<tr>
<td>Due date</td>
<td>On the designated day during weeks 11-13</td>
</tr>
<tr>
<td>Weighting</td>
<td>5%</td>
</tr>
<tr>
<td>Submission</td>
<td>Oral presentation</td>
</tr>
<tr>
<td>Type of Collaboration</td>
<td>Group Project</td>
</tr>
<tr>
<td>Length</td>
<td>15 min</td>
</tr>
<tr>
<td>Subject Learning Outcomes</td>
<td>1-5 and 8-10</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>Ability to communicate critical concepts from the oral report and to answer questions relating to that material.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment 4</th>
<th>Laboratory Report(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due date</td>
<td>Week 13 (before 16:00 hours on Friday)</td>
</tr>
<tr>
<td>Weighting</td>
<td>20%</td>
</tr>
<tr>
<td>Submission</td>
<td>Submit a hardcopy to the StudentHub 41</td>
</tr>
<tr>
<td>Type of Collaboration</td>
<td>Individual Assessment</td>
</tr>
<tr>
<td>Style and format</td>
<td>As prescribed within the laboratory manual</td>
</tr>
<tr>
<td>Subject Learning Outcomes</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>Clarity and correctness of interpretation of answers to designated questions, use and understanding of relevant scientific literature, and clarity of graphs and figures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment 5</th>
<th>Lab/Seminar Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due date</td>
<td>Attendance at all laboratory sessions is mandatory.</td>
</tr>
<tr>
<td>Weighting</td>
<td>4%</td>
</tr>
<tr>
<td>Submission</td>
<td>No applicable</td>
</tr>
<tr>
<td>Type of Collaboration</td>
<td>Individual Assessment</td>
</tr>
<tr>
<td>Details</td>
<td>Attendance at all laboratory sessions is mandatory. Failure to attend and participate in all laboratories may result in subject failure (see above). Attendance rolls will be taken.</td>
</tr>
<tr>
<td>Subject Learning Outcomes</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>Attendance and active participation in laboratory activities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment 6</th>
<th>Final Oral Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due date</td>
<td>Friday of study recess</td>
</tr>
<tr>
<td>Weighting</td>
<td>30%</td>
</tr>
<tr>
<td>Submission</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Type of Collaboration</td>
<td>Individual Assessment, but performed in pairs</td>
</tr>
<tr>
<td>Length</td>
<td>15 min</td>
</tr>
<tr>
<td>Details</td>
<td>Within the study recess (Friday), a 15-min oral examination will occur. Two academic staff members will administer this examination simultaneously, which will be conducted in pairs.</td>
</tr>
<tr>
<td>Subject Learning Objectives</td>
<td>1-10</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>Clarity and understanding displayed when responding to questions</td>
</tr>
</tbody>
</table>
Minimum Requirements for a Pass in this Subject

To receive a clear pass in this subject a total mark of 50% or more must be achieved. In addition, failure to meet any of the minimum performance requirements is grounds for awarding a Technical Fail (TF) in the subject, even where total marks accumulated are greater than 50%.

The minimum performance requirements for this subject are:

- Attend and actively participate in all laboratory activities
- Attempt and pass every assessment item
- Submit two laboratory reports

Minimum Student Attendance and Participation

It is expected that students will allocate 12 hours per week to this subject, including any required class attendance, completion of prescribed readings and assessment tasks.

Student attendance at laboratory classes is compulsory and students must attend at least 100% of classes. Absences will require the submission of an application for Academic Consideration via SOLS and the presentation of suitable documentation, for example a Medical Certificate, to Student Central as soon as practical. For further details about applying for academic consideration visit the Student Central webpage: http://www.uow.edu.au/student/central/academicconsideration/index.html

Scaling

Final grades may be scaled, and all students taking this subject will be treated as a single group during any scaling process. For the oral examination, grades from both examinations will be scaled by normalising to an identical mean and standard deviation. This will make allowance for variations that may occur between the two examiners.

Late Submission

Late submission of an assessment task without an approved extension of the deadline is not acceptable. If you are unable to submit an assessment due to extenuating circumstances (e.g. medical grounds or compassionate grounds), you can make an application of academic consideration. Not all circumstances qualify for academic consideration. For further details about applying for academic consideration visit the Student Central webpage: http://www.uow.edu.au/student/central/academicconsideration/index.html

Late Submission Penalty

Marks will be deducted for late submission at the rate of 5% of the total possible marks for that particular assessment task per day. This means that if a piece of work is marked out of 100, then the late penalty will be 5 marks per day (5% of 100 possible marks per day). The formula for calculating the late penalty is: the total possible marks x 0.05 x number of days late. For the purposes of this policy a weekend (Saturday and Sunday) will be regarded as two days. For this subject, students must complete and submit all assessment tasks, and these must be of a satisfactory standard, regardless of lateness or loss of marks.

Supplementary Assessments

Supplementary Examinations are only available for the Final Examination, with the following policies governing this process:

Eligibility: Supplementary examinations may only be permitted in extenuating circumstances, such as verified illness beyond the student’s control, or for religious reasons. Thus, a person who did not sit the final examination due to medical or other serious extenuating circumstances will be eligible. Supplementary examinations will not be granted to anyone who sits the final examination (either partially or fully).
Academic Consideration: The student must apply for Academic Consideration, supported by appropriate documentation (e.g., medical certificate), through SOLS (go to Academic Consideration and request Supplementary Examination); do not contact either the School or subject co-ordinator. Only one Supplementary Examination will be offered each semester. This must be organised with the subject co-ordinator (at a time of mutual convenience), and not through the Academic Registrar's Division (ARD) or the School. Students can log on to SOLS and click on the link titled “Supplementary Assessment” to view any applicable offers or use the following link: http://www.uow.edu.au/student/exams/suppassess/index.html

System of Referencing Used for Written Work
For this subject, follow the American Psychological Association (APA) style manual with exceptions and recommendations noted below.

Spelling: The standard for this subject is the Oxford Dictionary.

Author citations: Use authors’ names and not reference numbers.
For citations in parenthesis within the text:
“it is generally recognised that xxxx cures xxxx (Mercer et al., 1992) …”
Note: et al. is an abbreviation for et alia, and therefore must have the “.”
For citations not in parenthesis and within text:
“Horne et al. (1992) has shown that xxxx cures xxxx …”
You can play with: ‘Horne and colleagues’, ‘Horne and associates’.
When citing multiple authors, cite in chronological order not alphabetical.
Never follow the APA rule for multiple authors citations.
Put all references in alphabetical (then chronological) order in the ‘reference’ section of your report.
Where there is more than one reference by the same author (or identical group with same first author) in same year, use lower case letters to identify citation differences (e.g. Lowe et al., 1992a, 1992b).
In the ‘reference’ section, follow the style below:

Use of Internet Sources
Students are able to use the Internet to access the most current information on relevant topics and information. Internet sources should only be used after careful critical analysis of the currency of the information, the role and standing of the sponsoring institution, reputation and credentials of the author, the clarity of the information and the extent to which the information can be supported or ratified by other authoritative sources.

Plagiarism
The full policy on Academic Integrity and Plagiarism is found in the Policy Directory on the UOW website.

“The University's Academic Integrity and Plagiarism Policy, Faculty Handbooks and subject guides clearly set out the University’s expectation that students submit only their own original work for assessment and avoid plagiarising the work of others or cheating. Re-using any of your own work (either in part or in full) which you have submitted previously for assessment is not permitted without appropriate acknowledgement. Plagiarism can be detected and has led to students being expelled from the University.

The use by students of any website that provides access to essays or other assessment items (sometimes marketed as ‘resources’), is extremely unwise. Students who provide an assessment item (or provide access to an assessment item) to others, either directly or indirectly (for example by uploading an assessment item to a website) are considered by the university to be intentionally or recklessly helping other students to cheat. This is considered academic misconduct and students place themselves at risk of being expelled from the University.”
Submission of Seminar Assignments
Seminar assignments must be given to the subject co-ordinator in person. DO NOT submit these reports to StudentHub41.

Submission of Laboratory Reports
Submit both laboratory reports to StudentHub41. Assessments submitted at StudentHub 41 must have a SATS (Student Assessment Tracking System) coversheet attached to the front of the assessment. Instructions for generating a coversheet can be found on the StudentHub 41 web page: http://smah.uow.edu.au/current-students/UOW151958.html

For an assessment to be successfully submitted at StudentHub 41 please note the following:

- The coversheet must be signed and dated.
- The assessment must have the correct coversheet i.e. the correct subject code and tutorial group (if applicable).
- A legible barcode with all numbers and digits below e.g. UOW20121007656.
- Assessments must be submitted by 4:00pm on the due date.

If an assessment is submitted to StudentHub 41 without any of the above we will contact you through your student email address and advise that you need to return to StudentHub 41 with the correct coversheet. Your assessment won’t be considered submitted until the correct coversheet is attached. This might mean that your assessment is submitted late.

An email receipt will be issued on the same day as submission of assessments and students are required to retain this receipt until they have received the final mark for that assessment task. It is your responsibility to contact StudentHub 41 if you have not received this receipt by the following business day. The receipt is proof of submission of assessments and students will be required to produce this in the event that an assessment task is considered to be lost. Students are also expected to keep a copy of all their submitted assessments in the event that re-submission is required. SATS Group Assessment Coversheets are printed by the lead member of the group and subsequent names can be added in the SATS student interface before printing. All members of the group must sign the printed SATS Group Assessment Coversheet before submitting the assessment.

Note that if assessments are submitted in the after-hours slot at StudentHub 41 it will be scanned into SATS the following business day. Assessments submitted via post will be scanned into SATS on the day of delivery. Any assessments received without the correct assessment coversheet attached will not be accepted by SATS. It is the student’s responsibility to ensure that the correct assessment coversheet is submitted with their assessment.

Students may post their assessments to:
StudentHub 41 (41.138B)
University of Wollongong
Wollongong NSW 2522

Assessments will be considered submitted on the date of postage. It is the student’s responsibility to ensure they have evidence of their submission date if it arrives at the office after due date.

Assessment Return
Seminar assignments will be returned by the subject co-ordinator in lectures. For your laboratory reports, you will be notified by email when marked assignments are available for collection from SMAH Central during business hours. Students will be required to present their student card when collecting marked assignments. In accordance with University Policy, marked assignments will usually only be held for 21 days after the declaration of marks for that assignment.
StudentHub41cbusiness hours and location: Monday – Friday, 9:00 am to 4:30 pm, Building 41.152.
Section C: General Advice

Students should refer to the Faculty of Science, Medicine and Health website for information on policies, learning and support services and other general advice.

University Policies
Students should be familiar with the following University policies:

a. Code of Practice – Teaching and Assessment

b. Student Charter

c. Academic Integrity and Plagiarism Policy

d. Student Academic Consideration Policy

e. Course Progress Policy

f. Graduate Qualities Policy

g. Academic Complaints Policy (Coursework and Honours Students)

h. Policy and Guidelines on Non-Discriminatory Language Practice and Presentation

i. Intellectual Property Policy

Student Support Services and Facilities

Students can access information on student support services and facilities at the following link. This includes information on “Academic Support”, “Starting at University, “Help at University” as well as information and support on “Career’s and Jobs”. http://www.uow.edu.au/student/services/index.html

Student Etiquette

Guidelines on the use of email to contact teaching staff, mobile phone use in class and information on the university guide to eLearning ‘Netiquette’ can be found at http://www.uow.edu.au/student/elearning/netiquette/index.html

Version Control Table

<table>
<thead>
<tr>
<th>Version Control</th>
<th>Release Date</th>
<th>Author/Reviewer</th>
<th>Approved By</th>
<th>Amendment</th>
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<tr>
<td>1</td>
<td>20151120</td>
<td>Nigel Taylor – Subject Coordinator</td>
<td>Mrs Sonia Losinno – ADE Nominee</td>
<td>FINAL MEDI321 Autumn 2016 Subject Outline</td>
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