

EXSS2010: Exercise Physiology

Ourimbah

Semester 1 - 2024



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

OVERVIEW

Course Description A fundamental understanding of exercise physiology is required to understand the performance and health benefits of exercise. This course will advance fundamental knowledge about exercise physiology and discuss the acute responses and adaptations of major body systems to exercise training. Furthermore, it will explore how environmental stressors effect human physiology and introduce sport-specific applications of exercise physiology. By the end of this course, students will have a greater understanding of the underlying physiological determinants of physical performance and how to assess physiological adaptations that occur with exercise.

Academic Progress Requirements Nil

Assumed Knowledge EXSS1050 and HUBS1401
Contact Hours
Ourimbah Laboratory *
Face to Face On Campus
2 hour(s) per week(s) for 12 week(s)
Online Activity
Online
2 hour(s) per week(s) for 13 week(s) starting Week 1

Unit Weighting Workload * This contact type has a compulsory requirement.
10
Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

COURSE OUTLINE

CONTACTS

Course Coordinator **Ourimbah**
Dr Mitch Naughton
Mitch.Naughton@newcastle.edu.au
0413288621
Consultation: Office hours by appointment.

Teaching Staff Other teaching staff will be advised on the course Canvas site.

School Office **School of Biomedical Sciences and Pharmacy**
MS607
Medical Sciences Building
Callaghan
Biomedsci-Admin@newcastle.edu.au
02 49215601 or 49212058
8:30am-5pm (Mon-Fri)

SYLLABUS

Course Content • Energy systems
 • Neuromuscular structure and function
 • Physiological responses to exercise
 • Physiological adaptations to exercise
 • Environmental physiology
 • Sports physiology

Course Learning Outcomes **On successful completion of this course, students will be able to:**
1. Describe the function, regulation and interaction of physiological systems relating to exercise (ESSA 3.2.1);

2. Describe the individual and integrated physiological responses and adaptations to acute and chronic exercise under normal conditions, in different environments, and by external influences (ESSA 3.2.2);

3. Conduct safe and accurate assessments of health, physical activity and exercise capacities with reference to their scientific rationale and limitations (ESSA 7.2.2 and 7.2.4);

4. Describe the principles and rationale for the calibration of equipment in commonly used in assessments and recognise and recalibrate equipment when required (ESSA 7.2.5);

5. Identify considerations and contraindications of assessments and demonstrate an ability to modify and conduct them appropriately for a range of diverse individuals (ESSA 7.2.3 and 7.2.6);

6. Collect, analyse and interpret physiological data obtained during acute exercise, and compare such data between time points, individuals and populations (ESSA 3.2.4).

Course Materials **Recommended Text:**
- William D. McArdle, Frank I. Katch, Victor L. Katch - Exercise Physiology. Nutrition, Energy, and Human Performance. Wolters Kluwer Health, Lippincott Williams & Wilkins. Any Edition.

COMPULSORY REQUIREMENTS

In order to pass this course, each student must complete ALL of the following compulsory requirements:

Contact Hour Requirements:

- Laboratory There is a compulsory attendance requirement in this course. Students must attend 80% of scheduled laboratories.
- Laboratory Induction Requirement - Students must attend and pass the induction requirements before attending these sessions. In order to participate in this course, students must complete a compulsory lab induction.

Course Assessment Requirements:

- Assessment 2 - Tutorial / Laboratory Exercises: Pass Requirement - Students must pass this assessment item to pass the course. Students must obtain a passing grade of 50% for these laboratory reports.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Exercise Physiology and Assessments	Pre-Exercise Health Assessments and Screening and Basic Physiological Assessments	
2	4 Mar	Exercise Bioenergetics	Capillary Blood Collection and Metabolic Responses to Exercise	Online Quiz: 2%
3	11 Mar	Measuring Energy Expenditure	Indirect Calorimetry During Exercise.	Online Quiz: 2%
4	18 Mar	Acute and Chronic Cardiovascular Responses to Exercises	Blood Pressure and ECG During Exercise	Online Quiz: 2%
5	25 Mar	Muscle Structure, Function and Changes to Exercise	Public Holiday (No Laboratory)	Online Quiz: 2%
6	1 Apr	Acute and Chronic Respiratory Responses to Exercises	Spirometry and Respiratory Responses to Exercise.	Online Quiz: 2%
7	8 Apr	Neural Control of Exercise	Introduction to Electromyography	Online Quiz: 2% Laboratory Reports Weeks 1-6 (10%) - Friday 11.59pm
Mid-Semester Recess				
Mid-Semester Recess				
8	29 Apr	Hormonal Responses to Exercise	Practical Exam	Practical Exam (30%) - Lab Class Times
9	6 May	Physiological Assessments of Performance and Fatigue	Assessment of Physiological Capacities Related to Strength and Power	Online Quiz: 2%
10	13 May	Environmental Exercise Physiology	Exercise Thermoregulation	Online Quiz: 2%
11	20 May	Physiological Measures of Sports Performance	Assessment of Performance Capacities Related to Endurance	Online Quiz: 2%
12	27 May	Physical Activity, Occupational and Lifestyle Physiology	Quantifying Lifestyle Physical Activity	Online Quiz: 2%
13	3 Jun	Review Session	Online Review Session	Laboratory Reports Weeks 7-12 (10%) - Friday 11.59pm Final Exam (30%)
Examination Period				
Examination Period				

ASSESSMENTS

This course has 4 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Formal Examination	Formal Exam period	Individual	30%	1, 2, 4, 5, 6
2	Laboratory Exercises*	Submission 1 - Friday, Week 7 at 11.59pm Submission 2 - Friday, Week 13 at 11.59pm	Individual	20%	2, 3, 4, 5, 6
3	Online Quizzes	Sunday 11:59pm each week. Quizzes are released on the previous Sunday 11:59pm.	Individual	20%	1, 2, 5, 6
4	Practical Examination	In Lab Times, Week 8	Individual	30%	3, 4, 5, 6

* This assessment has a compulsory requirement.

Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

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Assessment 1 - Formal Examination

Assessment Type

Formal Examination

Purpose

The purpose of the formal exam is to determine the comprehension and recall of content specific to how the physiology of the body is changed with exercise (across both acute and chronic manners). Further, it will also assess students' knowledge around undertaking and establishing assessments and interpreting changes in key performance and physiological outcomes.

Description

The formal exam covers the content covered within all materials and learning activities across the Semester.

Weighting

30%

Length

120 minutes

Due Date

Formal Exam period

Submission Method

Formal Exam

Assessment Criteria

The Formal Exam will comprise of multiple choice, calculations, and short answer questions. Further information will be provided via Canvas prior to the exam.

Return Method

Not Returned

Feedback Provided

In Person - via appointment..

Assessment 2 - Laboratory Exercises

Assessment Type

Tutorial / Laboratory Exercises

Purpose

The purpose of the laboratory exercises is to assess students' engagement and interpretation of the learning activities undertaken within the timetabled laboratory classes.

Description

Each week students will be required to undertake laboratory activities and to complete learning activities directly related to the session. The Laboratory Exercises will be split into 2 submissions (Week 7 covering weeks 1-6 and Week 13 covering weeks 7-12).

Weighting

20%

Compulsory

Pass requirement - Must pass this assessment item to pass the course.

Requirements

Attempt / Submission Requirement - Students must attempt/submit this assessment item to pass the course.

Due Date

Submission 1 - Friday, Week 7 at 11.59pm
Submission 2 - Friday, Week 13 at 11.59pm

Submission Method	Online
Assessment Criteria	Completion of lab activities and assessment of written work and calculations. Refer to assessment information sheet on Canvas for further information.
Return Method	Online
Feedback Provided	Online
Opportunity to Reattempt	Students WILL be given the opportunity to reattempt this assessment with adverse circumstances.

Assessment 3 - Online Quizzes

Assessment Type	Quiz
Purpose	The purpose of the online quizzes is to ensure that students have a suitable knowledge from the online activities prior to attending each laboratory session.
Description	Each week will have an online quiz taken from lecture materials and other readings that will help inform the laboratory session.
Weighting	20%
Due Date	Sunday 11:59pm each week. Quizzes are released on the previous Sunday 11:59pm.
Submission Method	Online
Assessment Criteria	Correct answers given to match a series of questions.
Return Method	Online
Feedback Provided	Online - Following all quiz submissions.

Assessment 4 - Practical Examination

Assessment Type	Practical Demonstration
Purpose	The purpose of the assessment is for you to demonstrate the practical skills of exercise physiology and your ability to use the appropriate methods and skills to obtain and evaluate data and to answer relevant questions.
Description	The practical exam will consist of different activities around assessing physiological capacities. More details will be provided via Canvas.
Weighting	30%
Due Date	In Lab Times, Week 8
Submission Method	In Class
Assessment Criteria	Demonstration of practical skills and interpretation of data sets. Marking rubric will be provided via Canvas.
Return Method	Not Returned
Feedback Provided	In Person - via appointment.

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.

0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.
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*Skills are those identified for the purposes of assessment task(s).

Attendance

Attendance/participation will be recorded in the following components:

- Laboratory (Method of recording: Written and digital roll.)

Communication Methods

Communication methods used in this course include:

- Email: Students will receive communications via their student email account.
- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Face to Face: Communication will be provided via face to face meetings or supervision.

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

As a result of student feedback, the following changes have been made to this offering of the course:

- The laboratory exercise submission has been split into two sections to provide a more formative learning exercise for students.

Oral Interviews (Vivas)

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the [Oral Examination \(viva\) Procedure](#). In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the [Student Conduct Rule](#).

Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to <https://policies.newcastle.edu.au/document/view-current.php?id=35>.

Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:

<https://policies.newcastle.edu.au/document/view-current.php?id=236>

Important Policy Information

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at <https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures> that support a safe and respectful environment at the University.

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.