

HUBS2503: Clinical Exercise Physiology

Callaghan

Semester 1 - 2024



OVERVIEW

Course Description The course is designed to enhance students' understanding of human physiology and develop their understanding of physiological responses to single bouts of exercise, as well as the adaptations that occur following regular exercise training. Students will participate in practical sessions to gain an understanding of exercise and physical fitness testing.

Assumed Knowledge HUBS1403 Biomedical Science Part 1 and HUBS1404 Biomedical Sciences Part 2 or equivalent. Students are expected to have a basic knowledge and understanding of human anatomy, physiology and biochemistry.

Contact Hours

Callaghan Laboratory
Face to Face On Campus
2 hour(s) per Week for 11 Weeks

Examination
Face to Face On Campus
2 x 2 hours mid-semester examinations

Lecture
Recorded/Online
3 hours per week for 12 weeks

Unit Weighting 10

Workload Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

CONTACTS

Course Coordinator **Callaghan**
Dr Sarah Valkenborghs
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Consultation: Email for an appointment

Teaching Staff

Lecturers:
Sarah Valkenborghs

Laboratory Tutors:
Sarah Valkenborghs, Jenny Mackney, Laura Dowling, Sam Steedman

Laboratory Demonstrators:
Kate Hedley, Anthony Robinson

Technical Officers:
Carolyn Clark, Ashlee Cambourn

COURSE OUTLINE

www.newcastle.edu.au
CRICOS Provider 00109J

SYLLABUS

Course Content

1. Health effects of physical activity and sedentary behaviour
2. Pre-exercise screening and fitness testing
3. Types of exercise and physical fitness
4. Principles of exercise training and types of training
5. Skeletal muscle and exercise: neural control, adaptations and injuries
6. Energy systems and metabolism during exercise
7. The role of physical activity in energy balance and energy balance disorders
8. Exercise and reproductive function
9. The roles and recommendations for exercise during pregnancy
10. Nutrition and fluid balance for exercise
11. Respiratory function and exercise
12. The role of exercise in respiratory disorders
13. Cardiovascular function and exercise
14. The role of exercise in cardiovascular disorders
15. Environmental physiology and exercise
16. Aging and exercise
17. The role of exercise in brain and mental health disorders
18. The role of exercise in metabolic disorders
19. The role of exercise in immune function and cancer
20. The role of exercise in neuromuscular disorders
21. The role of exercise in bone health and osteoporosis
22. The role of exercise in joint health and arthritis

Course Learning Outcomes

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

1. Demonstrate an understanding of the role of pre-exercise screening and exercise testing
2. Explain how physiological systems are stimulated during physical activity
3. Describe the role of regular physical activity in the maintenance of health and physical fitness
4. Demonstrate an understanding of the physiological responses and adaptations to physical activity
5. Apply knowledge of the principles of exercise training to selection and appraisal of the different types of exercise training programs
6. Demonstrate knowledge of the impact of clinical conditions on capacity to perform physical activity
7. Describe the roles and recommendations for specific types of exercise programs for people with different clinical conditions
8. Demonstrate skills in conducting basic physical fitness assessments and exercise tests

Course Materials

Recommended Text:

Exercise Physiology: Nutrition, Energy and Human Performance 8th Edition by McArdle, Katch and Katch

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Intra -Semester Exam 1	Week 7 – Thur 11 Apr 2:30pm	Individual	35%	1-7
2	Intra -Semester Exam 2	Week 13 – Thur 6 Jun 2:30pm	Individual	35%	1-7
3	Laboratory Skills	In practical time	Individual	30%	8

Assessment 1 – Intra-Semester Exam 1

Assessment Type	In Term Test
Weighting	35%
Length	1 hour
Date	Week 7 – Thursday 11 April at 2:30pm in GP101
Submission Method	In class
Assessment Criteria	This is a CLOSED BOOK examination and no notes are permitted. The format of this assessment will be multiple choice, multiple answer, and open answer questions. All lecture and laboratory content is assessable. The intra-semester exam 1 will assess all content up to and including week 6.
Feedback Provided	Via Canvas and/or email.

Assessment 2 – Intra-Semester Exam 2

Assessment Type	In Term Test
Weighting	35%
Length	1 hour
Date	Week 13 – Thursday 6 June at 2:30pm in GP101
Submission Method	In class
Assessment Criteria	This is a CLOSED BOOK examination and no notes are permitted. The format of this assessment will be multiple choice, multiple answer, and open answer questions. All lecture and laboratory content is assessable. The intra-semester exam 2 will assess all content from weeks 7-12.
Feedback Provided	Via Canvas and/or email.

Assessment 3 – Laboratory Skills

Assessment Type	Skills Assessment
Weighting	30%
Date	In laboratory class time
Submission Method	In class
Assessment Criteria	For the five laboratory sessions students will be required to demonstrate their ability to perform a particular laboratory task to their laboratory tutor. Tasks that need to be performed will be outlined on Canvas, in the laboratory notes, and at the beginning of relevant laboratory sessions. 6% for each laboratory task = 30% overall.
Feedback Provided	Feedback on the laboratory task will be given during the relevant the laboratory session.

LABORATORY TIMETABLE

1 x 2-hour laboratory session per week for weeks 1-4 and 6-12 (note: no lab in week 5) in HPE206 as follows:

Tue 9-11am wk 1-4,9-12; Fri 9-11am wk 6-8	Wed 9-11am wk 1-4, and 6-12
Tue 11-1pm wk 1-4,9-12; Fri 11-1pm wk 6-8	Wed 11-1pm wk 1-4, and 6-12
Tue 2-4pm wk 1-4,9-12; Fri 2-4pm wk 6-8	Wed 2-4pm wk 1-4, and 6-12
Tue 4-6pm wk 1-4,9-12; Fri 4-6pm wk 6-8	Wed 4-6pm wk 1-4, and 6-12

COURSE SCHEDULE

Week	Format	Venue	Topic	Lecturer
1	Lecture	Pre-recorded	1. Physical activity, fitness, exercise & sedentary behaviour	SV
			2. Nutrition and exercise I	SV
			3. Nutrition and exercise II	SV
	Lab	HPE206	Physical activity assessments and nutrition for exercise	
2	Lecture	Pre-recorded	4. Body composition and health	SV
			5. Principles of training & types of exercise training	SV
			6. Energy balance 1: Positive energy balance and exercise	SV
	Lab	HPE206	Anthropometry and body composition assessments I	
3	Lecture	Pre-recorded	7. Energy balance 2: Negative energy balance and exercise	SV
			8. Exercise and pregnancy	SV
			9. Fluid balance, exercise and renal disease	SV
	Lab	HPE206	Anthropometry and body composition assessments II	
4	Lecture	Pre-recorded	10. Pre-exercise screening and evaluation	SV
			11. Exercise stress testing	SV
			12. Recruitment of muscle during exercise	SV
	Lab	HPE206	Introduction to Collecting Exercise Physiology Signals	
5	Lecture	Pre-recorded	13. Fatigue, cramps and muscle soreness	SV
			14. Neuromuscular adaptations to exercise training	SV
			15. Types of fitness & assessment of musculoskeletal fitness	SV
	-	-	-	No Laboratory sessions – Easter week
6	Lecture	Pre-recorded	16. Energy systems and exercise I	SV
			17. Energy systems and exercise II	SV
			18. Metabolism and metabolic adaptations	SV
	Lab	HPE206	Neuromuscular function and performance	
7	Lecture	Pre-recorded	19. Endocrine function and exercise	SV
			20. Exercise and diabetes	SV
			21. Cardiovascular responses to exercise	SV
	Lab	HPE206 + Cola 2	Anaerobic fitness testing	
	Intra-Semester Exam 1 – Thursday 11th April at 2:30pm in GP101			
Mid-semester break				
8	Lecture	Pre-recorded	22. Cardiovascular adaptations to exercise training	SV
			23. Exercise and CVD risk factors	SV
			24. Exercise and CVD	SV
	Lab	HPE206	Aerobic fitness testing I (maximal tests)	
9	Lecture	Pre-recorded	25. Respiratory function and exercise	SV
			26. Exercise and respiratory disease I	SV
			27. Exercise and respiratory disease II	SV
	Lab	HPE206	Aerobic fitness testing II (submaximal tests)	
10	Lecture	Pre-recorded	28. Thermoregulation and exercise	SV
			29. Exercise and brain health	SV
			30. Exercise and neuromuscular disorders	SV
	Lab	HPE206	Cardiovascular responses to exercise	
11	Lecture	Pre-recorded	31. Exercise and aging	SV
			32. Immune function and exercise	SV
			33. Exercise oncology	SV
	Lab	HPE206	Cardiovascular responses to stressors	
12	Lecture	Pre-recorded	34. Exercise and bone diseases	SV
			35. Exercise joint diseases	SV
			36. Course review and concluding remarks	SV
	Lab	HPE206	Laboratory skills – catch up session	
13	Intra-Semester Exam 2 – Thursday 6th June at 2:30pm in GP101			
Exam Period JUNE 11 – JUNE 22				
Rescheduled Exams 15th July – 19th July				

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.

*Skills are those identified for the purposes of assessment task(s).

Attendance

Attendance at laboratory class is recorded at the beginning of each session. If you are absent for a laboratory session, ensure you read the laboratory documents on Canvas and crosscheck with a classmate for any additional notes they may have taken. If you have any queries, clarify them with your tutor when you next return to class. Material covered in laboratory sessions will be included in the intra-semester examinations. Missed laboratory skills assessments can be completed in the Week 12 catch up class.

WH&S Requirements

Appropriate clothing must be worn to laboratory sessions (shorts, loose tops, athletic shoes). Risk assessments are provided for each laboratory session; they must be read and acknowledged at the beginning of each session, and the guidelines for risk minimisation followed.

Communication Methods

Communication methods used in this course include:

- CANVAS Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.

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.

Oral Interviews

As part of the evaluation process of any assessment item in this course an oral examination 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 Guidelines. 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

You are entitled to apply for special consideration because adverse circumstances have had an impact on your performance in an assessment item. This includes applying for an extension of time to complete an assessment item. Prior to applying you must refer to the Adverse Circumstances Affecting Assessment Items Procedure, available at <https://policies.newcastle.edu.au/document/view-current.php?id=236>. All applications for Adverse Circumstances must be lodged via the online Adverse Circumstances system, along with supporting documentation.

Supplementary Assessment for Fail Grades

Students may be eligible for a supplementary assessment if they fail the course. Refer to Section 138 in the Course Management and Assessment Manual for the criteria <https://policies.newcastle.edu.au/document/view-current.php?id=183>

Important Policy Information

The 'HELP for Students' tab in UoNline contains important information that all students should be familiar with, including various systems, policies and procedures.

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.

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