HESC4501

Exercise Physiology Research Seminars

Course Outline

Term 1, 2024

School of Health Sciences
Faculty of Medicine & Health

Table of Contents

1. Staff

Position	Name	Email	Consultation times and locations	Contact Details
Course Convenor	Dr Matthew Jones	matthew.jones@unsw.edu.au	By appointment	See email
Tutors	Dr Martin Lindley	m.lindley@unsw.edu.au	By appointment	See email

2. Course information

Units of credit: 6
Pre-requisite(s): Enrolment in program 3831 Science (Medicine) Honours OR completed MATH1041, HESC2501 and 12 UOC of Level 3 HESC courses.
Teaching times and locations: https://timetable.unsw.edu.au/2024/HESC4501.html

2.1 Course summary

The course will train you to be able to critically interpret scientific and clinical research linked to the field of exercise physiology to enhance your clinical practice. You will learn the skills necessary to find, read, understand and communicate clinical research in the practical sessions and seminars. Assessment tasks provide experience in looking up original research articles, appraising their value and communicating this to colleagues and the general public via an oral or poster presentation. Assessment tasks will also teach you to work in a team environment.

2.2 Course aims

The main aim of this course is to introduce you to original scientific and clinical research. It provides training in critical interpretation of scientific and clinical research linked to the field of exercise science and exercise physiology. The course aims to provide you with the skills necessary to locate, read, understand and communicate clinical research to the general public with confidence, thus improving your clinical practice standards.

2.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Describe the scientific research process to facilitate critical evaluation and communication of scientific evidence for translation into clinical practice.

2. Recognise significant research advances made in the field of exercise science and summarise and present them in both written and oral formats.

3. Critically appraise original research, including methodology, statistical results and ethical considerations for integration into best practice and research in exercise science.

4. Demonstrate interpersonal skills to participate effectively in a teamwork environment.

5. Critically self-evaluate and reflect upon participation/effort, effectiveness and productivity in a team environment and an individual learning scenario.

2.4 Relationship between course and program learning outcomes and assessments

Course Learning Outcome (CLO)	LO Statement	Program Learning Outcome (PLO)	Related Tasks & Assessment
CLO 1	Describe the scientific research process to facilitate critical evaluation and communication of scientific evidence for translation into clinical practice.	Students will be able to demonstrate detailed clinical knowledge and skills relevant to cardiopulmonary, metabolic, cancer, mental health, musculoskeletal and neuromuscular rehabilitation. Students will be able to apply advanced problem-solving skills and critical thinking within a scientific and clinical context.	Lectures 1,2,3,6,7 & 8 Tutorial 1,2,3,4, 8 & 9 Tutorial Quizzes Individual and group presentation tasks
CLO 2	Recognise significant research advances made in the exercise science field. Summarize and present these in both written and oral formats.	Students will be able to apply advanced problem-solving skills and critical thinking within a scientific and clinical context.	Lectures 1 to 8 Tutorials 1 to 9 Tutorial Quizzes Individual and group presentation tasks
CLO 3	Critically appraise original research, including methodology, statistical results and ethical considerations for integration into best practice and research in exercise science.	Students will be able to engage in independent learning and reflective practice for the betterment of professional clinical practice.	Tutorials 1 to 9 Tutorial Quizzes Individual and group presentation tasks
CLO 4	Demonstrate interpersonal skills to participate effectively in a teamwork environment.	Students will be able to display effective and appropriate communication skills and an ability to work as a member and leader of a team, with respect for diversity and a high standard of ethical practice.	Lectures 1 to 8 Tutorials 1 to 9 Tutorial Quizzes Individual and group presentation tasks
CLO 5	Critically self-evaluate and reflect upon participation/effort,	Students will be able to display effective and appropriate communication	Lectures 1 to 5 Tutorials 1 to 9 Tutorial Quizzes

	effectiveness and productivity in a team environment and an individual learning scenario.	skills and an ability to work as a member and leader of a team, with respect for diversity and a high standard of ethical practice.	

3. Strategies and approaches to learning

3.1 Learning and teaching activities

The learning and teaching philosophy underpinning this course is centred on student learning and aims to create an environment which interests and challenges students. The teaching is designed to be engaging and relevant to prepare students for future careers.

How the course relates to the Exercise Physiology profession
The information and ideas presented in this course will enable students to build critical thinking and good communication skills necessary for professionals. Good communication skills are necessary to build an effective relationship between the patient and the practitioners. Along with the knowledge base of techniques used in experimental research, an understanding of how research is published and ranked is a prerequisite to appreciate the quality of a piece of research. It is essential that a professional career has a solid understanding of research in the field of Exercise Sciences to appreciate the novel techniques and progress that has been made; enabling them to prescribe exercise programs backed by evidence that has been rigorously examined.

How the course relates to other courses in the Exercise Physiology program
Together with Research Projects HESC4551 and Research Internships HESC4561, HESC4571, this 4th year course builds upon the knowledge accumulated throughout the whole program. It uses previously understood fundamental concepts to build the necessary critical thinking towards professional independence. Although the primary source of information for this course is the lecture material, effective learning can be enhanced through self-directed use of other resources such as textbooks and Web based sources. Your practical classes will be directly related to the lectures and it is essential to prepare for practical classes before attendance. It is up to you to ensure you perform well in each part of the course; preparing for classes; completing assignments; studying for exams and seeking assistance to clarify your understanding.

3.2 Expectations of students

Students are reminded that UNSW recommends that a 6 units-of-credit course should involve about 150 hours of study and learning activities. The formal learning activities total approximately 50 hours throughout the term and students are expected (and strongly recommended) to do at least the same number of hours of additional study.

3.3 Attendance requirements

Students are expected to attend all scheduled tutorial classes. An Unsatisfactory Fail (UF) may be recorded as the final grade for the course if students fail to meet the minimum requirement of 80% attendance for tutorial classes (unless otherwise specified on Moodle). Course attendance expectations are determined by the requirements of the program accrediting body. Where a student is unable to attend, they are advised to inform the course convenor as soon as possible but no later than 3 days after the scheduled class and, where possible, provide written documentation (e.g. medical certificate) to support their absence.

4. Course schedule and structure

	Lecture 1	**Lecture 2**	**Tutorial**
Week 1	**1:** Course introduction**;** research methods	**2:** Fundamentals of measurement	**1:** Self-directed learning – ESSA position statement
Week 2	**3:** Framing a question/ study design	**4:** Randomisation, blinding and confounding	**2:** Looking for information/how to read a research article;
Week 3	**5:** Study quality, risk of bias and certainty of evidence	**6:** Statistics and interpreting outcomes	**3:** Designing a talk to get across scientific messages
Week 4	**7:** Ethics in research	**8:** Literature reviews	**4:** Dealing with being in the spotlight; giving a talk

	Seminars and Poster sessions	**Tutorial**
Week 5	Individual Seminars	**5:** Working as a team; study quality and risk of bias
Week 6	Flexibility week – no scheduled classes	
Week 7	Individual Seminars	**6:** Constructing a poster and abstract
Week 8	Individual Seminars	**7:** Working with data. Using Excel
Week 9	Individual Seminars	**8:** Statistics 1: Selecting statistical tests
Week 10	Posters	**9:** Statistics 2: Using SPSS to analyse data
Online		**10:** Use of Bibliography software endnote, referencing

Exam Period: 26 April – 9 May 2024
Supplementary Exam Period: 20 May – 24 May 2024

5. Assessment

5.1 Assessment tasks

Assessment task	Length	Weight	Mark	Due date and time
Assessment 1: Research paper presentation (individual)	10 min	25%	25	During tutorial time (Weeks 5-9); slides submitted by Monday Week 5
Assessment 2: Tutorial assessments (written reports, quizzes and oral talk)	Varied	30%	5 each (30 total)	During tutorial time (Weeks 1,2,4,8,9 and 10)
Assessment 3: Evaluation of scientific research to inform implementation (group presentation) Individual peer assessment and self-assessment	10 min	25% 20%	25 20	During Week 10 tutorial 11:59 pm, Friday of Week 10

Further information
UNSW grading system: https://student.unsw.edu.au/grades
UNSW assessment policy: https://student.unsw.edu.au/assessment

5.2 Assessment criteria and standards

Research paper presentation (individual oral talk)
You will present an original journal article (not a review article) related to the field of Exercise Science/Exercise Physiology. In tutorial 2 you will select the article to be presented and in tutorial 3 you will further analyse the article and start to design the talk. You will present the article to the class in the format of a 6-minute oral presentation followed by 3 minutes of questions. *The PowerPoint presentation to be used during your oral presentation must be uploaded to Moodle no later than Monday 9am in Week 5.*

	Fail	Pass	Credit	Distinction	High distinction
BACKGROUND AND METHODS **/10**	Introduction out of scope with the topic. No description of study methods. Cannot be understood by a non-expert audience.	Introduction lacks scope with the topic and has inadequate details. Poor description of study methods. Some concepts and terminology not described to allow understanding by a non-expert audience.	Introduction somewhat aligned with scope with the topic. Adequate description of study methods. Many concepts and terminology not described to allow understanding by a non-expert audience.	Introduction well in scope with the topic. Good description of study methods. Most concepts and terminology described to allow understanding by a non-expert audience.	Introduction very well in scope with the topic. Excellent description of study methods. All concepts and terminology described to allow understanding by a non-expert audience.

RESULTS AND FIGURES /4	Description of results and figures lacks major details,	Description of the results and figures is mostly clear. No dissociation between description and interpretation.	Descriptions of the results and figures allows understanding by non-expert audience, but some details are lacking. Still some dissociation between description and interpretation.	Clear description of the results and figures to allow understanding by non-expert audience. Dissociation between description and interpretation.	Very clear description of the results and figures to allow understanding by non-expert audience. Clear dissociation between description and interpretation.
STYLE /6	The font, colour graphics and slide layout used distracted from the presentation. Figures used not labelled with major errors. No logical structure to presentation. Delivery unclear or inaudible. Not confident with poor body language.	The font, colour graphics and slide layout used sometimes distracted from the presentation. Figures used and labelled with some errors. Lacking clear and logical structure throughout. Delivery mostly clear, and technical. Some major lapses in body language observed	The font, colour graphics and slide layout used sometimes distracted from the presentation. Figures used and labelled with some errors. Mostly clear and logical structure throughout. Delivery mostly clear, and technical. Some major lapses in body language observed	The font, colour graphics and slide layout used enhanced the presentation. Figures used and clearly labelled. Minor errors. Clear and logical structure throughout. Delivered clearly, well- paced, articulate and technical. Confident stance and body language. Enthusiastic.	The font, colour graphics and slide layout used greatly enhanced the presentation. Figures used and clearly labelled. No errors. Clear and logical structure throughout. Delivered clearly, well- paced, articulate and technical. Confident stance and body language. Enthusiastic and interesting.
QUESTIONS /5	Responses demonstrated little or no understanding of complex technical and contextual issues Significant number of errors made in answers to questions.	Responses demonstrated some understanding of complex technical and contextual issues A number of major errors made in answers to questions.	Responses demonstrated understanding of complex technical and contextual issues Accurate answers to questions drawing from related literature.	Responses demonstrated clear understanding of complex technical and contextual issues Strongly argued and accurate answers to questions drawing from related literature.	All responses demonstrated clear understanding of complex technical and contextual issues Consistently strongly argued and accurate answers to questions drawing from related literature.

<u>Evaluation of scientific research to inform implementation (group poster presentation)</u>
This group assessment consists of two parts: 1) group poster presentation and 2) an assessment of yourself and of your peers' contribution to group work.

1) Group poster presentation (*talk 15%, poster 10%*): you will be assigned to a group. Within your group, you must choose from one of the articles that you or your group members chose to present for the individual oral talk assessment. You must critically appraise this article in terms of its quality, risk of bias, strengths and limitations. You will use this information to discuss the value of the article (or not) in informing your clinical practice as an Exercise Scientist/Exercise Physiologist. You will present your critique and analysis to the class in a poster presentation format (7-minute presentation, 2-3 minutes of questions). The poster to be presented must be uploaded to Moodle no later than Monday 9 am in Week 10.

2) Peer- and self-assessment (each worth 10%): you will assess your peers based on the contribution you perceive they made to the group's work. This will be scored online via Moodle and will adjust each members' overall mark for this assignment. If a student fails to complete the peer evaluation, then they will receive 0% for their mark. You will also complete a self-assessment form via Moodle. The peer assessment of other members in your group, and your self-assessment, are to be completed no later than 11:59 pm on Friday in Week 10.

Group poster presentation:

	Fail	Pass	Credit	Distinction	High distinction
BACKGROUND AND METHODS /10	Incomplete or unclear description of the study background and methods; lacks essential details	Some description of the study background and methods; lacks depth and thoroughness	Adequate description of study and methods; missing several key details	Good description of study background and methods; few key details missing	Excellent description of study background and methods; all key details described
STUDY QUALITY AND RISK OF BIAS /4	No appraisal of study quality and risk of bias	Limited appraisal of study quality and risk of bias	Adequate description of study quality and risk of bias but lacking several key details to enable replication; tools/methods used are mentioned but not explained	Good description of study quality and risk of bias, lacking only a few key details; tools/methods used are mentioned and explained	Excellent description of study quality and risk of bias, no key details missing; tools/methods used are mentioned and explained in detail
IMPLICATIONS FOR PRACTICE /6	No attempt to link study findings to clinical implications for Exercise Science or Exercise Physiology	Limited attempt to link study findings to clinical implications for Exercise Science or Exercise Physiology	Adequate attempt to link study findings to clinical implications for Exercise Science or Exercise Physiology, but limited consideration of study quality/risk of bias in doing so	Good attempt to link study findings to clinical implications for Exercise Science or Exercise Physiology, with some consideration of study quality/risk of bias in doing so	Excellent attempt to link study findings to clinical implications for Exercise Science or Exercise Physiology with good consideration of study quality/risk of bias in doing so
QUESTIONS /5	Responses demonstrated little or no understanding of study and methodological issues; Significant number of errors made in answers to questions.	Responses demonstrated some understanding of study and methodological issues; A number of major errors made in answers to questions.	Responses demonstrated understanding of study and methodological issues; Accurate answers to questions drawing from related literature.	Responses demonstrated clear understanding of study and methodological issues; Strongly argued and accurate answers to questions drawing from related literature.	All responses demonstrated clear understanding of study and methodological issues; Consistently strongly argued and accurate answers to questions drawing from related literature.
POSTER STYLE /10	Unattractive design; lacks creativity and visual appeal; messy layout; inconsistency in style elements	Basic design elements; limited creativity; somewhat visually appealing; some areas messy or unclear; basic consistency in style elements	Thoughtful design; moderate creativity; visually pleasing; neat presentation of content; good consistency in style elements	Engaging design; creative elements evident; visually appealing; well organised layout; cohesive style elements	Very engaging design; creative elements evident; visually appealing; very well organised layout; style elements contribute to cohesive and unified design

Peer assessment form:

	Fail	Pass	Credit	Distinction	High distinction
PERSONAL INSIGHT and ABILITY TO DRAW ON EXAMPLES	Very little or no detail given of abilities, Very little or no detail given of weaknesses, Very little or no examples cited.	Some detail given of abilities, Some detail given of weaknesses, Very little or no examples cited.	Lists own role and contributions made, attempt made to discover weaknesses, a few examples cited	Can Articulate own role and contributions made, A number of examples cited, Examples demonstrate strengths, Weaknesses listed.	Can Articulate own role and contributions made, Many examples cited, Examples clearly demonstrate strengths and contribution to the team, Can Articulate weaknesses.
DEMONSTRATES AN UNDERSTANDING OF TEAMWORK	Seems focused on own goals rather than enhancing the teams effort, no examples of teamwork cited	Mainly focused on own goals rather than enhancing the teams effort, minimal effort made to link own goals with teams goals, no examples of teamwork cited	Seems to appreciate teamwork, Appears to note the importance of focusing on the TEAMS objectives. One or two examples cited	Seems to appreciate individual strengths and weaknesses can be compensated by teamwork, Appears to note the importance of focusing on the TEAM'S objectives, Takes initiative, a number of examples of teamwork cited	Appears to value multiple perspectives, Apparently seeks to resolve conflicts, Seems to appreciate individual strengths and weaknesses can be compensated by teamwork, Appears to note the importance of focusing on the TEAM'S objectives, Takes initiative. **Many** examples given that clearly show teamwork

Self-assessment form:

Fill in the table and use it to self-reflect on **<u>your</u>** experiences while working as part of this team. Think about **<u>your</u>** strengths i.e. what you feel are your greatest attributes (I speak clearly, I am organised, I am inclusive, I help resolve conflicts, I am enthusiastic, I share the load, I cooperate, etc.….) and how they enhanced the teamwork (**GIVE EXAMPLES**: I emailed team members to keep them up to date, I collected journal articles, I had material ready so it could be included, I was a spokesperson for the team, I listened to the ideas of others). We all have weaknesses, as a learner and a team member it is beneficial to acknowledge them so that we can improve e.g. I am a person who has trouble starting large tasks, so initially I was late getting information to the group, I then made sure I did a little bit (something) each day and found I got more done. The form must be filled in using Times New Roman, 10 FONT, 1 page only. These instructions and the lines in the form can be removed to give you room to complete the form.

	Reflect on <u>YOUR</u> strengths and weaknesses for each category. Cite examples (What did you do? (not your group) How were strengths applied?).
COMMUNICATION: How did **<u>you</u>** communicate with members of your group and to others? (not we set up a facebook page)	
TASK COMPLETION: How did **<u>you</u>** complete tasks for the group?	

LEADERSHIP: How did **you** display leadership?	
TEAMWORK: What was **your** role in the group, how did you display teamwork skills?	
IMPROVING YOURSELF: What teamwork skills did **you** learn/Improve? How can **you** continue to Improve	

Section	Fail	Pass	Credit	Distinction	High distinction
Communication	0	0.5	1	1.5	2
Task Completion	0	0.5	1	1.5	2
Leadership	0	0.5	1	1.5	2
Team Work	0	0.5	1	1.5	2
Improving Self	0	0.5	1	1.5	2

Marks will be given according to the assessment criterion table above and the following in each section marks awarded as follows:

- 0 marks if that section is not attempted
- 0.5 marks for 1 statement i.e. "I communicated in a respectful way"
- 1 mark for 2 or more statements
- 1.5 marks for 2 or more statements plus a reflection on weakness
- 2 marks for 2 or more statements plus a reflection on strengths and weakness and how you could improve

5.3 Submission of assessment tasks

Late Submission

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per day (including Saturday, Sunday, and public holidays). For example, if an assessment task is worth 30 marks, then 1.5 marks will be lost per day (5% of 30) for each day it is late. So, if the grade earnt is 24/30 and the task is two days late the student receives a grade of 24 – 3 marks = 21 marks.

Late submission is capped at 5 days (120 hours). This means that a student cannot submit an assessment more than 5 days (120 hours) after the due date for that assessment.

Short Extension

UNSW has introduced a short extension procedure for submission of individual assessment tasks. This does not include timed assessments, exams, quizzes, group tasks, presentations, clinical skills

assessments or practical assessments. Students must check the availability of a short extension in the individual assessment task information for their courses. For this course, students may apply for a short extension of up to 2-days for a maximum of one assessment task during the term.

Short extensions do not require supporting documentation. They must be submitted before the assessment task deadline. No late applications will be accepted. Late penalties apply to submission of assessment tasks without approved extension.

Special Consideration

In cases where short term events beyond your control (exceptional circumstances) will affect your performance in a specific assessment task, you may formally apply for Special Consideration through myUNSW.

UNSW has a Fit to Sit rule, which means that by sitting an examination on the scheduled date, you are declaring that you are fit to do so and cannot later apply for Special Consideration. Examinations include centrally timetabled examinations and scheduled, timed examinations, tests and practical assessments managed by your School.

You must apply for Special Consideration **before** the start of your exam or due date for your assessment, except where your circumstances of illness or misadventure stop you from doing so.

If your circumstances stop you from applying before your exam or assessment due date, you must **apply within 3 working days** of the assessment, or the period covered by your supporting documentation.

More information can be found on the Special Consideration website.

5.4. Feedback on assessment

Feedback will be given as promptly as possible in the following way:

Tutorial 1: Self Directed and Reflective Learning:	**Feedback in Moodle**
Tutorial 2: Looking for Information/how to read a research article	**Feedback in Moodle**
Tutorial 4: Dealing with being in the spotlight (talk)	**Feedback in class & Moodle**
Tutorial 7: Working with Excel	**Quiz in Moodle**
Tutorial 8: Basic Statistical Analysis	**Quiz in Moodle**
Tutorial 10 online: Use of Bibliography Software	**Quiz in Moodle**
Individual/group oral/poster presentations	**Feedback in class & Moodle**

The following feedback will be available in Moodle after marks are released: Peer mark on effort and engagement (peer within group assessment); Online Content (Completed self-assessment form);

6. Academic integrity, referencing and plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism. Please use APA referencing style for this course.

Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity *is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness,*

respect, responsibility and courage.[1] *At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.*
Further information about academic integrity and ***plagiarism*** *can be located at:*

- *The Current Students site* https://student.unsw.edu.au/plagiarism*, and*
- *The ELISE training site* https://subjectguides.library.unsw.edu.au/elise

The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct.

7. Readings and resources

See the reading list provided in the resources section on Moodle.

8. Administrative matters

Student enquiries should be submitted via student portal https://portal.insight.unsw.edu.au/web-forms/

9. Additional support for students

- *The Current Students Gateway:* https://student.unsw.edu.au/
- *Academic Skills and Support:* https://student.unsw.edu.au/academic-skills
- *Student Wellbeing and Health:* https://www.student.unsw.edu.au/wellbeing
- *UNSW IT Service Centre:* https://www.myit.unsw.edu.au/services/students
- *UNSW Student Life Hub:* https://student.unsw.edu.au/hub#main-content
- *Student Support and Development:* https://student.unsw.edu.au/support
- *IT, eLearning and Apps:* https://student.unsw.edu.au/elearning
- *Student Support and Success Advisors:* https://student.unsw.edu.au/advisors
- *Equitable Learning Services (Formerly Disability Support Unit):* https://student.unsw.edu.au/els
- *Transitioning to Online Learning* https://www.covid19studyonline.unsw.edu.au/
- *Guide to Online Study* https://student.unsw.edu.au/online-study

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.