



Australia's
Global
University

Faculty of Medicine
School of Medical Sciences

HESC4501

EXERCISE PHYSIOLOGY RESEARCH SEMINARS

SEMESTER 1, 2017

COURSE OUTLINE

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Please read this course outline in conjunction with the following pages on the [School of Medical Sciences website](#):

- [Advice for Students](#)
- [Learning Resources](#)

(or see "STUDENTS" tab at medicallsciences.med.unsw.edu.au)

Staff Contact Details

| | | |
|------------------|--|---|
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Course details

Credit Points: 6 UOC

Course Prerequisites / Assumed Knowledge

MATH1041 – Statistics for Life & Social Sciences

Course Description

This course is organised in seminar format with discussion of original research. It provides training in critical interpretation of scientific and clinical research linked to the field of exercise physiology. Seminars in this course will be delivered by staff, and also by students working in groups, with an emphasis on understanding the scientific method, ethics in scientific research and the evidence-base for clinical practice.

Aims of the Course

To encourage the development of:

1. critical skills for **appraisal and interpretation** of the scientific evidence-base for exercise physiology practice
2. an understanding of the common techniques used in the broad area of research in Exercise Sciences
3. an awareness of the techniques for an efficient communication of scientific results
4. an appreciation of the online resources available to find published research articles, book or conference abstracts
5. an appreciation of the quality of published articles, critical thinking
6. an awareness of the intellectual property law and the process from innovation to commercialisation

Student Learning Outcomes

This term is used to describe what it is that you should be able to do, explain or understand if you have learned effectively in the course. For each lecture, seminar and assessment item, the expected learning outcomes will be explicitly stated. The assessment in the course will be matched as closely as possible to the stated learning outcomes. That is, the assessment will test how well you have achieved the learning outcomes of the course. The general learning outcomes for the course are as follows:

At the end of the course you should be able to:

- critically assess the strengths and weaknesses of a research article
- identify significant advances when reading a research publication
- summarize and present research articles in public
- anticipate the commercial valorisation of innovation
- identify the online resources of scientific publications
- apply **critical thinking and presentation skills** to evaluate and communicate the evidence base for clinical practice

Graduate Attributes

- Engage in independent and reflective learning for the betterment of professional clinical practice, following an evidence-based approach
- Communicate effectively with patients, colleagues and other health professionals
- Work as a member and a leader of a team
- Display a respect for diversity and a high standard of ethical practice

See also: [Student Advice – Graduate Outcomes](#)

Rationale for the inclusion of content and teaching approach

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 carer 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 HESC 4571), this fourth 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.

Teaching strategies

Lectures – Lectures will be every week (from weeks 2 to week 7) and lasting 2 hours.

Tutorials – After each lecture, a tutorial will be done to train on the concepts developed during the lecture. They will consist of one-hour exercises such as *figure description, what methods to use to test a hypothesis?, Short oral presentation practice, etc...* (tutorials are listed in *course schedule*)

Independent study – Alone or in a group, independent studies will represent a significant component of the course, as you will be asked to retrieve publications from databases, synthesise and have critical reading on what you will present.

Assessments – These tasks have been chosen as tools to enhance and guide your learning as well as a way of measuring performance, and are therefore a central teaching strategy in this course.

Assessment

Summary of Assessments

| ASSESSMENT TASK 1 – <i>PAPER REVIEW (individual task)</i> | Weight | Due Date |
|---|--------|------------|
| Oral Presentation (PowerPoint Presentation) | 30% | Weeks 8-11 |
| Oral Presentation (peer assessed) | 10% | Week 8-11 |
| Online Content (Short summary of the presented publication, ~300 WORDS) | 10% | Week 8 |
| | | |
| ASSESSMENT TASK 2 – <i>INNOVATION IN EXERCISE PHYSIOLOGY (group task)</i> | Weight | Due Date |
| Oral Presentation (Poster) | 20% | Week 12-13 |
| Oral Presentation (peer assessed) | 10% | Week 12-13 |
| Online Content (one page description of the invention) | 10% | Week 12 |
| Online Content (Completed self-assessment form) | 10% | Week 13 |

Submission of Assessment Tasks

Assignments are to be submitted electronically through Turnitin via Moodle.

Penalties for late submission of assignments – In cases where an extension has NOT been granted, the following penalties will apply:

1. For assignments submitted one day after the due date, **a penalty of 50%** of the maximum marks available for that assignment will be incurred.
2. Assignments received two or more days after the due date **will not be allocated a mark**, however, these assignments **must** still be submitted to pass the unit.

Examination procedures and attendance requirements

1. Attendance is expected at all lectures, tutorials and presentations for this course. **Attendance at all classes will be recorded.** Students who do not participate in these sessions for any reason other than medical or misadventure, will be marked absent and will be awarded a grade of FAIL for the entire course. If absent for medical reasons, a medical certificate must be lodged with the lecturer within 7 days of the time period of the certificate's expiry. No consideration will be given after this time. Although lectures and tutorials will be available on echo 360, student participation is encouraged in the lectures and tutorials and these are important to attend.
2. **Deferred Exams**
If you miss an exam for medical reasons you must supply adequate documentation (including a medical certificate). Your request for consideration will then be assessed and a deferred exam may be granted. You cannot assume you will be granted supplementary assessment. The deferred exam may include a significant oral element.

Assessment Task 1: Paper Review

Oral presentation (Weeks 8, 9, 10, 11; **Individual task**)

For the purpose of these seminars, you will select an original journal article (not a review article) related to the field of Exercise Science.

You will post a short, written summary of the paper online (~300 words) and present the publication to the class in the format of a **7 minute** oral presentation followed by **3 minutes** of discussion.

Students will provide a single mark out of 10 for their peers' presentations; use the criterion below to guide your assessment. The course convenor will also mark the presentation according to the **Assessment criteria template** below.

Assessment criteria template:

| | Unsatisfactory | Below average | Satisfactory | Good | Excellent |
|--|--|---|--|--|---|
| BACKGROUND CONTENT AND CONCLUSIONS /10 | Introduction out of scope with the topic. Cannot be understood by a non-expert audience. | Introduction lacks scope with the topic and has inadequate details. Most concepts and terminology not described to allow understanding by a non-expert audience. | Introduction lacks scope with the topic. Many concepts and terminology not described to allow understanding by a non-expert audience. | Introduction well in scope with the topic. Most concepts and terminology described to allow understanding by a non-expert audience. | Introduction very well in scope with the topic. All concepts and terminology described to allow understanding by a non-expert audience. |
| FIGURES /5 | Description of the figures lacks major details, or methodology not described. | Description of the figures is mostly clear. Major inconsistencies in experimental design. No dissociation between description and interpretation. | Descriptions of the figures to allow understanding by non-expert audience, but some details are lacking. Not always dissociation between description and interpretation. | Clear description of the figures to allow understanding by non-expert audience. Dissociation between description and interpretation. | Very clear description of the figures to allow understanding by non-expert audience. Clear dissociation between description and interpretation. |
| STYLE /10 | 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. |

The paper to be reviewed is to be chosen and emailed to the course convenor no later than Friday WEEK 5 of term.

The following Individual task assessments are to be submitted no later than Monday in week 8:

- 1) The **PowerPoint presentation** to be used during your Oral is to be posted via Moodle.
- 2) A one page (Approximately 300 words) **summary** of the publication is to be posted via Moodle.

Marking Template for the one page summary:

| <u>Background</u> | Maximum Marks |
|--|------------------|
| <i>Overview of field:</i> | |
| | 4 |
| Clear description of field that paper investigates | [1] |
| Sufficient detail provided to understand paper | [1] |
| Methods described so can understand results | |
| | [1] |
| <i>Relevance to Exercise</i> | |
| <i>Physiology:</i> | |
| Describes the gap filled by this paper | [1] |
| <u>Results and conclusions</u> | |
| <i>Results:</i> | |
| | 4 |
| Main results clearly described | [1] |
| Details of appropriate statistical analysis | [1] |
| <i>Conclusions:</i> | |
| How is this paper adding to the field | [1] |
| Strengths and Flaws | [1] |
| <u>Presentation</u> | |
| <i>Readability:</i> | |
| | 2 |
| Able to be understood by a HESC audience | [1] |
| Grammar, spelling, and concise sentence structure | [1] |
| TOTAL MARK | 10 |

Assessment Task 2: Innovation in Exercise Physiology

Oral presentation (Weeks 12, 13): Innovation in Exercise Physiology.

This assessment is a **group** assessment; you will be assigned to a group (*The number of students within one team will normally be no more than 4*).

You will be asked to create a tool or a technique with an application to Exercise Science. You will check for anteriority and write a short patent simulation (one page). This “patent” simulation will be posted online (via Moodle).

Posters will be presented to the class in the format of a 10 minute presentation followed by 2 minutes discussion.

Students will provide a single mark out of 10 for each of their peers’ presentations; use the criterion below to guide your assessment. The course convenor will mark the presentation according to the **Assessment criteria template** below.

Assessment criteria template for the following: Oral Presentation, and Oral Presentation (peer assessed) Online Content (one page description of the invention).

| | Unsatisfactory | Below average | Satisfactory | Good | Excellent |
|---------------------------------|--|---|--|---|---|
| BACKGROUND OF INVENTION | Very unclear or no description of the problem that the invention wants to solve. | Poor description of the problem that the invention wants to solve. | Moderately clear description of the problem that the invention wants to solve. | Clear description of the problem that the invention wants to solve. | Very clear description of the problem that the invention wants to solve. |
| DESCRIPTION OF INVENTION | Poor description of the invention and Lack of creativity and innovation. | Unclear description of the invention. Marginally creative and innovative. | Clear description of the invention Moderately creative and innovative. | Clear description of the invention using adequate communication tools. Creative and innovative. | Very clear description of the invention using adequate communication tools. Highly creative and innovative. |
| QUESTIONS | Significant number of errors made in answers to questions. | A number of major errors made in answers to questions. | Accurate answers to questions. Some minor errors. | Strongly argued and accurate answers to questions. | Consistently strongly argued and accurate answers to questions. |

Marking Template for Group Poster Presentation:

| Background | Max Marks = 4 | Unsatisfactory (mark = 0) | Below average (0.25) | Satisfactory (mark = 0.5) | Good (mark = 0.75) | Excellent (mark = 1.0) |
|---|-----------------------|----------------------------------|-----------------------------|----------------------------------|---------------------------|-------------------------------|
| Adequate justification for invention. Describes the gap filled by this product? | 1 | | | | | |
| Accurate Review of Current Knowledge i.e. Scientific Literature | 1 | | | | | |
| If for a disease its described, if healthy population reason for use | 1 | | | | | |
| Able to be understood by a lay audience | 1 | | | | | |
| Description/Content | Max Marks = 6 | Unsatisfactory (mark = 0) | Below average (0.25) | Satisfactory (mark = 0.5) | Good (mark = 0.75) | Excellent (mark = 1.0) |
| Structure is logical & easy to follow | 1 | | | | | |
| Information is relevant to topic | 1 | | | | | |
| A clear description of features | 1 | | | | | |
| How is this innovative | 1 | | | | | |
| Use of other patents acknowledged or Evidence of no other similar products/ patents | 1 | | | | | |
| Summary of strengths & weaknesses | 1 | | | | | |
| Poster appearance & Presentation Style | Max Marks = 10 | Unsatisfactory (mark = 0) | Below average (0.5) | Satisfactory (mark = 1.0) | Good (mark = 1.5) | Excellent (mark = 2.0) |
| Layout attractive | 2 | | | | | |
| Font size & colour easy to read | 2 | | | | | |
| Use of pictures, diagrams & tables | 2 | | | | | |
| Confident voice, audience engagement & timing (not too short or long) | 2 | | | | | |
| Ability to interpret & answer questions | 2 | | | | | |

Marking template for the Online Content one page description of the invention.

| Area of Use: | <u>Background</u> | Maximum Marks 4 |
|-------------------------------------|---|---------------------------|
| | Clear description of the USE | [1] |
| | If for a disease its described, if healthy population reason for use | [1] |
| | Accurate Review of Current Knowledge i.e. Scientific Literature | [1] |
| <i>Need Solved:</i> | | |
| | Describes the gap filled by this product? | [1] |
| <u>Product Description</u> | | |
| <i>Detail of Innovation:</i> | | 4 |
| | A clear description of features | [1] |
| | Able to understood by a lay audience | [1] |
| <i>Innovation:</i> | | |
| | How is this innovative | [1] |
| | Use of other patents acknowledged or Evidence of no other similar products/ patents | [1] |
| <u>Feasibility</u> | | |
| <i>Marketability:</i> | | 2 |
| | Is this able to be manufactured? Realistic Cost | [1] |
| | Target market Identified and sufficient | [1] |
| TOTAL MARK | | 10 |

Assessment criteria template for the following: Online Content (Completed self-assessment form).

The completed form as a whole will be marked using the following criterion.

| | Unsatisfactory | Below average | Satisfactory | Good | Excellent |
|---|--|--|--|--|--|
| 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 focussed on own goals rather than enhancing the teams effort, no examples of teamwork cited | Mainly focussed 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 focussing 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 focussing 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 focussing on the TEAM'S objectives, Takes initiative. Many examples given that clearly show teamwork |

Marking Template Completed self-assessment form:

| Section | Unsatisfactory | Below average | Satisfactory | Good | Excellent |
|------------------------|----------------|---------------|--------------|------|-----------|
| | Marks | | | | |
| 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:

- A half mark 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 strength/weakness and how to improve

The innovation idea/topic is to be decided and **emailed to the course convenor no later than the Friday in WEEK 8.**

The Poster to be presented and the Summary of the innovation is to be submitted on line no later than **Monday in Week 12.**

The self-assessment form below - A Reflection on Working in Groups (an electronic version will be available to fill in), is to be submitted online **no later than Friday in week 13**

Self-Assessment Form - A Reflection on Working in Groups

Fill in the table and use it to self-reflect on **your** experiences while working as part of this team. Think about **your** 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 team work (**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 YOUR Strengths and Weaknesses for each category . Cite examples (What did you do? How were strengths applied?). | |
|--|---|
| COMMUNICATION: How did you communicate with members of your group and to others? | _____ _____ _____ _____ _____ |
| TASK COMPLETION: How did you 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 | _____ _____ _____ _____ _____ |

Course schedule

Examination procedures and attendance requirements

Attendance at all classes will be recorded.

Attendance is expected at all lectures, tutorials and presentations for this course. Students who do not participate in these sessions for any reason other than medical or misadventure, will be marked absent and will be awarded a grade of FAIL for the entire course.

If absent for medical reasons, a medical certificate must be lodged with the lecturer within 7 days of the time period of the certificate's expiry. No consideration will be given after this time. Although lectures and tutorials will be available via Echo 360 (accessed thru the course Moodle page), student participation is encouraged in the lectures and tutorials and these are important to attend.

See also: [Advice for Students – Special Consideration](#)

| Week | Date | Lecture | Tutorial | Seminar |
|------|------|--|---|---|
| 2 | 9/3 | Introductory lecture, Understanding Scientific Literature | Reading scientific papers | CM |
| 3 | 16/3 | Pediatric Clinical investigation in Exercise Physiology | How to plan a clinical investigation | CB |
| 4 | 23/3 | Communication for Science – Oral and Posters Presentations | Short oral presentation practice | CM |
| 5 | 30/3 | Ethics and Intellectual property | How to promote your research | CM, Mary Liu UNSW Innovations |
| 6 | 6/4 | Techniques of investigation in Exercise Science research | What technique to perform to test a hypothesis? | MM CM |
| 7 | 13/4 | Clinical Research to Clinical Practice | Integrating research into practice | JT |
| | 20/4 | Mid Semester | | |
| 8 | 27/4 | | | Paper Review: Individual Talk |
| 9 | 4/5 | | | Paper Review: Individual Talk |
| 10 | 11/5 | | | Paper Review: Individual Talk |
| 11 | 18/5 | | | Paper Review: Individual Talk |
| 12 | 25/5 | | | Innovation in Exercise Physiology: Group Talk |
| 13 | 1/6 | | | Innovation in Exercise Physiology: Group Talk |