

Instructor: Dr. Willem Meeuwisse
Phone: 403-220-8426
Email: w.meeuwisse@ucalgary.ca
Office: KNB 3300E
Office Hours: By Appointment

Room: KNB 127
Days: Wednesdays
Time: 3:00 - 5:50 pm
Course Website: Blackboard

Course Description:

This course provides instruction in critical enquiry, critical appraisal, research design, and includes the successful completion of an independent research project. It will provide the student with a general overview of investigative research and the nature of scientific inquiry. In the first half of the course, the student will participate in a variety of learning experiences including lectures, discussions, seminars, reading assignments, oral presentations, and critical appraisal projects. By the end of the first term, the student will have prepared a research proposal that contains the various elements that are individually and collectively important for a successful research project.

In the second half of the course (the second term), the student will undertake, in conjunction with a supervisor, to carry out the research project outlined in their proposal. By the end of the course, the student will have prepared a research report, in publication format, containing the results of the completed project.

Dr. Meeuwisse is a physician in the Sport Medicine Centre with a special interest in the design and interpretation of research studies. He also has a variety of research interests including sport injury and rehabilitation, epidemiology, and the health aspects of exercise.

This course will make use of didactic lectures, case studies and examples, assignments, discussions, seminars, assigned reading, student prepared oral presentations, critical appraisal projects, and research experience.

Course Objectives:

Upon completion of this course, the student will be expected to have achieved the following objectives:

A. Knowledge

1. to demonstrate an understanding of the nature of scientific inquiry and the scientific method
2. to identify the methods available for conducting a detailed, comprehensive literature search and for storing and collating literature
3. to judge the appropriateness of a research question
4. to identify and describe each of the individual elements that combine to make a research proposal
5. to understand the importance of human/animal ethical considerations and institutional ethics committees
6. to evaluate the advantages and disadvantages of various research designs
7. to recognize threats to validity within a given study design
8. to recognize the appropriateness of various types of statistical analyses and

- the meaning (relevance) of "statistical significance"
9. to list the major ethical considerations associated with modern research and scientific writing
 10. to list the major elements required for successful scientific writing and publishing
 11. to identify the elements required for a scientific oral presentation

B. Skills

1. to complete a comprehensive literature review
2. to write a structured abstract
3. to formulate a testable research question (hypothesis)
4. to write a scientific research proposal appropriate to answer the research question
5. to apply to an institutional ethics committee
6. to consistently provide an appropriate critical appraisal of published research
7. to conduct a research project including collection and analysis of information (data)
8. to write a publication style research report
9. to prepare and give a scientific oral presentation

A. Attitude

1. to realize the importance of the scientific method for advancing knowledge while recognizing its limitations

**Required Reading
Materials:**

The following text is available in the Bookstore as a course pack:
Research Methods in Athletic Training. Arnold, Gansneder and Perrin Eds. F.A Davis Company, Philadelphia. 2005. ISBN 0-8036-0778-4.

Other required readings will be posted on Blackboard.

**Contacting the
Instructor:**

Students requiring assistance are encouraged to speak with their instructor during class or office hours. Should you wish to meet with the instructor outside of office hours, please phone or email the instructor to make an appointment.

Email, while commonly used, does limit the effectiveness of communications and may not be the best way for instructors to answer student questions. Therefore, the instructor may request a telephone call or personal meeting. Your instructor will inform you as to his/her expectations about emails.

Grading Scale:

Grade	Percent	Grade Point Value	Description
A+	>95%	4.00	Outstanding
A	90-95%	4.00	Excellent - superior performance, showing comprehensive understanding of subject matter.
A-	85-89%	3.70	
B+	80-84%	3.30	
B	75-79%	3.00	Good-clearly above average performance with knowledge of subject matter generally complete.
B-	70-74%	2.70	
C+	66-69%	2.30	
C	62-65%	2.00	Satisfactory – basic understanding of the subject matter. Grade point average below 2.00 is not sufficient for promotion.
C-	58-61%	1.70	
D+	54-57%	1.30	
D	50-53%	1.00	Minimal pass – marginal performance; generally insufficient preparation for subsequent courses in the same subject.
F	<50%	0	Fail – unsatisfactory performance or failure to meet course requirements.

Evaluation of Course Content:

1. classroom participation	10%
2. assignments (design, critical appraisal, abstract)	25%
3. written research proposal	15%
4. data collection, analysis, and written report	45%
5. oral presentation of research results	<u>5%</u>
TOTAL	100%

Late Policy:

Assignments that are not handed in by the end of class on the due date will be given a grade of 0.

Final Examination:

There is no final examination

Additional Course Information:**SPECIAL NOTES:**

This course is designed to provide the honors student with a broad exposure to research and the method of scientific inquiry. As a result, each individual component of the research process (such as statistics or research design), can not be covered in great depth. Rather, the focus of the course will be on the integration and application of theoretical principles.

This course is a departure from the traditional method of instruction which emphasizes lectures and examinations. Since success in this course depends heavily upon attendance, class participation and student-instructor-student interaction, we will apply the following "rules":

- any student unable to attend a lecture must have a good reason and must notify Dr. Meeuwisse 24 hours in advance or leave a voice message at 220-8426

- students are expected to be right on time for classes
- all assignment deadlines are written in stone

This course has few deadlines but this should not lull the student into a false sense of security. Research projects take considerable planning and will not be successful using the "cramming" method. The early identification of an area of interest is strongly suggested so that work on the proposal can begin in September. Then, modifications to it can take place throughout the term. An initial idea, followed by several revisions, is the way most successful science projects are carried out. We suggest that this single element, namely the early identification of a topic of interest, followed by further focusing on a single, workable idea for the research project, is the most important time-related component of this course.

Course Content:

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|----|----------------|--|
| A. | Sep. 12 | Introduction |
| B. | Sep. 19 | What is Research? Science and Paradigm Shifts. |
| C. | Sep. 26 | Published Literature: Searching, Retrieving and Storing |
| D. | Oct. 3 | The Research Question and Research Proposal |
| E. | Oct. 10 | Principles of Study Design |
| F. | Oct. 17 | Causation and Threats to Validity |
| G. | Oct. 24 | Interpretation of Data, Statistics, Significance, and Chance |
| H. | Oct. 31 | <i>Independent Study</i> |
| I. | Nov. 7 | Principles of Critical Appraisal |
| J. | Nov. 14 | Applying Critical Appraisal Techniques |
| K. | Nov. 21 | Scientific Writing, Publishing and Integrity (Written Proposals Due) |
| L. | Nov. 28 | Oral Presentations and Discussion of Research Proposals |
| M. | Dec. 5 | Project Planning |

Winter Sessions / Due Dates

- | | |
|---------|---------------------------------------|
| Jan. 23 | Monthly review (Progress Report Due) |
| Feb. 27 | Monthly review (Progress Report Due) |
| Mar. 27 | Monthly review (Progress Report Due) |
| Apr. 3 | Final Research Report Due |
| Apr. 10 | Oral Presentation of Research Project |

ASSIGNMENTS AND DEADLINES

A. Assignments

	<u>Deadline</u>
Structured Abstract (5%)	Oct 3
Proposal Abstract (5%)	Oct 10
Design (5%)	Oct 17
Assigned Critical Appraisal (5%)	Nov 14
Selected Critical Appraisal (5%)	Nov 21

*******IMPORTANT****** *Assignments handed in late will be assigned a 0 grade*

B. Written Research Proposal (15%)

The student will write a formal research proposal containing all of the elements necessary to undertake an independent research project. The length of the proposal will be a limit of 20 double-spaced typewritten pages. The proposal will be written in the same scientific format required by granting agencies. **The proposals are due Nov. 23** (one week prior to presentation).

C. Class Participation and Oral Research Proposal Presentation (10%)

Each student will prepare a formal 10 minute oral presentation of their research proposal followed by a 5 minute discussion period. Students will be expected to offer comments relating to their peers' presentations. Powerpoint slides are required and the presentations should be rehearsed ahead of time so as to not 'read' it. **These presentations will take place in class on Nov 30.**

D. Research Report (45%)

In the second term, the student will conduct the research outlined in their proposal, working with the faculty member who has agreed to supervise the project (see "Research Supervisor Terms of Reference"). The report must be assembled into a formal research paper according to the format handed out in class. **The finished research papers are due April 4.** Although the final report is due on this date, the first draft should be completed much earlier (see "Research Supervisor Terms of Reference").

E. Oral Presentation of Research Results (5%)

Each student will prepare a formal 10 minute oral presentation of their research results. The format will be similar to that of the presentation of a paper at a scientific meeting. High-quality PowerPoint is required and the presentation should be rehearsed ahead of time so as to not 'read' it. The presentation will be followed by a 5 minute question and discussion period. **The oral presentations will be given April 11.**

Supplementary Course Information

In accordance with the University of Calgary Calendar

**Academic
Accommodation
Awareness Information:**

It is the student's responsibility to request academic accommodation. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the commencement of this course. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation.

Plagiarism/Cheating/Other Academic Misconduct:
(see Calendar)

A single offence of cheating, plagiarism, or other academic misconduct is a serious act that will not be tolerated in the Faculty of Kinesiology. Penalties for such acts will be determined by the Dean and may result in a failing grade, probation, suspension, or expulsion. Any student who is uncertain if an action falls into this category should consult the instructor and/or the Calendar.

Midterm Exam Policy:

The Faculty of Kinesiology policy is that all students are expected to write midterm exams on the dates listed on the course outline. Special accommodation may be granted by the instructor in **exceptional circumstances only** which include illness, participation in athletic events (varsity, national or international), domestic affliction, and religious conviction. It is the student's responsibility to supply proper documentation and/or notification **prior** to the originally scheduled midterm to support their circumstance. Personal travel plans and arrangements are **not** valid reasons for requesting a special accommodation for a midterm exam. Failure to comply with this policy will result in a grade of zero for the midterm and possible failure in the course.

FOIP Policy:

Please note that the University is under the jurisdiction of the provincial Freedom of Information and Protection of Privacy (FOIP) Act. Please refer to the website for details: <http://www.ucalgary.ca/secretariat/privacy>

**Internet and Electronic
Communication Device
Information:**

Any surfing of the Internet during lectures that is not directly related to the class discussion is distracting and strictly forbidden. Additionally, the use of any electronic devices (e.g., cellular phones, Blackberrys) for e-mailing, texting, etc. is strictly prohibited. Please turn OFF your phone before the beginning of each lecture.

Instructors have the authority, at the discretion of the dean of their faculty, to require that specific course assignments, term papers and academic exercises be submitted in an electronic format. Instructors cannot require that multiple copies of an assignment be submitted.

**Emergency
Evacuation/Assembly
Points:**

For classes in the Kinesiology buildings Primary assembly point is the MacEwan Student Centre - North Courtyard and the Alternate assembly point is University Theatres Lobby

Safewalk Information:

Safewalk volunteers walk people safely to their destination on campus (including Health Sciences, Children's Hospital, McMahon Stadium, and University LRT station). This service is free and available to students, staff and campus visitors. Call 403-220-5333 (24 hours a day/7 days a week/365 days a year).

Student's Union:

The Kinesiology Representative is Calindy Ramsden - E-mail: kinesrep@su.ucalgary.ca