



Course Syllabus: Research & Design
EXPH 5003-101
Fall 2024, TTH 1-2:20pm, CO223
Department of Athletic Training & Exercise Physiology

Contact Information

Instructor: Michael Olson, Ph.D.
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Office hours: MW 9-10:30am; TTH 9-11am.

Course Description

An introduction to the basic principles of research methods in Exercise Physiology. A study of research designs, measurement theory, data collection methods, and scientific writing principles specific to health and human performance. This course focuses on the basic concepts of research in exercise science, examining the vocabulary of clinical research as well as theory and ethics in research, principles of objective measurement, validity and reliability, experimental design and overview of statistical procedures as they relate to data analysis in current sports and medical theory. Writing research proposals as well as reporting results, and identifying strengths and weaknesses of specific research reports will be also addressed. This course is intended to prepare students to complete a proposal of Master's thesis, or other actual research project.

Textbook & Instructional Materials

Armstrong L. E. and Kraemer W. J. ACSM's Research Methods, 1st edition, Wolters Kluwer

Course Objectives

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

1. Explain the importance of research as a means to solve problems in Exercise Physiology.
2. Explain the application of different research approaches in Exercise Physiology to solve problems in its professional field.
3. Identify threats to validity and reliability of a study and be able to design Exercise Physiology studies to minimize such threats.
4. Explain various aspects of research designs.
5. Develop research practitioners that critically utilize the scientific literature in Exercise Physiology.

6. Conduct a systematic analysis of the literature using hand and computer search techniques.
7. Write a research proposal in accordance with standards in Exercise Physiology.
8. Design an experiment in accordance with the appropriate research methodology.
9. Appreciate and understand ethical issues associated with research in Exercise Physiology.

Attendance

1. Attendance at class is compulsory not optional. Any student whose absence was caused by (1) personal illness (must bring a receipt or note from a doctor), (2) death in the immediate family, or (3) authorized participation in official school functions will be given an opportunity to rectify in a manner acceptable to the professor, any deficiencies which may have resulted from such absence. The professor has the prerogative of determining whether or not a student may rectify deficiencies occasioned by absences for other reasons.
2. Only one absence will be permitted without penalty. Each additional absence will lead to a 5 point deduction of your attendance points (100 pts). More than 4 absences will result in your dismissal from the class with a failing grade.
3. Arrive on time. We will start promptly. 2 times late = 1 absence.

Course Policies

1. Class preparation
Students are expected to Read assigned chapters prior to class.
Failure to do so will likely result in unsatisfactory performance
2. Respect for instructor and classmates
 - a. If you are talking when class starts and do not stop, instructor will ask you to leave.
 - b. There is no savory smell food allowed in the classroom.

Assignments

You must turn in each assignment at the beginning of class on the day it is due. Assignments will not be taken after the start of class.

- 1) Literature Review (10%): **due on Sunday, 10/27 by 11pm**
Literature review (Minimum of 20) will be Times New Roman, 12 fonts, double spaced, typed pages in length including references. **See the appendix for a format guide.**
- 2) Research Proposal (15%): **due on Sunday, 11/17 by 11pm**
The research proposal will be written into a formal proposal for his/her project. The proposal will be Times New Roman, 12 fonts, double spaced, typed pages in length including references and any appendices, and will outline the intended research questions, hypothesis (es), a thorough literature review, experimental design, procedures, and the means of analysis including statistical methods to be used. **See the appendix for a format guide.**
- 3) Proposal Presentation (15%): Peer-review

You will present an abbreviated version of your research proposal to the entire class using power point slides. A synopsis of the literature review will be included. The focus of your presentation will be your research hypothesis, your theoretical construct and the design of your experiment with description of your intended research protocol, and data analysis method. **You will only have 15 minutes (10 min presentation and 5 min Q&A)** to communicate this to your peers, so organization of your presentation is imperative. All presenters will get a question from each audience and must answer the question. **See the appendix for a presentation rubric.**

***All in-course assignments must be submitted in an ELECTRONIC FORMAT ONLY.

***All written work is expected to be written at a graduate level and will be evaluated for both form and substance. All written and oral work will be evaluated with equally weighted attention to the extent to which the work is:

- Clear (how self-guiding, transparent, etc.)
- Comprehensive (how complete, thorough, etc.)
- Correct (how accurate and not misleading, etc.)
- Current (how up-to-date and modifiable, etc.)
- Contextual (how well it is placed theoretically, historically, culturally, socially, etc.)

Late Work

Late assignments will not be accepted.

Plagiarism: MSU Thesis Guidelines

Plagiarism carries stiff academic penalties. Students must carefully reference material gleaned from references, as this is the best defense against any possibility of plagiarism.

Exams

Take all three exams at the scheduled times and dates. No make-up exams will be given, except under medical/ family emergencies/ authorized participation in official school functions.

****Any form or sign of academic dishonesty during an exam will result in a zero for the exam grade.**

Academic Misconduct Policy & Procedures

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct.

Grading

Course Grade - Grades will be based on your performance in the following areas:
Table 1: Percentages allocated to each assignment.

Assignments	%
Exams 1	5
Exams 2	20
Exams 3	20
Literature Review	20
Research Proposal	15
Proposal Presentation	15
Participation	5
Total	100

Table 2: Total percentages for final grade.

Grade	%
A	90-100
B	80-89
C	70-79
D	60-69
F	< 60

Services for Students with Disabilities

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should make application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to <http://www.mwsu.edu/student-life/disability>.

College Policies

Campus Carry Rules/Policies

Refer to: [Campus Carry Rules and Policies](#)

Smoking/Tobacco Policy

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated-smoking areas at each location.

Alcohol and Drug Policy

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal sanctions under local, state and federal law for any offenses involving illicit drugs on University property or at University-sponsored activities.

Pregnant and Parenting Students

To support the academic success of pregnant and parenting students and students with pregnancy related conditions, the University offers reasonable modifications based on the student's particular needs. Any student who is pregnant or parenting a child up to age 18 or has conditions related to pregnancy, may contact MSU's designated Pregnancy and Parenting Liaison to discuss support available through the University. The Liaison can be reached by emailing ruby.garrett@msutexas.edu or calling 940-397-4500. Should a student communicate with me that they are pregnant or have a pregnancy related condition or may need additional resources related to pregnancy or parenting, I will communicate that student's information to the Title IX Coordinator, who will work with the student and others, as needed, to ensure equal access to the University's education program or activity.

A pregnant student, a parenting student, or a student with pregnancy related conditions may be provided with supportive measures, based on the student's individualized needs, analogous to those provided to a student with a temporary medical condition, and provided such supportive measures do not fundamentally alter the nature of an education program or activity. Such supportive measures may include, but are not limited to:

For pregnant students:

- (1) Providing breaks during class to express breast milk, breastfeed, or attend to health needs associated with pregnancy or related conditions, including eating, drinking, or using the restroom;
- (2) Excusing intermittent absences to attend medical appointments;
- (3) Providing access to online or homebound education, including the providing of access to instructional materials and video recordings of lectures (to the extent

such materials, recordings are made available to any student with an excused absence);

(4) Facilitating changes in schedule or course sequence, including extensions of time for coursework and rescheduling of tests and examinations and/or providing opportunity to make up missed assignments/assessments (such time extensions shall be applied in the same manner as the University grants and provides ADA/504 accommodations for additional time);

(5) Allowing a student to sit or stand, or carry or keep water nearby;

(6) Offering counseling;

(7) Facilitating changes in physical space or supplies (for example, access to a larger desk or a footrest);

(8) Allowing the student to maintain a safe distance from substances, areas, and activities known to be hazardous to pregnant individuals or unborn children;

(9) Providing elevator access;

(10) Facilitating a voluntary leave of absence from the University if the student is in good academic standing at the time the student takes a leave of absence, and facilitating a return to the student's degree or certificate program without being required to reapply for admission if the student remains in good academic standing; or

(11) Making other necessary changes to policies, practices, or procedures.

For Parenting Students:

(1) Facilitating priority registration to the extent the University provides early registration for any other group of students; or

(2) Facilitating a voluntary leave of absence from the University if the student is in good academic standing at the time the student takes a leave of absence, and facilitating a return to the student's degree or certificate program without being required to reapply for admission.

Obligation to Report Sex Discrimination under State and Federal Law

Midwestern State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. State and federal law require University employees to report sex discrimination and sexual misconduct to the University's Office of Title IX. As a faculty member, I am required to report to the Title IX Coordinator any allegations, personally observed behavior, or other direct or indirect knowledge of conduct that reasonably may constitute sex discrimination or sexual misconduct, which includes sexual assault, sexual harassment, dating

violence, or stalking, involving a student or employee. After a report is made, the office of Title IX will reach out to the affected student or employee in an effort to connect such person(s) with resources and options in addressing the allegations made in the report. You are also encouraged to report any incidents to the office of Title IX. You may do so by contacting:

Laura Hetrick
 Title IX Coordinator
 Sunwatcher Village Clubhouse
 940-397-4213
 laura.hetrick@msutexas.edu

You may also file an online report 24/7 at
https://cm.maxient.com/reportingform.php?MSUTexas&layout_id=6
 Should you wish to visit with someone about your experience in confidence, you may contact the MSU Counseling Center at 940-397-4618. For more information on the University's policy on Title IX or sexual misconduct, please visit
<https://msutexas.edu/titleix/>

Tentative Course Schedule:

This may very well change.

****Exam 1-3 dates will be determined by class progress at least one week prior to giving the exam.*

Table 3: Course Schedule

Week	Date	Lecture topic	Reading
1	8/27-29	Lecture introduction & overview, What is a Research?	Chapter 1
2	9/03-05	Writing a Research Manuscript/Thesis	Chapters 2, 20
3	9/10-12	How to Get an Idea for Research Topic? Searching the Literature (Laptop) * Use of advanced databases	Chapter 3
4	9/17-19	Literature Review -Critical analysis Literature Review -Clinical review sample/practice	Chapter 4
5	9/24-9/26	Exam 1 (Take-home: D2L)- Critical analysis Methods: Study Design	Chapter 5
6	10/01-03	Methods: Study Design	Chapter 5
7	10/8-10	Experimental Design	Chapters 7, 8
8	10/15-17	Validity/Reliability	Chapter 10, 15

Week	Date	Lecture topic	Reading
9	10/22 10/24	EXAM 2: Ch1-5, 7-8, 10, 15, 20 Statistical Approached to Data Analysis (Laptop)	Chapter 18
10	10/29- 31	Conducting a Study Proposal overview	Chapters 18, 14
11	11/05- 07	Statistical Approached to Data Analysis (Laptop)	Chapter 18
12	11/12- 14	Statistical Approached to Data Analysis (Laptop) Ethical Issues in Research-IRB application	Chapters 18,12
13	11/19- 21	Research Proposal/Presentation part 1	
14	11/25- 27	Thanksgiving Holidays-No Class	
15	12/03- 05	Research Proposal/Presentation part 2	
16	12/12 1-3pm	EXAM 3: Ch12, 14, 18	

Appendix: Format Guide

1. Literature Review:

Article reference: Author Last Name, First Initial (year published). Title of the article. Journal of Publication, Vol. # (issue #): pages.

Summary: MUST include p value in the result

2. Research Proposal:

The aforementioned experience will culminate in a paper written in thesis format and submitted with the following for evaluation:

- *Title Page (1 page): Title and your name*
- *Table of Contents (1 page): Each subtitle (Introduction, Literature Review, Methods, and References) with page number*
- *Introduction with purpose statement and hypothesis (2-3 pages)*
- *Literature review (5-7 pages)*
- *Detailed methodology with statistical analysis (2-3 pages): Subjects, Study design, Measurements, Statistical analysis*
- *References (minimum of 20) (2-3 pages)*

3. Scoring Rubric for Oral Presentations: See Table 4.

Table 4: Scoring Rubric

Category	Scoring Criteria	Total Points	Score
Organization (20 points)	Information is presented in a logical sequence.	20	
Content	Material included is relevant to the overall message/purpose.	10	

(20 points)	Appropriate amount of material is prepared, and points made reflect well their relative importance.	10	
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Category	Scoring Criteria	Total Points	Score
Presentation (60 points)	Speaker maintains good eye contact with the audience and is appropriately animated (e.g., gestures, moving around, etc.).	10	
	Speaker uses a clear, audible voice.	10	
	Delivery is poised, controlled, and smooth.	10	
	Visual aids are well prepared, informative, effective, and not distracting.	10	
	Length of presentation is within the assigned time limits.	10	
	Information is well communicated.	10	
Overall		100	