UF Department of Applied Physiology and Kinesiology
College of Health and Human Performance
UNIVERSITY of FLORIDA

Research Methods

HLP 6535 | Class # 26644 | 3 Credits | Fall 2025

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Course Info

INSTRUCTOR

Ashley J. Smuder, PhD
Office: FLG 112
Email: asmuder@ufl.edu
Preferred Method of Contact: Email

OFFICE HOURS

Thursday 9:30am – 10:30am or by appointment

MEETING TIME/LOCATION

FLG 225
Wednesday | Period 1 – 3 (7:25am – 10:25am)

COURSE DESCRIPTION

This course is designed to introduce basic research methodology and design, which includes statistical analysis techniques used in applied physiology and kinesiology. Students will demonstrate their knowledge of the course materials by analyzing, interpreting and summarizing research writing in professional journals and by examining a research study.

PREREQUISITE KNOWLEDGE AND SKILLS

Undergraduate Degree. Some background in math and science. Introductory statistics is not required but is helpful.

REQUIRED AND RECOMMENDED MATERIALS

No formal textbook is required for this class. ACCESS TO THE INTERNET, A PC OR MAC COMPUTER WITH UP-TO-DATE MICROSOFT SOFTWARE IS REQUIRED. All additional material will be provided online within canvas and by downloading software.

COURSE FORMAT

There are two major modules that are ~4-5 weeks in duration. There are online assignments due each week that consist of a mix of discussion posts, worksheets and quizzes. After each module there will be an online, in-class midterm. The course will entail in-person instruction on the scheduled days/times. Throughout the course you will be developing a "research plan" that consists of a 6–8-page document and a poster presentation where you will design a research approach for a problem you are interested in.

COURSE LEARNING OBJECTIVES

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

- Discuss issues related to research ethics, responsible conduct of human and animal research, and data collection, as well as recognize how to avoid plagiarism.
- Utilize effective techniques for conducting a literature search using online databases and reference manager software.
- Critique research articles and determine the quality of publications, identifying issues related to methodology and guidelines to improve scientific rigor and reproducibility.
- Identify and apply the steps involved in the scientific method by formulating a research question, building effective scientific aims, generating a research hypothesis and designing an experimental plan (study) to address the question.
- Generate and store data in an effective format and then select and perform appropriate statistical calculations to analyze data.
- Interpret visual representations of data (i.e. tables, graphs)
- Utilize scientific principles and inductive reasoning to translate and interpret results.
- Present aspects of the scientific method, including experimental design and results, in an accurate and professional manner.
- Outline the processes related to manuscript reviews, writing, authorship and journal impact factors.

University Policies

University policies are summarized here. This link will direct students to a separate webpage that will provide all required academic policies, such as attendance, grading, personal conduct, DRC and evaluation verbiage, as well as campus academic, health, and wellness resources.

Course Policies

ATTENDANCE POLICY

Make every effort to attend all class meetings. Students will be responsible for all material presented in class in addition to any material posted on the class website. Lectures will not be recorded/posted, so it is the student's responsibility to get notes from a classmate following an absence. Students called for participation in lectures or discussion sessions and not present will receive a zero for participation. Students who receive a zero in participation for unexcused absence will not be able to earn full credit for participation. Students who need to miss a class should communicate and discuss with the instructor, in advance of missing a class, to avoid penalties. Students must be present in class for all quizzes and exams.

APPROPRIATE USE OF AI TECHNOLOGY

The use of any materials or resources prepared by another person or Entity (inclusive of generative AI tools) without the other person or Entity's express consent or without proper attribution to the other person or Entity is considered *cheating.* Additionally, the use of any materials or resources, through any medium, which the Faculty / Instructor has not given express permission to use and that may confer an academic benefit to a student, constitutes *cheating*. The use of any AI enabled tool in this course substantially compromises the student's ability to achieve the stated learning objectives and are strictly prohibited throughout the entirety of the course.

In addition:

1. Phones must be turned to silent or off during all lectures and exams. Vibrate and quiet settings are not acceptable. They should never be visible during an exam and, if seen, will be looked upon as an attempt to use it resulting in the consequences shown below in "Academic Honesty".

2. Students will be expected to show respect to the instructors and all students in the class. Students behaving disrespectfully (talking during lectures, making inappropriate or threatening statements to instructor or students, using phones in class, etc.) will be dismissed from the lecture or exam at hand. All university regulations governing student behavior will be enforced.

3. Lectures will begin at the scheduled times. Students will be expected to arrive on-time, and in the event of tardiness, to enter the room with as little disruption as possible.

4. Lecture notes posted on the class website are the property of the instructor. They are posted solely for students in this course and solely to facilitate note taking and studying. No part of the materials may be re-distributed, reproduced, or used for any purpose other than note-taking and studying.

ACADEMIC DISHONESTY

Cheating in any way will not be tolerated. If a student is made aware of cheating, approached by another student to conspire to cheat, or concerned that another student may be attempting to look at his/her exam or answers, it is that student's responsibility to notify the instructor to avoid implication in cheating incidents. Any student caught cheating will receive a zero. There will be no exceptions. Additionally, the instructor may assign a failing grade for the course. In all cases, students will be subject to the regulations and consequences, which can include probation or expulsion from the University, outlined in the Student Handbook.

EXAM MAKE-UP POLICY

Students who are ill or have an emergency that prevents them from taking the exam during the designated time are responsible for contacting the instructor as soon as possible. Students who have occasional extra-curricular or academic activities that conflict with exams or quizzes should contact the instructor in advance to make arrangements to make-up the assignments. Unexcused absences/availability for exams will result in a zero on the exam. Make-up exams are offered at reasonable times in agreement with the instructor. Students must make-up quizzes from each module within one week of the missed quiz, unless impeded by extenuating circumstances. Requirements for make-up exams, assignments and other work are consistent with university policies.

COURSE EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online. Students can complete evaluations in three ways: (1) The email they receive from GatorEvals, (2) Their Canvas course menu under GatorEvals, or (3) The central portal located here. Guidance on how to provide constructive feedback is available at the gator evals site. Students will be notified when the evaluation period opens. Summaries of course evaluation results are also available at the gator evals site.

APK ADMINISTRATORS

For suggestions or concerns related to APK courses or programming, please reach out to any of the following:

- Dr. David Vaillancourt (he/him), APK Department Chair, vcourt@ufl.edu
- Dr. Demetra Christou (she/her), APK Department Vice Chair, ddchristou@hhp.ufl.edu
- Dr. Steve Coombes (he/him), APK Graduate Coordinator, rachaelseidler@ufl.edu
- Dr. Anna Gardner (she/her), APK Undergraduate Coordinator, akgardner@ufl.edu

Grading

Students in the course will be assessed through quizzes in class, exams, and participation in discussion sessions. Quizzes are administered weekly. There are three exams in the course (one per module). Discussion sessions for participation are held weekly.

Evaluation Components (Number of each)	Points Per Component	Total Grade
Assignments	80 pts	80/220
Midterm Exams (2)	30 pts each = 60 pts	60/220
Attendance and Participation (2)	10 pts per module = 20 pts	20/220
Research Article Presentation	60 pts	60/220

The following table outlines the point-accruing components of the course:

Grades will be determined by the composite of 3 primary sources.

ASSIGNMENTS (80 points total): will be determined on the basis of weekly exercises that are provided on CANVAS. Approximately 8 weeks of assignments will be administered throughout the semester that are comprised of exercises on EXCEL, SAS JMP or other programs, online quizzes, discussion board participation and writing assignment.

EXAMS (60 points total): There will be two exams during this course. Questions will be multiple choice, true/false or matching on conceptual material and problem solving, with less emphasis on memory. Exams will usually be 30 questions. You will be given more than enough time to complete the exams.

ATTENDANCE AND PARTICIPATION (20 points total): Students are expected to attend all scheduled meetings and contribute to group assignments and discussions to receive full participation points.

RESEARCH PROJECT (60 points total): Each student will develop an independent research design paper and poster presentation. We will be working on this project throughout the semester, so it should reflect an outcome of your work throughout. For students who are actively doing research, it is advisable that they work with their advisors to determine a suitable subject to explore in depth for this purpose. A final poster of the project will be presented during the last 2 weeks of class.

FINAL GRADE: Canvas will keep track of your raw grades. However, it is an imperfect system and your final grade may not be accurately determined by CANVAS. Personally, I would ignore your ongoing grade on CANVAS and just look at how you are doing relative to the total points for each assignment. I can give you a detailed grade listing and calculation at the end of the semester if you need it.

Grading Scale: Students take quizzes and exams using Canvas and scores are available immediately upon submission. Grades for materials being evaluated by the instructor will be posted within 1-2 weeks of submission. Students should contact the instructor as soon as possible if they feel there is an error in the grading of individual questions or submission of final grades. Final course grades will be assigned based on the table below. The grade achieved by the student is final. There is no rounding of grades in any circumstance. Any requests for additional extra credit or special exceptions to these grading policies will be interpreted as an honor code violation (i.e., asking for preferential treatment) and will be handled accordingly. More detailed information regarding current UF grading policies can be found here: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/.

The instructor will use the rubric in the table below to assign points based on participation in class, discussion assignment submissions and research article presentation.

Excellent	90-100%	- Defines, describes, and illustrates concepts - Explains, assesses and criticizes ideas - Demonstrates preparation and reading of assignments
good	80-89.99%	- Defines, describes, and illustrates concepts - Explains, assesses and criticizes ideas - Evidence of reading assignments, but not fully prepared
reasonable	70-79.99%	- Defines, describes, and illustrates concepts - Explains, assesses, or criticize some ideas - Evidence of incomplete reading of assignments and preparation
basic	60-69.99%	- Defines and describes some concepts - Explains but cannot assess and criticize ideas - Clearly unprepared and lacking evidence of reading assignments
bare minimum	0-59.99%	- Defines and describes some concepts - Unable to explain, assess, or criticize ideas - Clearly unprepared and lacking evidence of reading assignments - Not present or refusal to engage or discuss

Late Policy: Assignments may be submitted late with a valid and university approved excuse. Without a university approved reason 10% of possible points will be deducted per day. University policy regarding attendance and approved reasons for missing class and associated assignments can be viewed here: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

Letter Grade	A	B+	B	C+	C	D+	D	E
Percent of Total Points	90.00-100%	87.00-89.99%	80.00-86.99%	77.00-79.99%	70.00-76.99%	67.00-69.99%	60.00-66.99%	0-59.99%
GPA of Each Letter Grade	4	3.33	3	2.33	2	1.33	1	0

Weekly Course Schedule

The course includes two modules: I) Scientific Method, Writing and Reviewing; II) Statistical methods and Ethics of Research.

Tentative dates and course plan are on the next page.

Week	Date	Class Activity	Module
1	27-Aug	Course Intro How to Approach Scientific Problems Understanding the Origins of Creativity	1
2	3-Sep	Research Writing and Reviewing Research Proposals and Databases	
3	10-Sep	Sensitivity and Specificity Internal and External Validity	
4	17-Sep	Types of Research Choosing a Research Project	
5	24-Sep	Midterm Exam 1	
6	1-Oct	Descriptive Statistics Hypothesis Testing	2
7	8-Oct	Comparing Two Populations Paired and Non-Parametric Data	
8	15-Oct	Linear Regression Comparing Groups of Nominal Data	
9	22-Oct	ANOVA, Multi-Way ANOVA and Post Hoc Tests	
10	29-Oct	Quantitative Research Working with EH&S, the IRB and IACUC Understanding Research Ethics	
11	5-Nov	Midterm Exam 2 – Research Projects Due	
12	12-Nov	Presentations	
13	19-Nov	Presentations	
14	26-Nov	No Class - Thanksgiving Break	
15	3-Dec	No Class	

SUCCESS AND STUDY TIPS

Here are some tips that have proven useful for many:

- To succeed in this course, students should prepare regularly and in advance. Lecture slides are available online for previewing and reviewing content. Students should check topics and assignments on the course schedule above, read assigned text and attend class to ask questions.
- The course is designed so that if you do the assignments, review the material each week and work hard at your research project, you will likely earn a very good grade.
- Concentrate on the material and get as much out of it as you can to prepare yourself for a professional life rather than becoming anxious about winning a high grade. It is largely a skills class, not a “weed-out” class. Again, most student who do what is asked of them do very well.
- Look up material that inspires you. If you come across something that connects to class content, share as a Discussion on Canvas. We’re lucky to have so many resources through the internet.
- Check Canvas for announcements. Adjustments to the schedule and edits/clarifications to topics discussed in class will be posted there.
- Things happen; that’s life. If there are some majorly overwhelming things happening during your semester, send me an email and even schedule a meeting with me. We’ll figure out steps you should take in hopes of wrapping up the course well.