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

Research Methods

APK 4050 | Class # 21560 | 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

Tuesday 8:30am – 9:30am
Wednesday 10:30am – 11:30am

MEETING TIME/LOCATION

FLG 220
Tuesday | Period 1 (7:25am – 8:15am)
Thursday | Period 1 – 2 (7:25am – 9:20am)

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

APK major with 3, 4, 6 or 7 classification.

REQUIRED AND RECOMMENDED MATERIALS

Research Methods in Kinesiology and the Health Sciences by Susan Hall and Nancy Getchell. ISBN-13:978-0-7817-9774-0. ACCESS TO THE INTERNET, A PC OR MAC COMPUTER WITH UP-TO-DATE MICROSOFT SOFTWARE IS REQUIRED. Class materials will also include lecture slides, research articles and other online resources. These materials will be made available through CANVAS. Students are responsible for reading all assigned materials.

COURSE FORMAT

There are three major modules that are ~3-4 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. There will be no recordings of the lectures posted. Attendance of all scheduled meetings in person is required. Usually on Thursday

there will be a lecture while on Tuesday there will be application of the material, group discussion and a quiz. In the last part of the semester there will be research article presentations. Please see the tentative schedule for more detailed information.

COURSE LEARNING OBJECTIVES

By the end of this course, students should be able to:

1. Identify the steps involved in scientific method
2. Identify issues related to methodology and discuss guidelines to enhance scientific rigor and reproducibility
3. Discuss issues related to research ethics and responsible conduct of human and animal research
4. Outline the processes related to manuscript writing/submission/review/publication, authorship and journal impact factors
5. Conduct a literature search and manage references
6. Critique and present primary research articles
7. Formulate a research question/hypothesis and design a research study to address the question
8. Choose appropriate statistical tools to analyze data
9. Visually and verbally present data and describe experimental design and results

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. Cheating includes but is not limited to: attempting to look or looking at another student's exam or answers; or allowing another student to look at one's exam or answers. 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 on any exam, quiz or assignment 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
Quizzes (8)	5 pts each = 40 pts	40/240
Midterm Exams (3)	25 pts each = 75 pts	75/240
Discussion Assignments (8)	10 pts each = 80 pts	80/240
Attendance and Participation (3)	5 pts per module = 15 pts	15/240
Research Article Presentation	40 pts	40/250

QUIZZES (40 points total): There will be 8 quizzes in this course. Quizzes will focus on the material presented during lectures and the reading assignments. Some quizzes will be administered during normal class time while others will be take-home. Detailed information will be provided in advance on CANVAS.

MIDTERM EXAMS (75 points total). There will be three 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 be 25 questions. You will be given the full 50-minute class period to complete the exams.

DISCUSSION ASSIGNMENTS (80 points total): Weekly exercises will be provided on CANVAS. Approximately 8 discussion assignments will be administered throughout the semester that are comprised of exercises on EXCEL, other programs, discussion boards and writing assignments.

ATTENDANCE AND PARTICIPATION (15 points total): Students are expected to attend all scheduled meetings and contribute to group assignments and discussions to receive full participation points. More information on participation points will be provided.

RESEARCH ARTICLE PRESENTATION (40 points total): Each group of students will choose a research article of interest to them and develop a presentation of that article and written summary of the article based on the criteria covered throughout the course. We will be working on this project throughout the semester, so it should reflect an outcome of your work throughout. The final research presentation will be presented during the last weeks of class.

EXTRA CREDIT: Students can earn up to 12 points (4 per module) of extra credit in the course. Extra credits are based on successful completion of the extra credit assignment for each module. Extra credit assignments must be completed before the exam for each module to count toward the grade.

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 three modules: I) Scientific Method, Writing and Reviewing; II) Statistical methods; and III) Ethics of Research.

Tentative dates and course plan:

Date	Topics Covered	Note	Module
21-Aug	Course Intro and How to Approach Scientific Problems (Chapter 1)	Lecture	
26-Aug	**Quiz and Discussion Assignment**	**Discussion**	
28-Aug	Research Writing (Chapter 2) and Writing (Chapter 3) Research Proposals and Databases (Chapter 4 and 16)	Lecture	
02-Sep	**Quiz and Discussion Assignment**	**Quiz and Discussion**	
04-Sep	Sensitivity and Specificity Internal and External Validity	Lecture	**1**
09-Sep	**Quiz and Discussion Assignment**	**Quiz and Discussion**	
11-Sep	Types of Research Choosing a Research Project	Lecture	
16-Sep	**Midterm Exam 1**	**Exam**	
18-Sep	Descriptive Statistics	Lecture	
23-Sep	Hypothesis Testing	Lecture	
25-Sep	No Class		
30-Sep	**Quiz and Discussion Assignment**	**Quiz and Discussion**	
02-Oct	Comparing Two Populations Paired and Non-Parametric (Chapter 12 and 13)	Lecture	
07-Oct	**Quiz and Discussion Assignment**	**Quiz and Discussion**	**2**
09-Oct	Linear Regression (Chapter 11) Comparing Groups of Nominal Data	Lecture	
14-Oct	**Quiz and Discussion Assignment**	**Quiz and Discussion**	
16-Oct	ANOVA, Multi-Way ANOVA and Post Hoc Tests	Lecture	
21-Oct	**Midterm Exam 2**	**Exam**	
23-Oct	Qualitative Research (Chapters 7 and 8) Working with EH&S, the IRB and the IACUC	Lecture	
28-Oct	**Quiz and Discussion Assignment**	**Quiz and Discussion**	
30-Oct	Understanding Research Ethics (Chapter 5) and Lab notebooks	Lecture	
04-Nov	**Quiz and Discussion Assignment**	**Quiz and Discussion**	
06-Nov	**Midterm Exam 3**	**Exam**	
11-Nov	No Class – Veterans Day		3
13-Nov	Research Article Presentations	Presentations	
18-Nov	Research Article Presentations	Presentations	
20-Nov	Research Article Presentations	Presentations	
25-Nov	No Class – Thanksgiving Break		
27-Nov	No Class – Thanksgiving Break		
02-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 and most students 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.