

Research Methods

APK 4050 | Class # 25975 | 3 Credits | Fall 2024

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Course Info

INSTRUCTOR	Ashley J. Smuder, PhD Office: FLG 112 Office Phone: 352-294-1765 Email: asmuder@ufl.edu Preferred Method of Contact: Email
OFFICE HOURS	Tuesday 8:30am – 9:30am Thursday 9:30am – 10:30am
MEETING TIME/LOCATION	FLG 245 M W F Period 2 (8:30am – 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 ~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 Mondays and Wednesdays there will be a lecture while on Fridays there will be application of the material, group discussion and

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

Course & University Policies

ATTENDANCE POLICY

Make every effort to attend all class meetings. Missing classes will likely have an impact on participation grade. The rubric for participation points is included below under 'GRADING'. 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 on participation.

PERSONAL CONDUCT & ACADEMIC INTEGRITY

University of Florida students are bound by the Honor Pledge. On all work submitted for credit by a student, the following pledge is required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The [Student Honor Code and Conduct Code \(Regulation 4.040\)](#) specifies a number of behaviors that are in violation of this code, as well as the process for reported allegations and sanctions that may be implemented. All potential violations of the code will be reported to Student Conduct and Conflict Resolution. If a student is found responsible for an Honor Code violation in this course, the instructor will enter a Grade Adjustment sanction which may be up to or including failure of the course.

APPROPRIATE USE OF AI TECHNOLOGY

The UF Honor Code strictly prohibits [cheating](#). 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-CLASS RECORDING

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session. Publication without permission of the instructor is prohibited.

To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

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 class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.”

ACCOMMODATING STUDENTS WITH DISABILITIES

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting their Get Started page at <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations. Several activities in the course are performed in group. The instructor will work closely with the DRC and the students registered therein to make suitable arrangements for group assignments.

COURSE EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their

Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Getting Help

HEALTH & WELLNESS

- **U Matter, We Care:** If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.
- **Counseling and Wellness Center:** Visit the [Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.
- **Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the [Student Health Care Center website](#).
- **University Police Department:** Visit [UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).
- **UF Health Shands Emergency Room / Trauma Center:** For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; or visit the [UF Health Emergency Room and Trauma Center website](#).
- **GatorWell Health Promotion Services:** For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the [GatorWell website](#) or call 352-273-4450.

ACADEMIC RESOURCES

- **E-learning technical support:** Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.
- **Career Connections Center:** Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.
- **Library Support:** Various ways to receive assistance with respect to using the libraries or finding resources.
- **Teaching Center:** Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.
- **Writing Studio:** 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.
- **Student Complaints & Grievances:** Students are encouraged to communicate first with the involved person(s), but [here](#) is more information on the appropriate reporting process.

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. Joslyn Ahlgren (she/her), APK Undergraduate Coordinator, jahlgren@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 (9)	5 pts each = 45 pts	45/210
Midterm Exams (3)	20 pts each = 60 pts	60/210
Discussion Assignments (9)	5 pts each = 45 pts	45/210
Attendance and Participation (3)	10 pts per module = 30 pts	30/210
Research Article Presentation	30 pts	30/210

QUIZZES (45 points total): There will be 9 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 (60 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 20 questions. You will be given the full 50-minute class period to complete the exams.

DISCUSSION ASSIGNMENTS (45 points total): Weekly exercises will be provided on CANVAS. Approximately 9 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 (30 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. Please note that the University has specific reasons that are acceptable for missing class which apply to both undergrad and grad students:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

RESEARCH ARTICLE PRESENTATION (30 points total): Each student will choose a research article of interest to them and develop a presentation of that 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 week of class.

Grading Scale: Students take quizzes using Canvas and scores are available immediately upon submission. Grades for materials being evaluated by the instructor will be posted within two 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

GRADING SCALE

Students take exams and quizzes using Canvas and scores are available immediately upon 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 and showing on Canvas is final. There is no rounding of grades in any circumstance.

“More detailed information regarding current UF grading policies can be found here: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>.”

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 are on the next page.

Date	Topics Covered	Note	Module
23-Aug	Course Intro and How to Approach Scientific Problems (Chapter 1)	Lecture	1
26-Aug	Research Writing (Chapter 2)	Lecture	
28-Aug	Reviewing Writing (Chapter 3)	Lecture	
30-Aug	Quiz and Discussion Assignment	Quiz and Discussion	
02-Sep	No class – Labor Day		
04-Sep	Research Proposals and Databases (Chapter 4 and 16)	Lecture	
06-Sep	Quiz and Discussion Assignment	Quiz and Discussion	
09-Sep	Sensitivity and Specificity	Lecture	
11-Sep	Internal and External Validity	Lecture	
13-Sep	Quiz and Discussion Assignment	Quiz and Discussion	
16-Sep	Types of Research	Lecture	
18-Sep	Choosing a Research Project	Lecture	
20-Sep	Midterm Exam 1	Exam	
23-Sep	Descriptive Statistics (Chapter 10)	Lecture	2
25-Sep	Hypothesis Testing (Chapter 10)	Lecture	
27-Sep	Quiz and Discussion Assignment	Quiz and Discussion	
30-Sep	Comparing Two Populations; Paired and Non-Parametric (Chapter 12 and 13)	Lecture	
02-Oct	Comparing Groups of Nominal Data	Lecture	
04-Oct	Quiz and Discussion Assignment	Quiz and Discussion	
07-Oct	Linear Regression (Chapter 11)	Lecture	
09-Oct	ANOVA and Post Hoc Tests	Lecture	
11-Oct	Quiz and Discussion Assignment	Quiz and Discussion	
14-Oct	Multi-way ANOVA and ANCOVA	Lecture	
16-Oct	Midterm Exam 2	Exam	
18-Oct	No Class - Homecoming		
21-Oct	Understanding Research Ethics (Chapter 5) and Lab notebooks	Lecture	3
23-Oct	Working with the IRB	Lecture	
25-Oct	Quiz and Discussion Assignment	Quiz and Discussion	
28-Oct	Qualitative Research (Chapters 7 and 8)	Lecture	
30-Oct	Researchers Guest Lecture	Lecture	
01-Nov	Quiz and Discussion Assignment	Quiz and Discussion	
04-Nov	EH&S	Lecture	
06-Nov	Working with the IACUC	Lecture	
08-Nov	Quiz and Discussion Assignment	Quiz and Discussion	
11-Nov	No Class – Veterans Day		
13-Nov	Tips for Enhancing Early-Stage Career Development	Lecture	
15-Nov	Midterm Exam 3	Exam	
18-Nov	Research Article Presentations	Presentations	
20-Nov	Research Article Presentations	Presentations	
22-Nov	Research Article Presentations	Presentations	

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.