

GRADUATE RESEARCH METHODS

HLP 6535 ~ 3 CREDITS ~ FALL 2021

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Preferred Method of Contact: Email

OFFICE HOURS: W | Period 2-3 (8:30 AM – 10:25) or by appointment

MEETING TIME: M | Period 2-4 (8:30 AM – 11:30 AM)

MEETING LOCATION: FLG 225

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 planning 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 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. 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. The final project will be due one week before the end of the semester.

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.

COURSE AND UNIVERSITY POLICIES:

ATTENDANCE POLICY: Make every effort to attend all class meetings. Students who need to miss a class should communicate and discuss with the instructor in advance of missing a class to avoid potential penalties.

PERSONAL CONDUCT POLICY: Students are expected to exhibit behaviors that reflect highly upon themselves and our University. Specifically, you are expected to follow the UF Student Honor Pledge, which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult the instructor in this class.

EXAM AND ASSIGNMENT MAKE-UP POLICY: Make-up assessments and assignments will be given at the discretion of the instructor. If a student knows that they will be unable to take the exam, it is the student's responsibility to contact the instructor ahead of time to make arrangements. To request and possibly schedule a make-up quiz or exam (with valid explanation), please e-mail me and provide relevant information, including documentation. A student experiencing an illness should visit the UF Student Health Care Center or their preferred healthcare provider to seek medical advice and obtain documentation. If you have an illness, family emergency or death, please contact the Dean of Students Office (www.dso.ufl.edu) and follow the DSO Care Team procedures for documentation and submission of a request for make-up assignment (<https://care.dso.ufl.edu/instructor-notifications/>). They will contact your instructor so that you do not have to provide documentation to individual instructors for a make-up. 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.

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 and Wellness

- U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575
- Counseling and Wellness Center: <https://counseling.ufl.edu/>, 352-392-1575
- Sexual Assault Recovery Services (SARS) - Student Health Care Center, 392-1161

- University Police Department, 392-1111 (or 9-1-1 for emergencies)
<http://www.police.ufl.edu/>

Academic Resources

- E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>
- Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling. <https://career.ufl.edu/>
- Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>
- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>
- Student Complaints On-Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/> On-Line Students Complaints: <http://distance.ufl.edu/student-complaint-process/>

INCLUSION, DIVERSITY, EQUITY AND ACCESSIBILITY RESOURCES

For suggestions or concerns related to IDEA, please reach out to any of the following:

- Dr. Linda Nguyen, APK IDEA Liaison, linda.nguyen@hnp.ufl.edu
- Dr. Rachael Seidler, APK Graduate Coordinator, rachaelseidler@ufl.edu
- Dr. Joslyn Ahlgren, APK Undergraduate Coordinator, jahlgren@ufl.edu

GRADING:

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

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

A: 30% ASSIGNMENTS (60 points total): will be determined on the basis of weekly exercises that are provided on CANVAS. Approximately 12 weeks of assignments will administered throughout the semester that are comprised of exercises on EXCEL, SAS JMP or other programs, online quizzes, discussion board participation and writing assignment. There is one extra credit assignment offered per module. These assignments, along with reading assignments, have been targeted to require an average of 3 h of outside work per week. Some weeks may require more or less than that.

B: 40% RESEARCH PROJECT (80 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 1-2 weeks of class.

C: 30% 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 usually be 20 questions. You will be given more than enough time to complete the exams.

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 using Canvas and scores are available immediately upon submission. Grades for materials being evaluated by the instructor will be posted within one week 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/>.

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:

This course includes 4 Modules:

Module 1

- Topic 1 – How to approach scientific problems
- Topic 2 – Understanding the origins of creativity
- Topic 3 – Descriptive statistics
- Topic 4 – Choosing a research project
- Topic 5 – Comparing two sample populations using the t-test
- Topic 6 – Using databases to search the scientific literature
- Topic 7 – Paired and non-parametric datasets
- Topic 8 – Elements of scientific discourse and critique

Module 2

- Topic 1 – Comparing groups of nominal data
 - Topic 2 – Hypothesis testing
 - Topic 3 – Linear regression
 - Topic 4 – How to cite scholarly work
 - Topic 5 – Developing effective specific aims
 - Topic 6 – Care and handling of data
 - Topic 7 – Experimental design
 - Topic 8 – Curvilinear and nonlinear regression
 - Topic 9 – Sensitivity and specificity
- Research Proposal Due

Module 3

- Topic 1 – ANOVA
 - Topic 2 – Internal and external validity
 - Topic 3 – Multiway ANOVA
 - Topic 4 – Repeated measures ANOVA
 - Topic 5 – Nested variables
 - Topic 6 – ANCOVA
 - Topic 7 – Logistic regression
 - Topic 8 – Qualitative descriptive research
- Research Methodology Due

Module 4

- Research Projects Due
- Poster Presentations Due

Tentative dates and course plan:

Week	Date	Class Activity	Module
1	23-Aug	Course Intro and Module 1 Topic 1-3	1
2	30-Aug	Topic 4	
3	6-Sep	No Class – Labor Day	
4	13-Sep	Topic 5-6	
5	20-Sep	Topic 7-8	
6	27-Sep	Midterm 1 and Module 2 Topic 1-2	2
7	4-Oct	Topic 3-5	
8	11-Oct	Proposal due - Topic 6-7	
9	18-Oct	Topic 8-9	3
10	25-Oct	Midterm 2 and Module 3 Topic 1-2	
11	1-Nov	Topic 3-5 - Methodology due	
12	8-Nov	Work on projects	
13	15-Nov	Topic 6-7	
14	22-Nov	Topic 8	4
15	29-Nov	Midterm 3 - Projects due - Presentations	
16	6-Dec	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. Lectures are available online for previewing and reviewing content. Students should check topics and assignments on the course schedule above, watch online lectures, read assigned text, and attend class to ask questions.
- The material presented in this class is reasonably advanced but the course is designed so that if you do the assignments, work hard at your research project and complete all of the online lectures, 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.