

RESEARCH METHODS

APK 4050: 7851 (10656) ~ 3 CREDITS ~ FALL 2020

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VIRTUAL OFFICE HOURS: Tuesday and Thursday 4:00 – 5:30 PM or by appointment

MEETING TIME: Tuesday 5th & 6th periods (11:45AM–1:40 PM) & Thursday, 6th period (12:50–1:40 PM)

LIVE ZOOM LECTURES WILL BE GIVEN TUESDAY AND THURSDAY AT THE REGULAR CLASS TIME

COURSE DESCRIPTION: The course provides an understanding of basic research methods and statistical analysis techniques used in applied physiology and kinesiology. Students will demonstrate their knowledge of the course materials by analyzing, interpreting and summarizing research concepts, writing, and studies.

PREREQUISITE KNOWLEDGE AND SKILLS: APK major with 3, 4, 6 or 7 classification

REQUIRED TEXT BOOKS: TWO E-BOOKS

1. Strunk, W., & White, E. B. (2000). *The elements of style* (4th ed.). New York: Macmillan (eBook).
2. Cauraugh, J. H. (2020). *Research Methods: Functional Skills – Third Edition*. ISBN: 978-1-939337-34-4 (eBook).

COURSE FORMAT: Live Zoom lectures will encourage interactions and active learning. This process involves students answering questions, solving problems, and discussing science topics. Prepared students read the required *Research Methods eBook* and integrate the information into their interests in APK. Expect to be asked at least one question a day.

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

1. Identify and apply the steps involved in the scientific method
2. Critique research articles and determine the quality of publications
3. Evaluate experimental designs and choose appropriate statistics to analyze data
4. Visually and verbally present experimental designs, data, and findings
5. Formulate a research question, generate a research hypothesis, and design a study to address the question
6. Identify issues related to methodology and discuss guidelines to improve scientific rigor and reproducibility
7. Discuss issues related to research ethics and responsible conduct of human and animal research
8. Outline the processes related to manuscript reviews, writing, authorship, and journal impact factors
9. Conduct a literature search and manage references

COURSE AND UNIVERSITY POLICIES:

ATTENDANCE POLICY: Class attendance to the **Live Zoom Lectures** is expected. Even though only one point is earned for participating in lectures, students who are able to answer questions on specific concepts discussed in lectures do exceptionally well in this course.

PERSONAL CONDUCT POLICY: UF students are bound by *The 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 UF, 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.

Students in Research Methods will exhibit behaviors that reflect highly upon themselves and our University. 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 professor in this class.

EXAM MAKE-UP POLICY: Students will take three examinations on the scheduled dates with Honor Lock active. If an emergency arises on an exam date, then a make-up exam must be scheduled as soon as possible. Requirements for 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 requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the professor when requesting accommodation. You must submit this documentation before taking exams. Accommodations are not retroactive; therefore, students should contact the office early in the semester. Arrangements will be made for taking exams in consultation with the professor.

COURSE EVALUATION: 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/>.

COVID-RELATED PRIVACY ISSUE FOR REMOTE CLASS

Our class sessions may be audio visually recorded for enrolled students who are unable to attend live. Students who participate with their camera engaged or use a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

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/>

GRADING:

	<u>Points</u>
<i>Participation in Live Lectures</i>	1
<i>Exam 1: September 29, Tuesday</i>	33
<i>Exam 2: October 27, Tuesday</i>	33
<i>Exam 3: November 24, Tuesday</i>	33
<i>Total</i>	100

EXAM FORMAT IS A COMBINATION OF MULTIPLE CHOICE, SHORT ESSAY, AND LONG ESSAY

GRADING SCALE:

Letter Grade	Total Points Required to Earn Each Letter Grade
A	≥ 91
A-	89
B+	88
B	81
B-	79
C+	78
C	71
C-	69
D+	68
D	61
D-	59
E	≤58

Please note that no extra credit is available for this course. Previous students who scored well on the three exams accumulated enough points to excel.

UF's catalog provides detailed information regarding current UF grading policies: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>. Requests for exceptions to these grading policies may be interpreted as an honor code violation and will be addressed accordingly.

WEEKLY COURSE SCHEDULE: READING SCHEDULE AND CONTENT

Exam questions are based on the eBook: *Research Methods: Functional Skills (2020; third edition)*. Given that the eBook has many slides embedded in the text, full sets of slides for lectures are usually not posted.

Strunk, W., & White, E. B. (2000). *The elements of style (4th ed.)*. New York: Macmillan (eBook). Read the whole book for writing questions on the first two exams.

Note: the content for any exam may change depending on class interactions and apparent course progress. If any changes are necessary, then we will discuss as a class before the exam.

Week	<i>Research Methods: Functional Skills (3rd edition); Chapter & Heading</i>	<i>Content</i>
1	Preface	Course Overview
	Chapter I: 1.1 – 1.5	Approach to Science; Importance of RM & Science; Causal Relationships
	1.6 – 1.11	Science, Exp. Design, Variability & Statistics; Types of Research; Two Supreme Problem Solvers; Controlling Motor Actions; Proteins, Cell Signals & Microarrays
2 & 3	Chapter II: 2.1 – 2.5	IVs: Main Effects, & Interactions Voluntary Motor Actions: ME & Interactions Interaction: Alcohol, Tylenol, & Liver Functions

	2.6 – 2.9	Examining Main Effects & Interaction: Matrix Visually Displaying Two-way Interactions Six Two-way Interactions & Main Effects Confirm ME & Interactions: Matrix & Figures Two Frequently Used Statistics: <i>t</i> & <i>F</i> tests
4	Chapter III: 3.1 – 3.4	Designs Vary by Three Criteria Different Designs: One-way & Two-way
	3.5 – 3.8	Design Examples: Mixed & Three-way Comprehension Confirmation Review
Sept. 29	Exam 1: 33 points	Chapters Preface, I, II, & III Strunk & White
6	Chapter IV: 4.1 – 4.7	Statistical Significance & Reminders One-tailed & Two-tailed Tests Multiple Comparison Procedures Null & Alternative Hypotheses <i>F</i> Table Critical Values Truth Table & Power
7 & 9	Chapter V: 5.1 – 5.7	Internal and External Validity Eight Internal and Four External Threats Three Internally Valid True Experiments Three Pre-experimental Designs
	Chapter VI: 6.1 – 6.10	Parametric & Nonparametric Statistics ANOVA Assumptions & Summary Table Chi-Square, Correlations, <i>t</i> & <i>F</i> Tests Random Numbers, Ergogenic Aids Hick-Hyman Law
Oct. 27	Exam 2: 33 points	Chapters IV, V & VI Strunk & White
	Chapter VII: 7.1 – 7.9	Research Integrity & Oath for Scientists Ethics in Life & Science & Authorship Institutional Review Board Protecting Rights of Individuals Happiness & Success

10–11		New Perspective: Science Statistics, Experimental Design & Variability
	Chapter VIII: 8.1 – 8.12	Writing: Clear, Concise, & Correct Four Evaluation Criteria & Questions to Ask Rocking Chairs & Dementia Increase the Quality of Our English Language Feel Good Education
	Chapter IX: 9.1 – 9.7	Analysis of Covariance, Meta-Analysis, & Regression Analyses Multivariate Statistics & Saving Trees
12-13	Chapter X: 10.1 – 10.10	Four Research Axioms Principled & Persuasive Arguments Advancing Science & Reviewing Articles Writing a Thoughtful Critique External Funding & Publishing Your Study Three Clinical Research Steps in a Vaccination Doing the Right Thing
Nov. 24	Exam 3: 33 points	Chapters VII, VIII, IX, & X

LIVE ZOOM LECTURES: SYNCHRONOUS WITH OUR CLASS PERIODS

REQUIRED TEXT BOOKS: TWO E-BOOKS

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eBooks are at three electronic sources. Cut and paste a source into your browser.

1. Smashwords:

<http://www.smashwords.com/books/search?query=cauraugh>

- a. [Download a free Kindle app to your laptop computer, iPad, or iPhone.](#)
- b. [Download a version to read on your Kindle app.](#)
- c. [Marking and searching the text will be easy on the Kindle app.](#)

2. Apple iBooks; For Apple iPad/iPhone/iPod Touch, download the free Apple iBooks app and buy the eBooks on your iTunes account.

<https://itunes.apple.com/us/book/research-methods-functional/id591138108?mt=11&ign-mpt=uo%3D4>

3. Amazon – Kindle or Kindle Fire app reading:

<http://www.amazon.com/dp/B00AUZPSSY>

SUCCESS, MOTIVATIONAL PERSPECTIVE, & OATH FOR SCIENTISTS:

Your Research Methods experiences will be meaningful given that you actively use the information in the *eBook (Research Methods: Functional Skills, 2020; Third Edition)* as well as the information presented and discussed in lectures. Enjoy this exposure to the scientific arena. The teaching style of this course is primarily reciprocal interaction with frequent, relevant questions used to practice retrieval of concepts. You must be able to use this knowledge in different situations. Our frequent Zoom research interactions will be more enjoyable if you relax and expect that I will ask you at least one question every class. In this flipped classroom, you should read the *eBook* before class and be prepared to speak about scientific concepts while supporting your statements with logical thinking and empirical evidence. Student answers and questions are encouraged at any time during our interactions. Importantly, the information for this course is readily learned when students give sincere efforts and embrace the topics. **Be a student who attains her or his intellectual potential!**