

MMC 6936 (Section 1H69): Experimental Design and Analysis
Spring 2015

Note: The final version of the syllabus will be uploaded the week of 01/01/2015

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Meeting Times: Wed. 4.05 pm – 7.05 pm in Research Lab, 2nd Floor, Weimer Hall.

Office Hours: Wednesday 2.00–4.00 pm, and by appointment.

Course Overview: This graduate seminar is intended to introduce you to the fundamental nuances of the experimental method. The guiding principle for this class is that there is a considerable distinction between methodology and statistics. As such, the focus is on conceptual principles underlying experimental research, with particular emphasis on terminology germane to this method. We will discuss the most important types of experimental designs and explore those statistical techniques that are commonly employed in analysis of experimental data.

Course Objectives: At the conclusion of the course, you should be able to:

- Conceptualize and operationalize variables in a research question
- Distinguish between and among different types of reliability and validity
- Comprehend the different types of experimental designs
- Have a fundamental understanding of common statistical techniques
- Critically analyze and evaluate published experimental research
- Propose a theoretically-driven original research project from scratch

Textbook: Keppel, G., & Wickens, T. D. (2004). *Design and analysis: A researcher's handbook* (4th ed.). Upper Saddle River, NJ: Pearson-Prentice Hall. In addition, I will hand out readings for several class sessions.

Research Project Proposal: In order for you to engage in the experimental tradition, you will be required to produce a document that will propose in detail a project that you design (and hopefully conduct next semester). The proposal will require you to demonstrate a rigorous understanding of experimental methods and to propose an original research question related to your own research interests. Theoretical rigor is an

essential component of the proposal. More detailed guidelines will be distributed in class. The research project accounts for 35 percent of the course grade.

Paper Critique: This exercise is designed to give you an opportunity to critically analyze and evaluate experimental research. The specific studies/papers to be critiqued will be handed out mid-semester and more detailed guidelines will be spelt out at that time. This exercise will account for 15 percent of the final grade in the course.

Assignments: Several assignments will be distributed during the course of the semester. The assignments will vary in level of difficulty, ranging from routine to challenging. Given the nature of the class, some of these will be conceptual while some others may require deployment of statistical techniques. More details will be spelt out when individual assignments are handed out. The assignments account for 40 percent of the course grade.

Class Participation: Another 10 percent of the course grade is devoted to the quality of your participation in class. As you well know, the success of any graduate seminar is predicated on the quality of discussion that we engage in, so, SPEAK UP! The level of engagement you display during class meetings, as well as the caliber of your comments and questions will determine this aspect of the grade. Therefore, it is important that you have read the assigned readings ahead of time and come prepared with questions, probes, suggestions, etc.

Attendance: Attendance is mandatory for every class meeting. If a student needs to miss a class, prior permission must be obtained from the instructor. In addition, irregular attendance will also negatively affect your class participation score.

Schedule: The schedule includes the main topics for each week and the reading required for the meeting. The lectures and discussions will supplement the readings and will add different perspectives to the existing material. Students are expected to have completed the assigned readings BEFORE coming to class.

Policy on Academic Integrity: Students are expected to conform to the Honor Code in all academic matters. For more information on the academic integrity and the honor code, please visit the following URL: <https://www.dso.ufl.edu/sccr/seminars-modules/academic-integrity-module>, or feel free to speak to me or someone at the Office of the Dean of Students.

Note: Based on your input and our progress, I reserve the right to amend and change the syllabus, reading schedules, and grading events during the semester.

COURSE SCHEDULE

01/07	INTRODUCTION TO CLASS No assigned reading
01/14	CONCEPTUALIZATION AND HYPOTHESIS-TESTING Keppel & Wickens Ch. 1 (Also glance through Ch. 2 & 3)
01/21	OPERATIONALIZATION AND MEASUREMENT
01/28	RELIABILITY AND VALIDITY Keppel & Wickens Ch. 7.1, 7.2, 7.3
02/04	BETWEEN-SUBJECTS & WITHIN-SUBJECTS DESIGNS Keppel & Wickens Ch. 16 & 17
02/11	BETWEEN-SUBJECTS & WITHIN-SUBJECTS DESIGNS (Contd.) Keppel & Wickens Ch. 16 & 17
02/18	FACTORIAL DESIGNS Keppel & Wickens Ch. 10 (Also glance through Ch. 11 & 12)
02/25	TBA
03/11	TBA
03/18	TBA
03/25	TBA
04/01	INTRODUCTION TO DATA ANALYSIS
04/08	ANOVA & ANCOVA; ETHICAL ISSUES IN EXPERIMENTAL RESEARCH Keppel & Wickens Ch. 14 & 15
04/15	TBA
04/22	PROJECT PROPOSAL PRESENTATIONS No assigned reading (Note: Project proposal reports due on 04/29)