## Data Analysis II Psy 612 CRN 25880 Winter 2018

# 1000-1120 Tuesday & Thursday McKenzie 122

## Instructor

Robert Mauro 327 Straub Office Hours: Tuesday 1530-1700 and by appointment E-mail: mauro@uoregon.edu Office telephone: (541) 346-4917

#### **Teaching Assistants**

Questions: gradstats@uoregon.edu Office Hour Signups: http://gradstats.youcanbook.me/

Jessica Kosie 464 Straub Office Hours: E-mail: jkosie@uoregon.edu

Melissa Moss

Office Hours: E-mail: mmoss2@uoregon.edu

#### Laboratory

Friday 0900-1020 (CRN: 25881); 1030-1150 (CRN: 25882)

#### **Course Information**

This is the second course in a three-course graduate level data analysis sequence. This course is devoted to topics in multiple regression with special emphasis on complex analysis of variance and experimental design. We assume that all students have successfully completed Psy 611 (Data Analysis I) or equivalent. In general, the text chapters listed in the syllabus cover the material planned for class on the day that they are assigned. This material provides more depth and often alternate explanations of some of the issues.

#### Text

Judd, C., McClelland, G., & Ryan, C. (2017). Data Analysis: A Model Comparison Approach to Regression, ANOVA, and Beyond (3rd Ed.). Routledge: New York, NY.

Class notes available on Canvas

# **Other Useful Books**

## Data Analysis

Abelson, R. (1995). Statistics as Principled Argument. Lawrence Erlbuam: Hillsdale, N.J.

#### Analysis of Variance & Experimental Design

Hays, W. L. (1994). Statistics (5th ed). Harcourt Brace College Publishers: Fort Worth.

Keppel, G. & Wickens, T. (2004). <u>Design and Analysis: A Researcher's Handbook</u>, 4th Ed. Prentice Hall: Upper Saddle River, NJ.

Tamhane, A., & Dunlop, D. (2000). <u>Statistics and Data Analysis</u>. Prentice Hall: Upper Saddle River, NJ.

Winer, B. J. (1971). <u>Statistical Principles in Experimental Design</u> (2d ed). McGraw-Hill: New York.

#### Multiple Regression & Related Issues

Cohen, J. & Cohen, P., West, S., & Aiken, L. (2003). <u>Applied Multiple Regression /Correlation</u> <u>Analysis for the Behavioral Sciences</u>, 3rd Ed. Taylor & Francis, NY.

Pedhazur, E. J. (1997). <u>Multiple Regression in Behavioral Research</u> (3rd Ed.). Harcourt Brace: San Diego, CA.

Wonnacott, R. & Wonnacott, T. (1970). <u>Econometrics</u>. J. Wiley: New York. Conducting Empirical Research

#### **Class Requirements:**

Complete take-home midterm examination (35% of grade), final examination (45% of grade), and weekly homework assignments (20%) of grade. Responses to all homework and examination problems should follow standard reporting formats; see the Report Guidelines handout for examples. Homework will be assigned and due each Thursday. Homework should be uploaded to Canvas by 1000 on the Thursday that it is due. Students are encouraged to study together and discuss homework assignments. However, you should be able to complete every step of every homework problem. The report that you submit should reflect your own work. You are expected to complete the examinations on your own without discussing them with people other than the instructor and TAs.

Problem sets and exams will be graded by the teaching assistants using explicit criteria that I will provide. The teaching assistants have taken graduate statistics previously and performed at a superior level. If anyone has concerns about their work being graded by a fellow graduate student, please see me and we can consider alternative arrangements.

#### **Learning Objectives**

Upon completing this course you should have a broad conceptual understanding of many of the statistical techniques based on the General Linear Model (GLM) that are used in psychology and many other disciplines. You should be able to choose appropriate GLM statistical analysis techniques for specific research questions and datasets, complete basic data analyses, and summarize the results in APA-style reports. You should also be better able to understand and evaluate statistical information reported in primary research articles.

# **Students with Disabilities**

If you have a documented disability and may need accommodations, contact me ASAP. Students who are experiencing learning difficulties are encouraged to consult the Accessible Education Center (164 Oregon Hall; 541-346-1155; uoaec@uoregon.edu; web: http://aec.uoregon.edu/ ). Without documentation, accommodations are not guaranteed and are to be made at the discretion of the instructor.

# **Academic Dishonesty**

The University Student Conduct Code defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. All work submitted in this course must be your own. For the consequences of academic dishonesty, refer to the Schedule of Classes published quarterly. Violations will be taken seriously and are noted on student disciplinary records. If you are in doubt regarding any aspect of these issues as they pertain to this course, please consult with me before you complete any relevant requirements of the course. For more information regarding academic honesty and the student conduct code, see: http://dos.uoregon.edu/conduct.

# **Inclement Weather Policy**

If Eugene School District 4J cancels (not delays) school, we will cancel class. Nothing we do in this class can't wait until it is safe to travel.

# Tentative Syllabus

Date	Торіс	Reading	Homework
1/9	Introduction: GLM concepts		
1/11	GLM with Matrices		Hmk1
1/16	GLM with Matrices		
1/18	LS Multiple Regression: Basics (Review)	6. Multiple Regression	Hmk2
1/23	Partitioning Variance	7. Moderated and Nonlinear Regression Models	
1/25	Interactions: Mediation & Moderation		Hmk 3
1/30	Non-linear Relations		
2/1	Factorial ANOVA (Combinations of categorical predictors)	9. Factorial ANOVA	Hmk 4
2/6	ANCOVA (Combinations of continuous and categorical variables)	10. ANCOVA	
2/8	Experimental Design		Midterm Exam
2/13	Repeated Measures: Non-independent Error	11. Repeated Measures	
2/15			Hmk 5
2/20	Random & Fixed Factors		
2/22	Nested Designs		Hmk 6
2/27	PM MLM	12. On the Road to MLM	
3/1	Omitted Variables		Hmk 7
3/6	Heteroscedasticity	13. Outliers and ill- mannered error	
3/8	Outliers		Hmk 8
3/13	Non-Linear Regression	14. Logistic Regression	
3/15	Introduction to Bayesian Statistics		Final Exam
3/23	Final Due 8:00 AM		