

SPLH 861: Applied Quantitative Methods

Instructor:	Dr. Lesa Hoffman	Website:	http://www.lesahoffman.com/SPLH861/index.html
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Room:	3049 Dole	Office:	3042 Dole
Time:	Wed 12:00–2:30	Office Hours:	Wednesdays 2:30–4:00 in 3049 Dole

Schedule of Topics and Events:

The online syllabus at the web address provided above will always have the most current information.

Course Objectives, Materials, and Pre-Requisites:

The goal of this graduate seminar is give participants direct experience with applications of quantitative methods for data analysis. More specifically, this will include instruction on the process of matching data types and research questions to the statistical models than be used to answer them, followed by estimation, interpretation, and revision of those models as needed. Participants will be expected to enter the course with an individual data analytic need for a current research project. Instruction will then be tailored to meet these needs to the extent possible, and will include traditional lecture, in-class discussion, tutorials in statistical software, individual time for data analysis, and guidance in preparing results for dissemination (e.g., in manuscripts or professional presentations). Participants should have previous or concurrent coursework in general linear models (e.g., regression and analysis of variance) prior to enrolling in this seminar.

Academic Honesty:

As a reminder, the University of Kansas has a formal policy on academic honesty. All course assignments should be done individually.

Accommodating Students with Disabilities:

Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation.

Course Requirements:

Participants will have the opportunity to earn up to **90 points** by completing approximately 11 homework assignments. Completing the initial data outline is worth **3 bonus points**. Finally, **10 points** may be earned through class participation across the semester. This may include answering questions posed by the instructor as well as asking questions of your own. Submitting your log as proof that you learned how to install and use SAS university edition or how to use SAS or STATA from the KU Advanced Computing Facility is worth **2 bonus points**.

Revision on 11/22: Given that only 10 homework assignments will be administered, the total points from homework will be **80**, such that the total possible for the course will be **90 (+5 bonus points possible)**. Thus, a percentage grade out of 100 will be used to assign final grades.

Policy on Late Homework Assignments and Incompletes:

In order to be able to provide the entire class with prompt feedback, **late homework assignments will incur a 2-point penalty, and late revisions will incur a 1-point penalty**. In addition, homework assignments must be at least 3/4 complete to be accepted as a first draft. However, extensions will be granted as needed for extenuating circumstances (e.g., conferences, family obligations) if requested **at least three weeks in advance of the due date**. Finally, a grade of "incomplete" will only be given in the event of extremely dire circumstances and at the instructor's discretion.

Final grades will be determined by number of points earned out of 90 possible from homework and class participation:

≥97 = A+, 93–96 = A, 90–92 = A-, 87–89 = B+, 83–86 = B, 80–82 = B-, < 80 = C or no pass
(77–79 = C+, 73–76 = C, 70–72 = C-, 67–69 = D+, 63–66 = D, 60–62 = D-, < 60 = F)

Schedule of Events:

Week	Date	Course Materials	Readings
1	8/27	Discussion using your Data Analysis Outline	
	8/29	Completed data analysis outline due by 11:59 PM via email	
2	9/3	Lecture 1: A Re-Introduction to General Linear Models Example 1: Practice with Main Effects in General Linear Models	Hoffman (2014) ch. 2 sec. 1 Enders (2011) ch. 3 p. 57-71
	9/5	NO HOMEWORK DUE	
3	9/10	Lecture 2: Interactions among Continuous Predictors Example 2: Practice with Interactions among Continuous Predictors	Hoffman (2014) ch. 2 sec. 2
	9/12	HW1 DUE BY 11:59 PM VIA BLACKBOARD	
4		Example 2, continued	
	9/17	Lecture 3: Interactions among Categorical Predictors Example 3: Practice with Interactions among Categorical Predictors	Hoffman (2014) ch. 2 sec. 3-8
	9/22	HW2 DUE BY 11:59 PM VIA BLACKBOARD	
5	9/24	Lecture 4: "Other" Kinds of Effects in General Linear Models Class discussion of own data for HW4	
	9/26	HW3 DUE BY 11:59 PM VIA BLACKBOARD	
6	10/1	Lecture 5: Introduction to Multivariate and Repeated Measures Models Example 5: Piecewise Effects of Age Younger and Older Adults in Repeated Measures Data	Hoffman ch. 3 Enders (2011) ch. 3 p. 71-85 Enders (2011) ch. 4
	10/3	HW4 ON OWN DATA DUE BY 11:59 PM VIA BLACKBOARD:	
7	10/8	NO CLASS OR OFFICE HOURS	
	10/10	REVISIONS TO HW1, HW2, and HW3 BY 11:59 PM VIA BLACKBOARD	
8	10/15	Example 5, continued	
	10/17	NO HOMEWORK DUE	
9	10/22	Lecture 6: Introduction to Crossed Random Effects Models Example 6: Crossed Random Effects Models for Trials nested within Subjects and Items	Hoffman (2014) ch. 12
	10/24	REVISIONS TO HW4 DUE BY 11:59 PM VIA BLACKBOARD	
10	10/29	Lecture 7: Introduction to Clustered Data Models Example 7: Two-Level Clustered Data Example: Students within Schools	Raudenbush & Bryk (2002) ch. 4-5
	10/31	HW5 DUE BY 11:59 PM VIA BLACKBOARD	

11	11/5	Lecture 8: Introduction to Path Analysis and Mediation Example 8: Path Analysis for Mediation	Enders (2011) ch. 5 Kline (2004) ch. 5-6 MacKinnon (2008) ch. 6
	11/7	HW6 DUE BY 11:59 PM VIA BLACKBOARD	
12	11/12	Lecture 9: Introduction to Generalized Linear Models for Non-Normal (Binary) Data Example 9: Predicting Binary Outcomes	Cohen, Cohen, Aiken, & West (2002) ch. 13 Hoffman ch. 13 sec. 2
	11/14	HW7 ON OWN DATA DUE BY 11:59 PM VIA BLACKBOARD	
13	11/19	Lecture 10: Generalized Linear Models for Proportions and Categorical Outcomes Example 10a: Binomial (Repeated Measures) Models for Percent Correct Example 10b: Ordinal and Nominal Models for Categorical Outcomes	Hox (2010) ch. 6-7
	11/21	HW8 DUE BY 11:59 PM VIA BLACKBOARD	
14	11/26	NO CLASS OR OFFICE HOURS	
	12/1	REVISIONS TO HW5 AND HW6 DUE MONDAY 12/1 BY 11:59 PM VIA BLACKBOARD	
15	12/3	Lecture 11: Generalized Models for Count, Skewed, and "If and How Much" Outcomes Example 11: Modeling Count Outcomes	Atkins & Gallop (2007)
	12/5	HW9 AND REVISIONS TO HW7 DUE BY 11:59 PM VIA BLACKBOARD	
16	12/10	Review and Requests for Special Topics Example 12: Path Models with Generalized Outcomes Course Evaluations	
	12/12	LAST DAY TO TURN IN ANY FIRST DRAFTS OF HW 1-9 HW10 ON OWN DATA DUE BY 11:59 PM VIA BLACKBOARD	
17	12/19	LAST DAY TO TURN IN ANY REVISIONS TO HW1-7 REVISIONS TO HW8, HW9, AND HW10 DUE BY 11:59 PM VIA BLACKBOARD	

References for Course Readings (all available via "Course Documents" on Blackboard):

Atkins, D. C., & Gallop, R. J. (2007). Rethinking how family researchers model infrequent outcomes: A tutorial on count regression and zero-inflated models. *Journal of Family Psychology, 21*, 726-735.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2002). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). New York, NY: Routledge Academic.

Enders, C. K. (2010). *Applied missing data analysis*. New York, NY: Guilford.

Hoffman, L. (2014). *Longitudinal analysis: Modeling within-person fluctuation and change*. NY, NY: Routledge Academic.

Hox, J. (2010). *Multilevel analysis: Techniques and applications* (2nd ed). NY, NY: Routledge Academic.

Kline, R. B. (2004). *Principles and practice of structural equation modeling* (2nd Ed.). New York, NY: Guilford.

MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. New York, NY: Routledge Academic.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage.