

# EDUC 8171: Predictive Analyses

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< SEMESTER >

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**Office hours: By appointment.** On most Tuesday afternoons I am available for brief Skype / phone / F2F appointments. These are by appointment only and require 24 hours notice. Please contact me via email to request a meeting and I will send you my availability for that week

## ABBREVIATED VERSION FOR PROSPECTIVE STUDENTS

Classroom: NA

Class Time: asynchronous online

Office hours: by appointment

Learning modules will be posted on Mondays by midnight;  
Assessments are due on Mondays by midnight.

## COURSE INFO

### Prerequisites:

1. EDUC 6116 (Introduction to Educational Statistics) or equivalent, or instructor's permission.
2. EDUC 8120 (Group Comparisons) or equivalent, or instructor's permission. This course builds on topics which were introduced in EDUC 6116 and EDUC 8120 including: descriptive statistics, graphs, basic sampling and hypothesis testing, two-group mean comparison, simple analysis of variance (ANOVA), multiple comparison procedures, factorial ANOVA designs, and repeated measures. Note that students who have not had the necessary prerequisite coursework should not take EDUC 8171.

### Course Description:

EDUC 8171 is designed to be an advanced course in quantitative research methodology. We will work on the skills to enable you to become an informed consumer of the research literature, as well as prepare you to be a competent researcher. This class will concentrate on the use of regression as a statistical test. Specifically, we will cover simple linear regression, multiple regression, and logistic regression. We will examine the use of both continuous and categorical independent variables, and interactions between them. Statistical tests will be calculated 'by hand' as well as with SPSS. These statistical procedures will be taught within the context of the relevant research designs. We will work to develop the appropriate vocabulary to communicate the research results, and work to hone the skills needed to critically evaluate the research literature.

### Research Methods Lab Assistant:

Who: Anne Matthews (she is NOT a TA)

Email: [edreslab@gwu.edu](mailto:edreslab@gwu.edu)

Phone: 202-994-3174

Office Hrs: TBA

Location: 2134 G Street, Room 415

Website:

<http://gsehd.gwu.edu/content/gsehd-research-lab-services>

Appointments are strongly recommended and can be scheduled for in person, phone, or video chat meetings depending on your needs. Drop-ins are accepted, but availability cannot be guaranteed without an appointment.

### What's in this Syllabus?

Course Materials

SPSS

Grading Scale

Assessments

Dropbox

Submitting Assessments

Late Policy

Accommodations

Integrity

Email

Schedule

Supplemental Readings

Time Management/Credit Hrs

Online Section

Copyright Notice

# COURSE MATERIALS

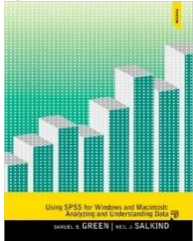
## Required Textbooks:



1. Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. (3rd ed.). New Jersey: Lawrence.

(e-copy available for free from the Gelman Library website)

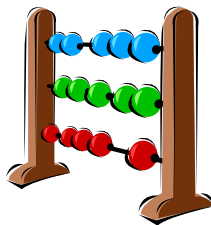
## Optional Textbooks:



1. Green, S.B., & Salkind, N.J. (2010). *Using SPSS for Windows and Macintosh: Analyzing and understanding data*. (6th ed.). Upper Saddle River, NJ: Prentice.
2. American Psychological Association (2009). *Publication Manual of the American Psychological Association*. (6th ed.). Washington DC: American Psychological Association.

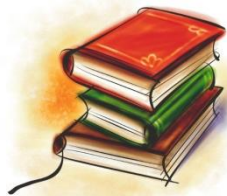
## Calculator:

You will need a calculator that is capable of calculating square roots for the homework, project, and midterm and final exams. Students are encouraged to bring calculators to class each day.



## Supplemental Readings:

In addition to the textbook (listed above), supplemental readings may be assigned periodically. These readings will be posted on Blackboard.



## Lecture Materials:

Students are responsible for bringing all lecture materials related to that day's topics. Materials can be printed, or viewed on a laptop or iPad. Materials will be posted on Blackboard by the morning of the date listed on the course schedule.

**Note:** *The lecture notes are not meant to be a substitute for engaging in the lectures/exercises. Not all material covered in lectures/exercises is in the lecture notes. I provided you with lecture notes as a favor to you so that you are not spending time copying formulas, graphs, and output. However, it is your responsibility to take notes on other material covered during lectures/exercises.*

## SPSS:

This course will use Statistical Package for the Social Sciences (SPSS) computer software. Students are expected to have access to SPSS/PASW to complete homework assignments. There are several options for utilizing this program:

1. **GW provides a free license for SPSS for current students.** For additional information please contact GW Tech Commons or the research methods lab assistant.
2. A 6- or 12-month rental version of the software program can be purchased from the following website (recommended by former students): <http://www.onthehub.com/spss/>. This software can be installed on the student's own computer. SPSS software has built-in safeguards to prevent unauthorized copying of software. If you choose to rent a copy of this program, be sure you buy the STANDARD GRADPACK VERSION. The Statistics Base Gradpack is limited and does not do all of the analyses we will be conducting in this course.
3. The student can use SPSS in one of the computer labs on campus. Note: That the basic version of SPSS installed on computers in Foggy Bottom computer labs does not do some of the analyses required for this course.
4. A 14 day trial version can be downloaded from the IBM/SPSS website.

**DISCLAIMER:** Be sure you are using THE STANDARD GRADPACK VERSION of SPSS. The Statistics Base Gradpack is limited and does not do all of the analyses we will be conducting in this course.



# COURSE GRADES

Your assessments will be combined according to the percentages shown below:

## Weighted Composite Grade:

Homework	20%
Project	20%
Midterm	30%
Final	30%

Final grades will be assigned based on the following scale:

## Letter Grade Scale:

92% and above	A
90% - 91.99%	A-
88% - 89.99%	B+
82% - 87.99%	B
80% - 81.99%	B-
78% - 79.99%	C+
72% - 77.99%	C
70% - 71.99%	C-
69.99% and below	F

*If you receive a failing grade (i.e., less than 70%) on BOTH the Midterm & Final exams you will receive a letter grade of F in the course.*

## Grading Policies:

- Numerical grades will not be rounded.
- Grades will not be changed unless a computational error has been made.
- No grades will be dropped.
- There will be no extra credit.
- Grades of "Incomplete" will not be given unless the student can demonstrate that near catastrophic events have led to a cause of extreme hardship.

# ASSESSMENTS

## Homework/Assignments:

There will be several homework assignments, each designed to give students a chance to apply and practice the concepts learned in class. The possible points for each assignment vary based on the amount of material covered. Students may discuss the homework with other students in the class but you must each turn in your own homework with your own computations and explanations written in your own words.

## Project:

Based on your own data, that of a faculty member in your area, or that from an available database (e.g., public use dataset on the web), students will complete a project that uses multiple regression analysis. There will be two parts of this research proposal: a presentation, and a paper. More specific details of this project can be found on Blackboard. Students should start hunting for some data early in the semester. Students are encouraged to discuss their project topics with the instructor during office hours or during another appointment.

## Exams:

The midterm and final exams will cover the topics presented in the first and the second half of the semester, respectively. However, due to the cumulative nature of the course content, key concepts from earlier topics will be used in later parts of the course and thus may appear on both exams.

Students are allowed to use calculators for the exams. Calculators may not be shared. Cell phone calculators are not permitted. Exams are to be completed independently; students found doing otherwise will be subject to the maximum university penalties. For security purposes you are not allowed to keep your exams. You are welcome to view and discuss your exams with me during office hours. Any student who does not return his/her exam will be given a grade of 0 on the exam.

*Note: anticipate assessments taking approximately 2 weeks to grade (1 week for summer courses) to grade your work. Exams and papers may take longer to grade.*

# TENTATIVE COURSE SCHEDULE



This is a **TENTATIVE** schedule that is subject to change. Topics will most likely be covered in this order. Depending on class time and student progress adjustments to the date topics are covered and due dates may differ from those shown below. Assessments will not be due before the due dates shown below. The chapters and page numbers for the readings correspond with the Cohen et al. (2003) textbook. Textbook readings are optional. Articles and book chapters are **REQUIRED** readings, however.

Learning Modules will be posted on Mondays by 11:59pm EST (midnight) unless it's a Holiday;  
Assessments are due on Mondays by 11:59pm EST (midnight) unless it's a Holiday.

Week	Day	Date	Learning Modules	Readings	Assessment DUE
1	Tues	1/17	LM 0 - Introduction LM 1 - Correlations	Cha 1-2 pg 117-140	CREATE Dropbox folder SHARE Dropbox folder COMPLETE Student Intro sheet & ADD Info Sheet to Dropbox
2	Mon	1/23	LM 2 - Simple Linear Regression		
3	Mon	1/30	LM 3 - Partial and Semi-Partial Correlations	Cha 3	
4	Mon	2/6	LM 4 - Multiple Regression	Kelly & Maxwell	
5	Mon	2/13	LM 5 - Nested Models	pg 158-175	HW 1
6	Tues	2/21	LM 6 - Non-Nested Models	T&F pg 145- 147	
7	Mon	2/27	LM 8 - Categorical Predictors Brief Skype meetings with me this week	Cha 8 MacCallum et al.	HW 2
8	Mon	3/6	<i>Midterm will be posted online this day by midnight.</i>		
9	Mon	3/13	SPRING BREAK: <i>continue work on midterm; work on projects</i>		
10	Mon	3/20	LM 9 – Binary Logistic Regression	Cha 13 O'Connell & Amico	MIDTERM
11	Mon	3/27	LM 11 - Statistical Power LM 12 - Prediction Methods	pg 90-94 pg 176-182	
12	Mon	4/3	LM 13 - Nonlinear Effects LM 14 - Interaction Effects	Cha 7 & 9 Aiken & West Baron & Kenny	HW 3
13	Mon	4/10	LM 15 - Mediation Effects LM 16 – Path Analysis (if time permits)		
14	Mon	4/17	<i>Final Exam will be posted online this day by midnight.</i>	Kelly & Maxwell	PROJECT PAPER
15	Mon	4/24			FINAL EXAM