

ED PSY 820: Multiple Regression and Other Linear Models

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- I do my very best to respond to email within 24 hours during regular business hours. If you do not get a response from me within a couple of work days, please feel free to follow up with a reminder. Note that I may not check and respond to email in the evenings or on weekends.
- Please do check the Canvas course page before emailing to see if the information is posted there. For example, if I already received some questions about a homework problem, I may have posted clarifications on Canvas. If you cannot find the information, do feel free to send me an email.

Office Hours: Please **contact me by e-mail to set up a time** to meet, as necessary.

- We can meet in person, online, or speak by phone.
- Please let me know at least a day or two in advance of when you would like to meet so we can set up a mutually convenient time and modality.

Course Objectives: This course is designed to provide students with a solid overview of basic and advanced topics in regression analysis. The course will be taught from an applied perspective, and the objectives are to enable students to:

- Identify the most appropriate approach for addressing research questions using data sets suitable for regression models.
- Use statistical software to appropriately carry out the data analysis and interpret the statistical information.
- Clearly communicate the results of the statistical analyses to address the research questions of interest.

By the end of the course students should be able to identify the regression analysis most appropriate for a given research question and data set, carry out the analysis, and properly interpret the results. Students will be exposed to regression models and analyses that they may need to use in their own research or encounter in reading research articles.

Pre-requisites: A graduate-level statistics course such as ED PSY 724 that included simple (and possibly multiple) regression, factorial ANOVA, and statistical computing.

Textbook: Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression / correlation analysis for the behavioral sciences*, 3rd ed. Mahwah, NJ: LEA.

- You may find it useful to have the book during class meetings.
- Other readings and (optional) books will be listed on the course web page.

Computing: Students will be required to use some statistical software packages (such as SAS or SPSS). Students are expected to be **already proficient** in at least one software package. The demonstrations and examples provided will focus on the use of SAS. Students who wish to use other software are welcome to do so on their own.

- Students should have remote access to software through UWM's [Remote Lab Access](#). Links to more information and instructions are posted on the course Canvas site under "Computing Resources".
- Please be aware that I will be able to help you most with SAS. If you want to use another software package, you will need to figure out how to obtain the correct results with that package.

Course Web Site and Delivery: This course will make extensive use of its **Canvas** site.

- The Canvas site can be accessed at [UWM Canvas Home](#) and instructions/support for using Canvas are available at [Student Canvas support](#).

- Students are expected to check the site on a regular basis for announcements, notes, assignments, discussions, and any other course information.
 - You can specify your [preferred notification settings](#) in Canvas. I recommend that you enable the notifications for the Announcements, at least.
- I will plan to post the materials, including **notes** (with and without a voice-over recording), no later than Monday each week. I will also plan to include some **learning checks** (not counted towards the course grade) that you are encouraged to do to check your understanding prior to the class meetings and before starting the homework assignments (which will count towards the course grade).
 - Students are expected to review the notes (and attempt the learning checks) each week **prior** to the class meeting.
- We will meet on **Thursdays at 3:30 pm**. As of now (August 2021), we plan to hold class meetings in person (in Enderis Hall, room 110). I hope to make remote participation possible and to be able to adapt as necessary and/or preferred.
 - In the class meetings I will provide clarifications and students will have a chance to ask questions about the material or assignments, review the learning checks, and discuss any other course information.

Course structure and student evaluation:

- **Homework:**
 - Homework problem sets will generally be **assigned every week** (based on that week's material) and will be submitted on Canvas every few weeks.
 - The assignments will likely be due on Thursdays (or Fridays), approximately every 2-3 weeks. Specific due dates will be posted on Canvas. (Note that assignment points may show up as 0 on Canvas but this will be updated once assignments are posted/graded.)
 - Late homework assignments will be accepted with a **10% point deduction** for each day they are late (in other words, you will lose 10% of the total number of points for the assignment for each day it is late, including weekend days). *Please communicate with me (the instructor) if there are extenuating circumstances and/or your homework will be late.* It is preferable that you submit an assignment that reflects **your best work** and is a bit late than one that does not reflect your best work but is on time.
 - The homework assignments will consist of problems that are intended to give you some hands-on practice with the material. You will need to make sure that you are clearly communicating your understanding in your answers (see separate document posted on Canvas for **general homework guidelines**).
 - Each problem (or major component) will be graded on a three-point scale to indicate the level of accuracy and understanding reflected in it:

Points	Description
3	Complete, clear and correct.
2	Some mistakes and/or misconceptions, somewhat unclear or incomplete.
1	Many mistakes and/or misconceptions, very unclear or incomplete.
0	Not done or barely attempted.
 - Homework grades and comments are designed to provide you with feedback on the level of understanding conveyed in your assignment. If you find the feedback insufficient, it is **your responsibility** to make sure that you ask and understand it. Do not put off getting help if you don't know how to do a problem or do not understand the feedback you received. Better yet, if you don't understand how to do a problem, ask before the assignment is submitted. (Note that I will not "pre-grade" your answers but will be happy to clarify anything that is unclear to you.)

- Please feel free to post any questions (or helpful information for other students) in the **Discussions** area on Canvas.
- A note on working with others: The goal of the homework assignments is to make sure you are learning and understanding the material, so it would defeat the purpose if you get the right answer without really understanding why. Therefore, while you are allowed to discuss the concepts on homework assignments, it is recommended that you complete the assignments on your own. In addition, **the work you submit must be your own**, and it is considered academic misconduct to submit anyone else's work (or words) as your own.
- **Exams:**
 - There will be one midterm exam as well as a final exam. These will be “take-home” exams.
 - The midterm exam will be due around the middle of the course (date will be clearly posted on Canvas) and the final exam will be due during finals week.
 - Students must **complete the exams independently** and with the utmost regard for **academic integrity** (i.e., they should be treated as if they are in-class). Students will **not** be allowed to collaborate on or discuss the exams with anyone (other than the instructor), and violations of this will be considered academic misconduct.

The weights assigned to each of the three components will be:

Homework	25%
Mid-term exam	35%
Final exam	40%

There will be NO extra credit option in this course.

Using these weights, final scores (out of 100) will be computed and these will be converted to letter grades as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
90-100	85-89	80-84	75-79	70-74	67-69	63-66	60-62	57-59	53-56	50-52	below 50

Academic Integrity:

- It is better to receive an honest grade on your own work than to risk committing plagiarism or academic misconduct. If you are unsure on what is acceptable, or need help, please ask.
- Excerpts from [UWM's Academic Integrity Online page](#):
 - Ask your instructor if you are unsure about how to complete an assignment or course requirement appropriately.
 - When collaborating with other students, collaborate for a better understanding of the material, not for answers. (*Note: No collaboration of any kind is allowed on the exam in this course.*)
 - If you are unable to complete assignments, the instructor may be flexible with the deadlines, and receiving a late penalty is far better than academic dishonesty.
- There is additional information and resources for avoiding plagiarism at [Plagiarism.org](#)

University Policies: Policies regarding participation of students with disabilities, accommodations for religious observances, academic misconduct, student complaints, grade appeals, sexual harassment, attendance, assignment of a grade of "incomplete", etc., are available at this [Syllabus Links document](#). *Students should review these policies at the start of the course.*

Panther Community Health and Safety Standards: UWM has implemented reasonable health and safety protocols, taking into account recommendations by local, state and national public health authorities, in response to the COVID-19 pandemic. As a member of our campus community, you are expected to abide by the Panther [Interim COVID-Related Health & Safety Rules](#), which were developed in accordance with public health guidelines. These standards apply to anyone who is physically present on campus, UWM grounds, or participating in a UWM-sponsored activity:

- All individuals visiting UWM facilities must wear face coverings while indoors;
- Unvaccinated students coming to campus are required to test weekly for COVID-19; and,
- You should check daily for COVID-19 symptoms and not come to campus if you are feeling sick.

Additional details about student and staff expectations can be found on the [UWM COVID-19 webpage](#).

Time Investment: This will vary by student and by week, but my expectation is that students will spend a total of about 150 hours on the course (as would be the case for an in-person 3-credit course). This [document](#) provides a more detailed breakdown. This is an estimated workload and students will be assessed on their performance (as indicated in the syllabus), not on the time put into the course.

A note about cell phones: As a courtesy to the instructor and your fellow students, *please turn OFF your cell phone ringer* during class.

TENTATIVE SCHEDULE:

Week	Date	Topic	Reading
1	Sept. 2	Introduction & Review of Correlation and simple regression	Chapters 1-2
2	Sept. 9	Descriptive multiple regression: two-predictor models	Sections 3.1-3.4
3	Sept. 16	Inference in multiple regression models	Sections 3.5-3.8
4	Sept. 23	Formulation of multiple regression models: a brief introduction to matrix algebra	Appendix &TBA
5	Sept. 30	Assumptions of regression analysis	Chapter 4
6	Oct. 7	Diagnostic measures: Outliers and multicollinearity	Chapter 10
7	Oct. 14	Data analytic strategies: variable sets and comparisons ➤ Midterm Exam available	Sections 5.1-5.7
8	Oct. 21	Data analytic strategies, continued	Sections 5.1-5.7
9	Oct. 28	Nonlinear regression	Chapter 6
10	Nov. 4	Interaction between continuous predictors	Chapter 7
11	Nov. 11	Categorical independent variables	Chapter
12	Nov. 18	Interaction between categorical and continuous variables	Chapter 9
13	Nov. 25	~ <i>Thanksgiving week</i> ~	
14	Dec. 2	Mediation models ➤ Final Exam available	Sections 12.1-12.3
15	Dec. 9	Introduction to logistic regression	Section 13.2
Finals week	Dec. 16	➤ Final exam due on Dec. 16	

➤ *Note: The due date for each exam is anticipated to be two weeks from the day it is made available.*