**PSY 502: Data Analysis for Psychological Sciences I**
**Fall 2021**
**Instructor: Gül Günaydın, PhD**

**Course Description**: PSY 502 is the first of a two-part series surveying common data analytic approaches in psychology research. We will start with reviewing some very basic analyses (which you are likely familiar with) and make our way up through more advanced models. As we progress, we will also discuss the best practices to improve the quality of analytic approaches and decisions.

**Required Readings**: The required readings will focus on the best practices in data analyses.

**Lectures:** I will be posting video lectures introducing each analytic model. Please watch these lectures before attending in-class meetings and try to replicate the analytical methods introduced. You may use the class hour on **Tuesday** to catch up on the videos.

**In-class meetings:** The meetings will take place on **Mondays at 08:40-10:30 at FASS G006**. I will not be lecturing during these meetings. During one class hour, you will complete **assignments** on a given week's topic. (Please note that you have to attend class to get points for a given week's assignment.)  During the other class hour, we'll discuss the assigned reading(s) and I will answer *your* questions about the lectures, readings, and assignments.  At the end of the hour, you will submit your work via the Turn-it-in assignment created on SUCourse. Please **bring your laptop** to all in-class meetings.

## Course Assessment:
In-class assignments: 40% (4 points X 10 assignments)
Mid-semester reflection on statistical power: 10%
In-class exam: 40%
End-of-semester reflection on regression: 10%

**Grades:** The following grading scheme is used to assign the final grade for the course.  No changes can be made to your final grade unless there has been an arithmetical error.

| A | 100-93 | B | 79.99-75 | C | 64.99-60 | D | 49.99-45 |
|---|---|---|---|---|---|---|---|
| A- | 92.99-85 | B- | 74.99-70 | C- | 59.99-55 | F | 44.99-0 |
| B+ | 84.99-80 | C+ | 69.99-65 | D+ | 54.99-50 | | |

One bonus point for participation may be assigned to students who show up for classes regularly <u>and</u> ask thoughtful questions during classes as well as providing thoughtful responses to questions posed during classes. The participation bonus will only be assigned to those students who demonstrate <u>extraordinary</u> participation.

**Make-up for missed assignments/exams:** In order to be eligible for a make-up, you should have a valid and documented excuse.

**Academic Integrity:** Every student is expected to abide by the Sabancı University Academic Integrity Statement. Please see https://www.sabanciuniv.edu/en/academic-integrity-statement

Academic dishonesty, or plagiarism, is the act of taking someone else's work or ideas and presenting them as your own. Academic dishonesty can be deliberate or it can also result from carelessness; you will be held responsible for academic dishonesty regardless of whether you meant to do it.

Plagiarism can include anything from copying another student's work to using journal articles or an internet source (e.g., Wikipedia) in an assignment without describing them in your own words and referencing them. Please note that making small changes in a sentence (e.g., changing "a great deal" to "a lot" and "revealed" to "showed") does not mean that you paraphrased an existing idea and it is now your original claim. If you are unsure as to whether a certain act would fall in the category of academic dishonesty, please contact me for clarification. Any form of academic dishonesty in this course (e.g. plagiarism, cheating, etc.) will not be tolerated.

## Resources
Please **install the following software** on your laptop at the beginning of the semester. You will be using these to complete in-class assignments.
Jamovi https://www.jamovi.org/
JASP https://jasp-stats.org/
GPower
https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html

## Course Outline

**Week 1 (September 27th-28th**)

**October 7th: Class meeting** on introductions, getting to know each other, your questions about the course, syllabus, expectations, etc.

**Week 2 (October 4th-5th)**

**Video Lecture(s):** Review of basic concepts

**Reading:** Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. Psychological Science, 22, 1359-1366.

Assignment 1 due.

**Week 3 (October 11th-12th)**

**Video lecture(s):** Review of basic concepts (cont'd)

**Reading:** Open Science Collaboration (2015). Estimating the reproducibility of psychological science. Science, 349, aac4716.

Assignment 2 due.

***For Assignment 2 & 3 please read:*** Davidai, S., & Gilovich, T. (2016). The headwinds/tailwinds asymmetry: An availability bias in assessments of barriers and blessings. Journal of Personality and Social Psychology, 111, 835-851.

**Week 4 (October 18th-19th)**

**Video lecture(s):** Review of basic concepts (cont'd)
**Reading:** Nosek et al. (2018). The preregistration revolution. PNAS, 115, 2600-2606.

Assignment 3 due.

**Week 5 (October 25th-26th)**

**Video lecture(s):** Analysis of Variance (ANOVA) Part I: Between-participants designs

**Reading:** Aronow, P. M., Baron, J., & Pinson, L. (2019). A note on dropping experimental subjects who fail a manipulation check. Political Analysis, 27, 572-589. *[Read Abstract, Introduction, & Conclusion]*

Ten Have, T. R., Normand, S. L. T., Marcus, S. M., Brown, C. H., Lavori, P., & Duan, N. (2008). Intent-to-treat vs. non-intent-to-treat analyses under treatment non-adherence in mental health randomized trials. Psychiatric Annals, 38, 772-783. *[Read up to Example Studies]*

Assignment 4 due.

**Week 6 (November 1st-2nd)**

**Video lecture(s):** ANOVA Part II: Within-participants designs

**Reading:** da Silva Frost, A., & Ledgerwood, A. (2020). Calibrate your confidence in research findings: A tutorial on improving research methods and practices. Journal of Pacific Rim Psychology, 14, e14.

Assignment 5 due.

**Week 7 (November 8th-9th)**

**Video lecture(s):** Introduction to correlation and regression

**Reading:** Pritschet, L., Powell, D., & Horne, Z. (2016). Marginally significant effects as evidence for hypotheses: Changing attitudes over four decades. Psychological Science, 27, 1036-1042.

***For Assignment 6 & 8 please read:*** Turiano, N.A., Pitzer, L., Armour, C., Karlamangla, A., Ryff, C.D., & Mroczek, D.K. (2012). Personality trait level and change as predictors of health outcomes: Findings from a national study of Americans (MIDUS). *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 67(1)*, 4–12, doi:10.1093/geronb/gbr072

Assignment 6 due.

**Week 8 (November 15th-16th)**

**Video lecture(s):** Regression approach to ANOVA

**Reading:** LeBel, E. P., Campbell, L., & Loving, T. J. (2017). Benefits of open and high powered research outweigh costs. Journal of Personality and Social Psychology, 113, 230-243.

Assignment 7 due.

**Week 9 (November 22nd-23rd)**

Mid-semester reflection on statistical power due.

**Week 10 (November 29th-30th)**
**Video lecture(s):** Multiple regression

**Reading:** Silberzahn et al. (2018). Many analysts, one data set: Making transparent how variations in analytic choices affect results. Advances in Methods and Practices in Psychological Science, 1, 337-356.

Assignment 8 due.

**Week 11 (December 6th-7th)**

**Video lecture(s):** Mediation analysis

**Reading:** Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. Social and Personality Psychology Compass, 5, 359-371.

Assignment 9 due.

**Week 12 (December 13th-14th)**

**Video lecture(s):** Moderation analysis

**Reading:** Giner-Sorolla R. (2018). Powering your interaction [blog post]. https:// approachingblog.wordpress.com/2018/01/24/powering-your-interaction-2

Assignment 10 due.

**Week 13 (December 20th-21st)**

*[EXAM, December 20th, in-person]*

**Week 14 (December 27th-28th)**

**Readings:** Grosz, M. P., Rohrer, J. M., & Thoemmes, F. (2020). The taboo against explicit causal inference in nonexperimental psychology. Perspectives on Psychological Science, 15, 1243-1255.

SPSP Power Analysis Working Group (2020). Power to detect what? Considerations for planning and evaluating sample size.

End-of-semester reflection on regression due.

*Note: I reserve the right to make changes to the syllabus throughout the semester.*