



The Hebrew University of Jerusalem

Syllabus

Advanced Research Methods - 51895

Last update 08-08-2023

HU Credits: 4

Degree/Cycle: 2nd degree (Master)

Responsible Department: Psychology

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: Mt. Scopus

Course/Module Coordinator: Iftah Yovel

Coordinator Email: iftah.yovel@mail.huji.ac.il

Coordinator Office Hours: By appointment (email)

Teaching Staff:

Prof Iftah Yovel,
Mr. Baoz Rosenberg

Course/Module description:

This is the basic statistics course for graduate students in psychology. The theoretical basis for the statistical procedures commonly used in psychological research will be reviewed. Excel and an R-based statistical package (JAMOVl) will be used to perform these procedures on various data sets.

Course/Module aims:

This course was designed to provide graduate students the theoretical understanding and applied tools that will enable them to perform the various stages of data preparation and statistical analyses for their research projects. A successful completion of the course will enable students to get acquainted with additional and more specific types of statistical procedures.

Learning outcomes - On successful completion of this module, students should be able to:

Understand basic concepts pertinent to descriptive and inferential statistics.

Use Excel for data preparation.

Explore data thoroughly and identify common problems and biases.

Examine the basic psychometric features of psychological measurement instruments.

Describe the general linear model as the basis for the major types of statistical procedures used in psychological research.

Understand the various features and limitations of the statistical procedures that will be covered.

Using Excel and an R-based statistical package (JAMOVl), to perform a wide variety of statistical procedures commonly used in psychological research.

Attendance requirements(%):

90% of classes (in order to perform the quizzes)

Teaching arrangement and method of instruction:

Course/Module Content:

- 1. Introduction, basic concepts*
- 2. Dealing with sources of biases (e.g., bootstrapping)*
- 3. Correlation, partial correlation*
- 4. Linear model, regression*

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5. Multiple regression
 6. Reliability
 7. Exploratory factor analysis
 8. Comparing two means
 9. One-way ANOVA
 10. ANCOVA
 11. Factorial ANOVA
 12. Repeated-measures ANOVA
 13. Mixed designs
 14. Moderation and mediation

Required Reading:
none

Additional Reading Material:

Field, A. (2013). *Discovering statistics (4th ed.)*. Thousand Oaks, CA: Sage Publications

Howell, D.C. (2008). *Fundamental statistics for the behavioral sciences (6th ed)*. Belmont, CA: Thomson/Wadsworth.

Accessible further resources (sorted based on course schedule):

Wilkinson, L. (1999). Statistical methods in psychology journals: Guidelines and explanations. *American Psychologist*, 54(8), 594– 604.

Cohen, J. (1994). The earth is round ($p < .05$). *American Psychologist*, 49(12), 997–1003.

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(11), 1359-1366.

Fritz, C. O., Morris, P. E., & Richler, J. J. (2012). Effect size estimates: Current use, calculations, and interpretation. *Journal of Experimental Psychology: General*, 141(1), 2-18.

Cumming, G., & Finch, S. (2005). Inference by eye: Confidence intervals and how to read pictures of data. *American Psychologist*, 60(2), 170–180.

Wright, D. B. (2003). Making friends with your data: Improving how statistics are conducted and reported. *British Journal of Educational Psychology*, 73, 123– 136.

Ratcliff R. (1993). Methods for dealing with reaction time outliers. *Psychological Bulletin*, 114, 510-532.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191.

Streiner, D. L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment*, 80(1), 99-103.

Zinbarg, R. E., Yovel, I., Revelle, W., & McDonald, R. P. (2006). Estimating generalizability to a latent variable common to all of a scale's indicators: A comparison of estimators for . *Applied Psychological Measurement*, 30(2), 121-144.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272-299.

DeCoster, J., Iselin, A.-M. R., & Gallucci, M. (2009). A conceptual and empirical examination of justifications for dichotomization. *Psychological Methods*, 14(4), 349- 366. doi: 10.1037/a0016956

Miller, G. A., & Chapman, J. P. (2001). Misunderstanding analysis of covariance. *Journal of Abnormal Psychology*, 110(1), 40- 48.

Hayes, A.F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs*, 76(4), 408-420 (2009).

Jacobson, N. S., Roberts, L. J., Berns, S. B., & McGlinchey, J. B. (1999). Methods for defining and determining the clinical significance of treatment effects: Description, application, and alternatives. *Journal of Consulting and Clinical Psychology*, 67(3), 300-307.

Tomarken, A. J., & Waller, N. G. (2005). Structural Equation Modeling: Strengths, limitations, and misconceptions. *Annual Review of Clinical Psychology*, 1(1), 31-65.

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical & Statistical Psychology*, 63, 665- 694.

Grading Scheme:

Essay / Project / Final Assignment / Home Exam / Referat 50 %

Submission assignments during the semester: Exercises / Essays / Audits / Reports

/ Forum / Simulation / others 20 %
Other 30 %

Additional information: