

# HDE 220: Research Methods in Human Growth and Development

Winter Quarter, 2024

Meeting Time: Mondays 10AM – 2PM

Location: Hutchison 75

Instructor: Erik Henricson

Office: 283 Hickey Gymnasium (the East side across from the MU and the green space)

Office Hours: By appointment

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## Course Description and Goals:

This course is an introduction to research methods and a review of basic statistics for the study of human development. An undergraduate background in social sciences (such as psychology, human development and family studies) and some coursework in statistics and research methods are assumed.

After completing this course, students should be able to:

- 1) Demonstrate understanding of major methodological issues related to research design, measurement, and statistical analysis
- 2) Critically evaluate empirical research articles with respects to their developmental conceptualization, design, measurement, and interpretation of results
- 3) Use statistical software to conduct basic statistical analysis and interpret the results

## Evaluation:

Evaluation is based on: (a) Class participation, 20%; (b) Assignments, 30%; (c) Presentation, 20%; and (d) Final paper, 30%.

Class participation: Students are expected to read all assigned readings carefully before class and contribute actively to class discussions.

Assignments: There will be several assignments to be completed outside of class time. Students can discuss assignments with their classmates. However, each student must turn in their own write-up.

Presentation: Each student will sign up to give a 20-min presentation on one of the weekly topics of the class. The presentation will serve as an ice-breaker for the lecture and is expected to facilitate class discussions on the selected topics. Students could review and critique current practices, discuss past or potential applications in their research area, and/or highlight important methodological considerations related to the selected topics. Presenters are encouraged to seek suggestions and feedback from other students in the class when deciding the content of the presentations.

Final paper: At the end of the quarter, each student will write a final paper in the form of EITHER a research proposal OR an essay. Regardless of content, the paper is limited to 3 pages (single-spacing, minimum size 11 text, 1" margins), excluding references. Students will be evaluated in their familiarity of the literature, understanding of research methodology, and critical thinking ability.

- *Proposal:* Propose a quantitative research project on a topic of your choice in human development. The proposal should include four sections: Introduction, Method, Intellectual Merit, and Broader Impact. The introduction should include a brief literature review and clearly stated hypotheses. The method section should include descriptions of research design, participants, measures, and data analysis plan. In the intellectual merit section, articulate the potential of the project to advance knowledge in the field. For

broader impact, describe the potential of the project to benefit society and contribute to the achievement of specific, desired societal outcomes.

- *Essay*: Choose a topic in human development and discuss the major methodological considerations in this area of research. The topic can be general (e.g., social-emotional development across the life span) or specific (e.g., depression in ethnic minority adolescents). Discussion of methodology can include issues related to research design, measurement, data analysis, and/or interpretation.

### **UC Davis Code of Academic Conduct:**

Students are expected to follow the UC Davis Code of Academic Conduct, which can be found at <http://sja.ucdavis.edu/files/cac.pdf>. Students who violate the Code of Academic Conduct are subject to disciplinary sanctions that include censure, probation, suspension, deferred separation or dismissal from the University of California.

### **Recommended Textbook:**

Howell, D. (2013). *Statistical methods for psychology* (8th ed.). Belmont, CA: Wadsworth. OR EARLIER EDITIONS.

### **Useful Resources:**

UCLA Statistical Consulting Website: <http://www.ats.ucla.edu/stat/>

### **UC Davis Policies and Resources:**

#### Academic Integrity

Students are expected to follow the UC Davis Code of Academic Conduct, which can be found at <http://sja.ucdavis.edu/files/cac.pdf>. Students who violate the Code of Academic Conduct are subject to disciplinary sanctions that include censure, probation, suspension, deferred separation or dismissal from the University of California.

#### Prohibition against Discrimination, Harassment, and Retaliation

Discrimination, harassment, and retaliation are not tolerated. All instructors are mandated reporters and therefore obligated to report any information regarding alleged acts of sexual discrimination, sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find a list of those individuals at: <https://care.ucdavis.edu>

#### Mental Health and Wellness

As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, depression, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. UC offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, consider utilizing the confidential mental health services available on campus. I encourage you to reach out to the Counseling Center for support (<https://shcs.ucdavis.edu/>). An on campus counselor or after-hours clinician is available 24/7.

#### COVID-19 Information

You can find information specific to COVID-19 here:

[https://campusready.ucdavis.edu/student-faq?utm\\_source=sa&utm\\_medium=redirect-sa](https://campusready.ucdavis.edu/student-faq?utm_source=sa&utm_medium=redirect-sa)

## Schedule of Topics:

- Week 1**      **Variables, Distributions, and Descriptive Statistics**  
Reading: Howell (2013). Chapter 2, Describing and exploring data.  
Reading: Howell (2013). Chapter 3, The normal distribution.  
Reading: Micceri, T. (1989). The unicorn, the normal curve, and other improbable creatures. *Psychological Bulletin*, 105(1), 156-166.  
Lab: Descriptive statistics
- Week 2**      **MLK Day, No Class**
- Week 3**      **Population, Sample, and Hypothesis Testing**  
Reading: Howell (2013). Chapters 4, Sampling distributions and hypothesis testing.  
Reading: Howell (2013). Chapters 5, Basic concepts of probability.  
Reading: Howell (2013). Chapters 7, Hypothesis tests applied to means  
Reading: Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, 33, 61-83.  
Lab: T-tests
- Week 4**      **Hypothesis Testing Done Wrong**  
Reading: Howell (2013). Chapters 8, Power.  
Reading: Howell (2013). Chapters 11, Simple analysis of variance.  
Reading: Howell (2013). Chapters 12, Multiple comparisons among treatment means.  
Reading: Button, K. S., Ioannidis, J. P. A., Mokrysz, C., Nosek, B. A., Flint, J., Robinson, E. S. J., & Munafò, M. R. (2013). Power failure: Why small sample size undermines the reliability of neuroscience. *Neuroscience*, 14, 365-376.  
Reading: Bakker, M., Hartgerink, C. H. J., Wicherts, J. M., & van der Maas, H. L. J. (2016). Researchers' intuitions about power in psychological research. *Psychological Science*, 27(8), 1069-1077.  
Lab: One-way ANOVA
- Week 5**      **Causality and Experimental Design**  
Reading: Howell (2013). Chapter 9, Correlation and regression.  
Reading: Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). Experiments and generalized causal inference. In *Experimental and quasi-experimental designs for generalized causal inference* (pp. 1 – 32). Boston, MA: Houghton Mifflin Company.  
Reading: Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). Randomized experiments: Rationale, designs, and conditions conducive to doing them. In *Experimental and quasi-experimental designs for generalized causal inference* (pp. 246 – 278). Boston, MA: Houghton Mifflin Company.  
Lab: Correlation and regression
- Week 6**      **Quasi-Experimental Design**  
Reading: Howell (2013). Chapter 15, Multiple regression.  
Reading: Pitts, S. C., Prost, J. H. & Winters, J. J. (2005). Quasi-experimental designs in developmental research: Design and analysis considerations. In D. M. Teti (Ed.), *Handbook of research methods in developmental science* (pp. 81-100). Malden, MA: Blackwell Publishing.  
Reading: Shadish, W. R., Clark, M. H., & Steiner, P. M. (2008). Can nonrandomized experiments yield accurate answers? A randomized experiment comparing random and

nonrandom assignments. *Journal of the American Statistical Association*, 103(484), 1334-1344.

Lab: Multiple regression

**Week 7**      **President's Day, No Class**

**Week 8**      **Moderation and Mediation**

Reading: Howell (2013). Chapter 13, Factorial analysis of variance.

Reading: Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1192.

Reading: McCartney, K., Burchinal, M. R., & Rub, K. L. (2006). Contemporary advances and classic advice for analyzing mediating and moderating variables. In *Monographs of the Society for Research in Child Development*, 71, No. 3, 88-104.

Reading: Belsky, J., Pluess, M., & Widaman, K. F. (2013). Confirmatory and competitive evaluation of alternative gene-environment interaction hypotheses. *Journal of Child Psychology and Psychiatry*, 54(10), 1135-1143.

Lab: Factorial ANOVA

**Week 9**      **Developmental Designs**

Reading: Howell (2013). Chapters 16, Analyses of variance and covariance as general linear models.

Reading: Robinson, K., Schmidt, T., & Teti, D. M. (2008). Issues in the use of longitudinal and cross-sectional designs. In D. M. Teti (Ed.), *Handbook of research methods in developmental science* (pp. 3-20). Malden, MA: Blackwell Publishing.

Reading: Selig, J. P. & Preacher, K. J. (2009). Mediation models for longitudinal data in developmental research. *Research in Human Development*, 6, 144-164.

Lab: Moderation and mediation

**Week 10**      **Measurement**

Reading: Baltes, P. B., Reese, H. W., & Nesselroade, J. R. (1988). Measurement. In *Life-span developmental psychology: Introduction to research methods* (pp. 58-74). Monterey, CA: Brooks/Cole.

Reading: Edwards, M. C. & Wirth, R. J. (2009). Measurement and the study of change. *Research in Human Development*, 6, 74-96.

Reading: Sainani, K. L. (2014). Introduction to principal components analysis. *Physical Medicine and Rehabilitation*, 6, 275-278.

Lab: TBD