**Sociology – Inferential and Multivariate Statistics (8211)**

Fall Semester 2021

Professor Josh Klugman

Class Meeting Time: MR 2:00-4:30

Class Location: Weiss Hall 640

Office: Gladfelter 763

Zoom:

https://temple.zoom.us/j/96987141078

Office Hours (Zoom only):

M 11-12:30 W 12:30-2

E-mail: [klugman@temple.edu](mailto:klugman@temple.edu)

Lab Instructor: Matt Ford

Office: Weiss 723

Office Hours: By appointment

E-mail: matt.ford@temple.edu

**Prerequisites**

I assume that all students have taken an undergraduate introductory statistics class. If this does not apply to you please see me as soon as possible so we can talk about what you can do to make sure you do not get lost.

**Course Goals and Learning Outcomes**

This course will introduce you to statistical techniques that most quantitative sociologists use in their research. We will start off learning statistical basics and then drill down into linear regression, multiple regression, and hopefully logistic regression. You will learn how to do these statistical techniques in R which will be covered in the lab sessions.

**Texts and Course Materials**

The only required course materials are a scientific calculator, which you should bring to every class. You do not need anything fancy (a graphing calculator is not necessary).

There no required textbook for this class.

There will be a handful of article- and chapter-length readings throughout the semester.

For this course, the cost range for the scientific calculator is approximately $20-$25. The other required course materials (lecture notes, individual articles) are available at no cost to students.

**Requirements**

*Lab Assignments*: To hone your statistical skills and make you feel more comfortable using statistics, I require that you complete lab assignments that will assigned on roughly a weekly basis.

We encourage you to help one another on the lab assignments, although you should draw the line at looking at each other’s write-ups. Your grade is determined by how well you meet our expectations, not on your performance relative to others. However, we expect that the work you turn in is your own. Cheating will not be tolerated in this class.

You are required to turn in lab assignments on the days they are due. You have three “free days” where you can turn in one assignment three days late, or three assignments one day late. After you have reached the two day limit, we will deduct your assignment grade 25% for each day it is late. We will not accept assignments that are more than two days late.

*Exams:* There will be one midterm and one final exam. For each exam you will be allowed to use one double-sided page (8” × 11”) of hand-written notes. The final is semi-cumulative in that it will focus on the material covered since the midterm but it may require you to use the tools you learned before then.

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| *Final Grade Breakdown* |  |  | *Final Grade Cutoffs* | | | |
| Computer Assignments | 50% |  | A | 93.0 - 100 | C | 73.0 – 76.9 |
| Exams (2, 25% each) | 50% |  | A- | 90.0- 92.9 | C- | 70.0 – 72.9 |
|  |  |  | B+ | 87.0 – 89.9 | D+ | 67.0 - 69.9 |
|  |  |  | B | 83.0 – 86.9 | D | 63.0 - 66.9 |
|  |  |  | B- | 80.0 – 82.9 | D- | 60.0 – 62.9 |
|  |  |  | C+ | 77.0 – 79.9 | F | <60.0 |

**Attendance Policy**

This course does not have an attendance policy. You are adults, and if you miss class I will not penalize your grade. However, I encourage you to attend class. For most people, learning statistics is a challenge, and I have found that the most learning occurs in collective settings where one interacts with the instructor and fellow students. If you miss class, you are responsible for learning the content you missed as well as any other course materials/announcements.

**Communications Policy**

Wewill not answer questions regarding course content through e-mail. Instead, such questions should be directed at the discussion forum on Canvas. This will ensure students’ equal access to information. Only questions specific to you (e.g. asking to arrange a meeting, or about your grades) should be sent through e-mail.

I suggest you check Canvas and your e-mail account daily so you do not miss any special announcements made outside of normal class hours.

**Computing**

You do not need to buy any software to do well in this course. R and RStudio are available in all computer labs on the main campus, including Weiss and Gladfelter Halls. Anyway, this free, open-sourced software that is easy to download and install on Mac and PC computers.

**Tentative Topic Schedule** (subject to change as we progress through the semester):

Miller (2013) reading – Miller, Jane E. 2013. *Chicago Handbook to Writing About Multivariate Statistics*. Chicago, IL: University of Chicago Press. On course reserves.

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| **Week** | **Days** | **Topic** |
| **1** | 08/23-8/26 | Introduction – Summary Statistics, Normal Distribution  Introduction to Inferential Statistics – Hypothesis Testing, Confidence Intervals Using Normal and *t* dist.  READING: Miller (2013), “Types of Quantitative Comparisons” (on Canvas) |
| **2** | 8/30 – 9/2 | Inferential statistics Continued |
| **3** | 09/09 | Comparing Means Across Two Groups independent & dependent *t* tests of sample means  **NO CLASS MONDAY 9/6** |
| **4** | 9/13-09/16 | Cross-Tabulations and Chi-Square  Reading: Miller (2013), “Generalization, Example, Exceptions” (pp. 30-32) & “Creating Effective Tables” (on Canvas) |
| **5** | 09/20-09/23 | Correlation  READING: Gelman and Carlin (2014), “Beyond Power Calculations: Assessing Type S (Sign) and Type M (Magnitude) Errors”. *Perspectives on Psychological Science* 9(6) 641-651. [dx.doi.org/10.1177/1745691614551642](http://dx.doi.org/10.1177/1745691614551642)  Gelman (2017), “The ‘What Does Not Kill My Statistical Significance Makes It Stronger’ Fallacy”. Blog entry, *Statistical Modeling, Causal Inference, and Social Science* February 6, 2017. <http://andrewgelman.com/2017/02/06/not-kill-statistical-significance-makes-stronger-fallacy/> |
| **6** | 9/27-9/30 | Simple Linear Regression |
| **7** | 10/04-10/07 | Nonlinear Effects in Regression |
| **8** | 10/11-10/14 | **MIDTERM MONDAY, 10/11**  Nonlinear Effects in Regression |
| **9** | 10/18-10/21 | Introduction to Multiple Regression |
| **10** | 10/25-10/28 | Introduction to Multiple Regression  Mize, Trenton D. 2016. “Sexual Orientation in the Labor Market.” *American Sociological Review* 81(6): 1132-1160. https://journals.sagepub.com/doi/full/10.1177/0003122416674025 |
| **11** | 11/01-11/04 | Multiple Regression Strategies  Macmillan, Ross, and Michael J. Shanahan. 2021. “Why Precarious Work is Bad for Health: Social Marginality as Key Mechanisms in a Multi-National Context.” *Social Forces*. https://doi.org/10.1093/sf/soab006 |
| **12** | 11/08-11/11 | Multiple Regression Strategies  Hughes, Michael, K. Jill Kiecolt, Verna M. Keith, and David H. Demo. 2015. “Racial Identity and Well-Being Among African Americans.” *Social Psychology Quarterly* 78(1): 25-48. |
|  | 11/15-11/18 | Logistic Regression  Cunningham, Scott. 2021. “Directed Acyclic Graphs.” *Causal Inference: The Mixtape*. https://mixtape.scunning.com/dag.html |
| **13** | 11/22-11/25 | THANKSGIVING BREAK |
| **14** | 11/29-12/02 | Logistic Regression  Brady, David, Ryan M. Finnigan, and Sabine Hübgen. 2017. “Rethinking the Risks of Poverty: A Framework for Analyzing Prevalences and Penalties.” *American Journal of Sociology* 123(3): 740-786. https://www.journals.uchicago.edu/doi/full/10.1086/693678 |
| **15** | 12/06 | Logistic Regression  **NO LAB THURSDAY 12/9** |
| **16** | 12/13 | **FINAL EXAM MONDAY**  **1-3pm Weiss 640** |

**Disability Statement:** This course is open to all students who met the academic requirements for participation.  Any student who has a need for accommodation based on the impact of a disability should contact the instructor privately to discuss the specific situation as soon as possible.  Contact Disability Resources and Services at 215-204-1280 to coordinate reasonable accommodations for students with documented disabilities.

**Statement on Academic Freedom:** Freedom to teach and freedom to learn are inseparable facets of academic freedom.  The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02) which can be accessed through the following link: <https://www.temple.edu/secretary/sites/secretary/files/policies/03.70.12.pdf>.

**Policy on Academic Honesty:** Please consult Temple policy 03.70.12 (link listed above) for definitions of plagiarism and cheating and the penalties for engaging in that behavior.

# Mandatory Reporting Statement.

Please note that as a faculty member, I am required to report any information regarding sexual misconduct to the University Title IX Coordinator; as a student, however, you are **not** required to meet with or report anything the Title IX office. Students may speak to someone **confidentially** by contacting Student Health Services (215-204-3284) or Women Organized Against Rape (24 hours confidential; 215-985-3333).