PSYC 6340: Advanced Statistics and Design
Online and Asynchronous

Instructor: Samantha Estrada PhD
Email: sestrada@uttyler.edu
Office hours: Available TR 9:30-11 or *by appointment* via Zoom. The zoom link and passcode are in the Canvas shell. Send me an email to set it up a meeting.

The course will be online & asynchronous

Required Text: Navarro DJ and Foxcroft DR (2019). Learning Statistics with jamovi: A Tutorial for Psychology Students and other Beginners. (Version 0.70). DOI: 10.24384/hgc3-7p15 You can download it here: https://www.learnstatswithjamovi.com/

Recommended Text: Publication Manual of the American Psychological Association (7th Ed.).(2020).Washington, DC: American Psychological Association.

Software: We will be using a free and open source software for our data projects called `jamovi`. You can download the software here: https://www.jamovi.org/ and you can watch a tutorial installation here: https://www.youtube.com/watch?v=syx0f4xCxpk

We will also be using the free and open source software R and R Studio (Here's a tutorial for the installaiton: https://www.youtube.com/watch?v=by5HyJX6H1I)

We will also use the free and open source software `G*Power` which can be downloaded here: https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html

Course Catalog Description: Includes aspects of complex experimental designs, statistical hypothesis testing, decision theory, multiple regression analysis, ANOVA, distribution-free techniques, and factor analysis.

Required Prerequisites: PSYC 2354 and PSYC 2331 (or equivalent undergraduate statistics and research methods courses at another institution) and consent of instructor.

Student Learning Outcomes: As a result of this course, successful students will be able to:

- Identify and articulate the theoretical underpinnings of inferential statistics and experimental design.
- Articulate basic principles of statistical analyses, including measures of central tendency, variability, sampling distributions and hypothesis testing.
- Accurately choose and conduct statistical data analyses, using `jamovi` statistical software, emphasizing the basic assumptions, appropriate uses, and the interpretation of each.
- Employ qualitative, quantitative, and single-case research methods.

Homework Data Projects

- There will be data assignment for each of the topics we cover. The due date for these assignments will be Sundays 11:59 PM for the week each topic is covered.
- You have to pair up with another student to complete the assignment (pairs means *two* people); however, look for the Canvas page to sign up for a team. Teams may meet online or face to face. I will create the the "team" in Canvas so that only one of you has to submit in Canvas.

- Your reports for these data projects need to be clearly labeled as LastName.FirstName.AssignmentName.docx (or .doc), if working in pairs it should include both names and only one of you needs to submit in Canvas.
- All assignments MUST be turned in on time to receive full credit. I will deduct 2 points for everyday a submission is late (from a total of 10 points). You will get to drop one assignment no questions asked without it affecting your grade.
- **Homework Data Projects are submitted Sundays of each week at 11:59pm**

R Data Projects

Additionally, you will complete roughly 4-5 assignments in R. The goal of these assignments is to better prepare you for PSYC 6341 a crouse in which we will be using mostly R for our analysis in addition to developing your programming skills.

- You will complete these in pairs.
- See the schedule for the due dates.

Discussion Board

- We will have a weekly discussion board covering the topics we are learning in class. The specific discussion topics may range from dicussing articles to evaluating the statistical content of research articles.
- Each discussion will be graded and moderated by the TA and myself
- Each discussion will be worth 10 points.
- There is an available rubric for grading the discussion in Canvas.
- Late discussion postings will be deducted 2 points for everyday the post is made late.
- **Discussions post should be submitted by Sunday at 11:59pm of each week.**

Exams

This class will have a midterm exam and a final project.

Midterm

The midterm exam will be 15 questions taken online through Canvas and a project utilizing applied conceps using `jamovi` or interpreting output.

Final Project

In a group of your choosing, you will work to design and test a hypothesis using one of the provided real data sets posted on Canvas. The final product will consist of a detailed recorded presentation of your results in class. See the detailed description posted on Canvas. You will submit portions of this project throughout the semesters so that I can provide feedback before the final submission see schedule for deadlines.

Grading

Midterm	20%
Final Data Project	20%

Homework Data Projects	40%
Discussion Board	20%

Email Netiquette

- I will respond to emails Monday to Friday from 8-5 pm.
- Make sure your question isn't addressed in this syllabus.
- When you email me, identify what course you are in. State what section, day and time you are in. I teach more than one statistics class, and more than one section every day.
- Address me as Dr. Estrada. Do not begin your email with "hey." I'm also not Ms. Estrada.
- If you have issues with the quizzes. You should contact the TA for the class.

I am usually quick to respond to student e-mails. However, student e-mails tend to do several things that try my patience. I have a new policy, effective Fall 2019, that outlines why I will not respond to certain e-mails students send. Multiple rationales follow.

- The student could answer his/her own inquiry by reading the syllabus.
- Do not email me inquiring about your final grade or to help you predict your final grade. See policy on grade correction below
- Grades will be available on CANVAS and you should know what you need to pass the course.
- The student should use his/hers UTT email at all times. Do not email me from your private account (eg. coolguy23@gmail.com). If you email me from a personal email, I will NOT respond.
- The student missed class for which there was no exam. I do not need to know the exact reason for a missed class. Students with excusable absences are responsible for giving me a note in hard copy that documents the reason for the missed class. An e-mail is unnecessary unless the impromptu absence involved missing a midterm or final.
- The student wants to know what topics s/he missed during a class s/he skipped. The answer is always "you missed what was on the syllabus."
- The students wants to know how many classes s/he missed at some point during the semester.
- I assume the student has a better answer to that question than me until the end
- The student is requesting an extension on an assignment for which the syllabus already established the deadline. The answer is always "no".
- The student is "grade grubbing" or asking to round up a grade. The answer is always "no".
- The student is asking for an extra credit opportunity. PSYC 5340 is a master's level course there is no extra credit.

When to contact the Teaching Assistant (TA):

- TAs change semester by semester. To find their information more accurately you can look in the homepage of our class CANVAS.
- For question regarding discussion board grades.
- Questions regarding tutoring or review sessions.

Make-up exams and assignments: To be eligible for a make-up exam or assignment that was missed due to an absence, you will have to bring in some kind of official documentation for that absence (doctor note, work note, etc). This same policy applies to late work. The only late assignments accepted will have appropiate documentation. You are not to submit a late assignment without first providing documentation (remember you can drop ONE assignment without it affecting your grade). Late assignments may receive partial credit.

Technical Support: If you experience technical problems or have a technical question about this course, you can obtain assistance by emailing itsupport@patriots.uttyler.edu or call 903.565.5555. When you email IT Support, be sure to include a complete description of your question or problem including: • The title

and number of the course • The page in question • If you get an error message, a description and message number • What you were doing at the time you got the error message

University Policies

Grade Replacement/Forgiveness: If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to do so will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates will receive grade forgiveness (grade replacement) for only three course repeats; graduates, for two course repeats during his/her career at UT Tyler.

Disability Services: If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may also be obtained at the following UT Tyler Web address: http://www.uttyler.edu/disabilityservices.

Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Grade Grievances

Grade grievances can be filed only after final grades have been posted after the end of the semester, but must be made within 90 days of the semester end. To file a grade grievance, refer to the appropriate section of the UTT Catalog (p. 38).

Academic Honesty Statement

Cheating, plagiarism (submitting another person's material as one's own), or doing work for another person who will receive academic credit is impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the

student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

Civility Statement

Students are expected to interact with instructors and peers in a respectful manner that enhances the learning environment.

UT Tyler Resources for Students

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254)

Library Support

The Robert R. Muntz Library strives to serve as a center of discovery, exchange, and advancement of ideas. http://www.uttyler.edu/library/

I RESERVE THE RIGHT TO MODIFY THIS SYLLABUS AT ANY TIME. THEREFORE, YOUR ATTENDANCE AND ATTENTION TO THE ANNOUNCEMENTS IN CANVAS ARE CRUCIAL BECAUSE IT WILL ASSIST YOU REMAIN CURRENT ON THE MATERIAL AND KNOW WHEN THE SYLLABUS MAY BE MODIFIED.

Week 01, 08/24 - 08/30: Data Entry & Importing Data

Reading	
	Textbook Chapter 3 (pgs.43 – 55): Getting started with jamovi
Discussion Board	
	Introduction & Replication in Psychology
Homework	
	Jamovi and G*Power installation + selected tutorials. No submission required. Sign up for pair teams
	R and R Studio installation

Week 02, 08/31 - 09/06: Descriptive Statistics and Graphs

Reading	
	Textbook Chapter 4 (pgs.59 – 84): Descriptive Statistics
	Textbook Chapter 5 (pgs.85 – 96): Drawing Graphs
Discussion Board	
	Descriptives
Homework	
	Intro to Jamovi & Data Entry Project
	Sign up for presentation team
Watch:	
	Getting started with R and R Studio

Week 03, 09/07 - 09/13: Recording and Computing Variables & Hypothesis Testing

Reading	
	Textbook Chapter 6 (pgs.97 – 117): Pragmatic Matters
	Textbook Chapter 9 (pgs. 181-206): Hypothesis Testing
	Wheelan, G. (2013) Garbage in, garbage out.
	Gelman (2018) Data Ethics
Discussion Board	
	Data quality & ethics
Homework	
	Graphs and Descriptives Data Project
Watch:	
	Basic R Commands

Week 04, 09/14 - 09/20: Categorical Data Analysis

Reading	
	Textbook Chapter 10 (pgs. 211 – 239): Categorical Data Analysis
	— The χ^2 goodness-of-fit test
	— The χ^2 test of independence

	— Effect Size — Assumptions of the test(s) Nimon, K. F. (2012). Statistical assumptions of substantive analyses across the general linear model: a mini-review. Frontiers in psychology, 3, 322.
Homework	Data Management Project
Homework	Basic R Commands project

Week 05, 09/21 - 09/27: Comparing Two Means

Reading	Textbook Chapter 11 (pgs.241 – 280): Comparing Two Means – Independent Samples t-test (Student test) – Paired-samples t-test – Effect size
Homework	Categorical Data Project
Watch	Importing data from Excel Reading in, Accessing, and Summarizing Data in R

Week 06, 09/28 - 10/04: Correlation & Regression

Reading	Textbook Chapter 12 (pgs.281 – 325): Correlation and Regression Kehaulani, G. S (2015). The art and science of the scatterplot. Velikovic, V. What everyone should know about statistical correlation. Petrocelli, J. V. (2003). Hierarchical multiple regression in counseling research: Common problems and possible remedies. *Measurement and evaluation in counseling and development,* 36(1), 9-22.
Discussion Board	Correlation and Regression
Homework	Compare Means Project
Homework	Importing & summarizing data in R homework

Week 07, 10/05 - 10/11: Logistic Regression

Reading	Stoltzfus, J. C. (2011). Logistic regression: a brief primer. Academic Emergency Medicine, 18(10), 1099-1104
Homework	Correlation and Regression Project

Week 08, 10/12 - 10/18: Midterm Exam

> The exam will open Monday 10/12 at 1:00 am due 10/18 at 11:59pm

Week 09, 10/19 - 10/25: One-Way and Two-Way ANOVA

Reading	
	Textbook Chapter 13 (pgs.327 – 360): Comparing several means (One-Way ANOVA)
Discussion Board	
	One-Way ANOVA
Homework	
	Logistic Regression Project
Homework	
	R built-in datasets script

Week 10, 10/26 - 11/01: Repeated Measures ANOVA

Reading	
	Textbook Chapter 13 (pgs.327 – 360): Comparing several means (One-Way ANOVA)
	Textbook Chapter 14 (pgs. 361– 417): Factorial ANOVA
Homework	
	Logistic Regression Project
	DRAFT of Literature Review, Hypotheses and Research Questions due 11/01 at 11:59pm via Canvas.
Homework	
	Descriptives & t-test script

Week 11, 11/02 - 11/08: ANCOVA

Reading	
	Textbook Analysis of Covariance ANCOVA (pgs. 384 – 388)
Discussion Board	
	ANCOVA
Homework	
	RM ANOVA

Week 12, 11/09 - 11/15: Factor Analysis

Reading	
	Textbook Chapter 15 (pgs.419 – 464): Exploratory Factor Analysis
	Huck, S. W. (2012). Reliability and Validity. Reading statistics and research. Boston, MA: Pearson

| **Homework** | |
| ANCOVA | |

Week 13, 11/16 - 11/22: MANOVA

| **Reading** |
| Warne, R. T. (2014). A Primer on Multivariate Analysis of Variance (MANOVA) for Behavioral Scientists. *Practical Assessment, Research & Evaluation*, 19. |
| **Homework** |
| EFA Project
DRAFT of Methods section due at 11/22 at 11:59pm via Canvas. Group (or group representative) meeting with Dr. Estrada. Make an appointment. |

Week 14, 11/23 - 11/29

Turkey Break!

Week 15, 11/30 - 12/06

| **Discussion Board** |
| Presentations Forum due on 12/06 at 11:59 pm |
| **Homework** |
| Final Paper Group Data Project due 12/06 at 11:59 pm |

Week 16, 12/07 - 12/11

| **Discussion Board** |
| Feedback to classmates |
| **Homework** |
| Peer Evaluation Due |