Course Information: PSYC 2354 Statistics and Laboratory

- **Section:** PSYC 2354.001
- **Meeting Times:** Tuesday Thursday 2:00PM to 3:20PM
- **Location:** BRB 1030
- **Instructor**: Samantha Estrada PhD
- **Email**: sestrada@uttyler.edu

Office Hours

- **What are office hours?** These are times where I will be in my (virtual) office and you can come and ask me anything class related.
- My office hours are Wednesdays 2-5 via Zoom *by appointment*.
- You can find the Zoom link and passcode in the homepage of `Canvas`.
- To schedule an appointment use this `calendly` link: https://calendly.com/sestrada
  - I use these times for consulting with faculty and students, thus having each their separate link keeps things tidy that's why I request you use calendly.
  - You don't have to email me, `calendly` will notify me. I only ask you to make an appointment through this app because it makes the sharing of zoom links easy plus it goes straight to my calendar so I don't forget!
  - You can also cancel if needed through the app.
  - If the available in `calendly` hours don't work for you then please email me we can work something out.

Required Materials

Textbook: Foster, G. C., Lane, D., Scott, D., Hebl, M., Guerra, R., Osherson, D., & Zimmer, H. (2018). An Introduction to Psychological Statistics. This is a free and open source textbook and it is available here: https://irl.umsl.edu/oer/4/

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

- *Note*: `jamovi` is available through the university's virtual desktop https://one.uttyler.edu which can be access anywhere with a computer and internet.

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

Suggested Calculator: TI-84 Plus

- Other models such as TI-84, TI-83, TI-89 may have the statistical capabilities so you can always check with me if you have this type of calculator HOWEVER I am not an expert in all calculators mostly I am familiar with TI-84 Plus so it will be your responsibility to learn how to use your device.
- In general, a scientific calculator should work, but I will show you shortcuts in the TI-84. It is up to you if you want to use these shortcuts or not.
- Note for the online quizzes, nothing is stopping you from using jamovi, as your calculator.

Recommended Website: Purdue University Writing Lab. APA formatting and style guide (7th Edition). Purdue online writing lab (OWL). https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html/

- Specifically, go to Research And Citation APA Style (7th Edition) > APA Formatting And Style Guide (7th Edition) > Numbers & Statistics

Course Catalog Description

An introduction to descriptive and inferential statistical methods used in psychological research. Emphasis will be on hypothesis testing with t-tests, analysis of variance, correlation, and selected nonparametric techniques.

Student Learning Outcomes & Assessments

Upon successful completion of the course, the student will be able to:

1. Demonstrate an understanding of the differences between and uses of descriptive and inferential statistics. (BS/BA 6.0)
2. Demonstrate an understanding of the differences between parametric and nonparametric statistics (BS/BA 6.0)
    a. Define and distinguish between a population and a sample.
    b. Define and distinguish between statistics and parameters.
    c. Classify data with respect to the four levels of measurement.
3. Compute statistical tests manually (with a calculator) and interpret and explain results. (BS/BA 6.0)
    a. Compute and explain measures of central tendency and find the mean, median and mode of a sample and a population
    b. Compute and explain variability: range, variance and standard deviation
    c. Calculate and interpret standard z scores and information gained through normal distribution tables.
    d. Calculate and interpret correlation coefficients using the Pearson and the Spearman.
    e. Explain regression and predict y-values using regression equation.
    f. Calculate and interpret standard error of the estimate and proportion of variance accounted for.
    g. Discuss hypothesis testing and how to state the null and alternative hypotheses
    h. Interpret the level of significance of a hypothesis test (p-values)
    i. Identify type I and type II errors, and the probabilities associated with them.
    j. Discuss the power of an analysis and the factors that affect it.
    k. Perform one and two sampled t-tests, determine significance, and interpret the results.
    l. Explain an F-test, calculate and interpret a one-way ANOVA

m. Calculate and interpret a two-way ANOVA
n. Calculate and interpret non-parametric tests such as the Mann-Whitney U, the Wilcoxon rank test, and Chi Squares.
o. Graph different types of data manually and describe the information contained in them.

4. Be able to identify the independent and dependent variables of experiments, determine the design and the correct statistical analyses with which to test appropriate hypotheses. (BS/BA 6.0)

Grading

15% - Online Quizzes
35% - Midterm Assessment & Final
30% - Participation & Worksheets
20% - Data Projects

Grading Scale

```
90 -  100%    A
80 -   89%    B
70 -   79%    C
60 -   69%    D
 0 -   59%    F
```

Worksheets

For selected chapters (mainly hypothesis testing topics) we will also have additional worksheets to complete. I will have additional office hours for these so that you can ask questions as you complete them. Roughly we should have a total of 2-4 worksheets through the semester they will be announced in the schedule.

- Worksheets will be posted in `Canvas`.
- Submit via `Canvas`. Due a class session after the topic covered in class (check detailed schedule to be sure) at 11:59PM
- The TA and I recommend the use of MS Office Lens. A link to a short demo is posted in `Canvas`.
- You get to drop one worksheet without it affecting your grade.

Data Projects

There will be data assignment for each of the topics we cover (roughly 8 assignments total). You will perform the analysis in jamovi. The due date for these assignments will be Mondays 11:59 pm the week after the topic has been covered. You will complete these assignments in pairs. Sign up for a pair during the first week of the semester. Submit files named as `LastNamePartner1.LastNamePartner2.AssignmentName.PSYC2354` (.doc, .docx or .pdf). No .pages or links to google drive documents. Name the jamovi file in the same way with the extension .omv

- Sign up for pair in `Canvas`, simply find the page and use the edit button, then write in your name. You should be able to contact everyone in the course through `Canvas` by searching for their name in the Inbox section.

- You only need to submit ONE file with both partners' name. Feel free to leave a `Canvas` comment with both partners' names along with your submission.
- I have a template for the data projects as well as a APA style examples for all topics. Use them.
- You get to drop one data project without it affecting your grade.
- Plagiarized projects will receive a grade of zero.
- 20% deduction for every day the project is late.
- `Anonymous Feedback` I will select a paper for each project, remove personal identifying information. I will provide feedback and share with the rest of the class. The goal is that the rest of the class have a good compass on to what constitutes a quality submission for the data projects.

Online Quizzes

`Canvas` Online quizzes will be assigned for every chapter. The quizzes will be available under the "Quizzes" section in `Canvas`. Roughly we should have a total of 12-13 quizzes, depending on how slow/fast the class moves.

- You will be allowed to take the quiz up to 3 times.
- The quizzes are not timed.
- A tentative schedule is available in `Canvas`. If the schedule changes I will announce it in class.
- No make-ups. You get to drop the lowest 2 quiz grades without it affecting your grade. No questions asked. Do not email me for asking for a make-up, the answer is "no."
- If you have issues/questions with a quiz, your first point of contact should be the class TA.
- I have done my best to create quiz questions on `Canvas`, my goal was to not have the class have to buy a digital homework from a publisher which would roughly cost $>$ \$100. However, because the TA and I created the questions there is always room for error. Do email us if you find a mistake in the quizzes. We can "re-grade" your quiz or give you an extra attempt depending on the circumstances. Don't abuse this and ruin it for the rest of the class.

Midterms

Midterm Assessment #1

We will have an exam covering the following chapters:

- Introduction to Variables
- Measures of Central Tendency
- Measures of Variability
- z-scores & Central Limit Theorem

Midterm Assessment #2

We will have one midterm data project. In this project you will get to practice the analyses you have learned up to this point of the semester. The midterm (and final) will both be take home and in many ways can be thought of as homework assignments that extend across more than a single chapter (whereas the "homework" assignments are specific to a chapter). You will be given a week to complete them. Because they are take home exams, you can use any notes, textbooks, or software that you need to answer the questions. However, because these are exams you will not be allowed to work with each other. I will provide a data set, you will conduct the appropriate analysis and write your results in APA style. Neatness counts. More details in `Canvas`. Plagiarized projects will receive a grade of zero. There should be no collaboration between students for this project, if there is the students will receive a grade of zero.

Topics for Midterm Assessment #2

- Hypothesis Testing
- t-test & Confidence Interval
- Two samples hypothesis test

Datathon: Final Data Project

The final project will be cumulative. This project is similar to the weekly data projects but larger in scope. I will provide a data set and research questions. You will select the appropriate statistical method to answer the research question and submit a write-up in APA style of your findings. This write up should include:

- Hypotheses
- Research Question
- Methods section including descriptive for participants and/or variables
- Results section using appropriate statistical analysis

Failure to submit the final data project will result in the student failing the course.

Topics & Tentative Schedule

Week 01, 08/22 - 08/24: Chapter 1: Introduction to Variables.

Watch: Introduction to Research Methods Lecture.
Reading: Textbook Foster et al. (2018) Chapter 1 Pages 8-35.
Discussion: Graphs due Tuesday 08/29 at 11:59 pm
Quiz # 2 due Tuesday 08/29 at 11:59 pm.
Quiz # 1: Introduction to `jamovi` & course Tuesday 08/29 at 11:59 pm.

Week 02, 08/29 - 08/31: Chapter 3: Descriptives: Measures of Central Tendency

Watch: Measures of Central Tendency
Reading: Textbook Chapter 3 Pages 73 – 94
Worksheet: You can begin working on the worksheet due Tuesday 09/12 at 11:59 pm.
Quiz #3 Due Tuesday 09/05 at 11:59 pm.

Week 03, 09/05 - 09/07: Chapter 3: Descriptives: Measures of Variability

Watch: Measures of Variability
Reading: Textbook Chapter 3 Pages 73 – 94
Discussion Board: Descriptives due Tuesday 09/12 at 11:59 pm.
`jamovi` Data Project: Descriptives Data Project due Tuesday 09/12 at 11:59 pm.
Worksheet: Submit worksheet for Chapter 3 & 4 due Tuesday 09/12 at 11:59 pm.
Quiz #4 due Tuesday 09/12 at 11:59 pm.

Week 04, 09/12 - 09/14 z-scores and Probability & Chapter 6: Sampling Distributions: Central Limit Theorem

Watch: z-scores, Standard Normal Distribution and Central Limit Theorem
Discussion Board: z-score due Tuesday 09/19 at 11:59 pm
Watch: Central Limit Theorem
Reading: Textbook Chapter 4 and 5 Pages 95 – 115 & Chapter 6 Textbook Pages 116 – 125
Quiz #5 due Tuesday 09/19 at 11:59 pm.

Week 05, 09/19 - 09/21: Midterm Assessment #1

Canvas quiz 10-13 questions. Open book/notes. No time requirement. Only 1 attempt. Available Thursday Tuesday 09/21 at 11:59 pm from 2PM to 5PM.

Week 06, 09/26 - 09/28: Chapter 7: Introduction to hypothesis testing

Watch: Introduction to hypothesis testing
Discussion Board: Open Science
Reading: Textbook Chapter 7 Pages 127 – 147
Worksheet: Submit worksheet for Chapter 7 Tuesday 10/03 at 11:59 pm.
Quiz # 6 due Tuesday 10/03 at 11:59 pm.

Week 07, 10/03 - 10/05: Chapter 8: Hypothesis Testing t-distribution & Confidence Intervals

Watch: Hypothesis Testing t-distribution & Confidence Intervals
Reading: Textbook Chapter 8 Pages 148 – 160
Worksheet: Submit worksheet for Chapter 8 Tuesday 10/10 at 11:59 pm.
`jamovi` **Data Project**: t-distribution
Quiz # 7 due Tuesday 10/10 at 11:59 pm.

Week 08, 10/10 - 10/12: Two-sample Hypothesis Testing

Watch: Two-sample Hypothesis Testing
Reading: Textbook Chapter 9 and 10 Pages 161– 191
`jamovi` **Data Project**: T-tests due Tuesday 10/17 at 11:59 pm.
Worksheet: Submit worksheet for Chapter 10 Two-sample Hypothesis Testing due Tuesday 10/17 at 11:59 pm.
Quiz #8 due Tuesday 10/17 at 11:59 pm.

Week 09, 10/17 - 10/19: Midterm Assessment #2 Data Project

- **Midterm Data Project** will OPEN Sunday 10/17 at 11:59 pm.
- **Midterm Data Project** will CLOSE Tuesday 10/24 at 11:59 pm.

Week 10, 10/24 - 10/26: Chapter 11: One Way ANOVA and post-hoc test

Watch: One Way ANOVA and post-hoc test
Reading: Textbook Chapter 11 Pages 194 – 213
jamovi Data Project: ANOVA due
Worksheet: Submit worksheet for Chapter 11 ANOVA
Quiz # 9 due Tuesday 10/31 at 11:59 pm.

Week 11, 10/31 - 11/02: Chi-Square Tests: Goodness of fit, Independence & McNemar's

Watch: Chi-Square
Reading: Textbook Chapter 14 Pages 259 – 269
jamovi Data Project: Chi-Square due Tuesday 11/21 at 11:59 pm.
Quiz #10 due Tuesday 11/07 at 11:59 pm.

Week 12, 11/07 - 11/09: Chapter 12: Correlation Coefficient: Pearson and Spearman Rank

Watch: Correlation Coefficient - Pearson and Spearman Rank
Reading: Textbook Chapter 12 Pages 215 – 240.
Quiz #11 due Tuesday 11/14 at 11:59 pm.

Week 13, 11/14 - 11/16: Simple Linear Regression

Watch: Simple Linear Regression
Reading: Textbook Chapter 13 Pages 242 – 257
jamovi Data Project: Correlation and Regression due Tuesday 11/28 at 11:59 pm at 11:59pm.
Quiz #12: due Tuesday 11/21 at 11:59 pm.

Week 14, 11/21 - 11/23: Turkey Break: No class!

Week 15, 11/28 - 11/30: Datathon: Final Project Work Week

- Final Data Project will OPEN Sunday 11/27 at 11:59 pm.

Week 16, 12/05 - 12/07

- Final Data Project DUE WEDNESDAY 12/07 at 11:59 pm.

Contact Me

Email Netiquette:

- I will respond to email Monday to Friday from 8-5 pm. I will do my best to respond in the next 48 hours of receiving your email. The same goes for my TAs.
- 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"
- Use your UTT email at all times. Do not email me from your private account (eg. coolguy23@gmail.com). If you email me from private email I will NOT respond.
- Do not email me inquiring about your final grade or to help you predict your final grade, unless you believe there should be a correction, the grades will be available in `Canvas` and you should know what you need to pass the course.
- You have a issues with the quizzes. You should contact the TA for the class.
- Appointments should be scheduled through calendly and not email

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 worksheet grades you should contact the TA.
- Questions regarding tutoring or review sessions.
- Issues with the online quizzes (typos, grades, etc)

Late policy

There will be an automatic 20% deduction for worksheets, data projects, and evaluation of statistical articles. The TAs and I have a scheduled time to grade, anything that comes after the deadline will receive minimal feedback.

Extra Credit Opportunities

There are three different Extra Credit Opportunities. The number of points awarded will be 5 points. You can only do one of these three opportunities. You may choose to do all of them, but I will only give you extra credit for one of them. There will be no other extra credit opportunities so please do not ask. Complete Extra Credits by Week 14, 11/21 - 11/23.

Extra Credit Option #1: Mentor Center Participation

Students who choose this extra credit option will be required to 1) complete a series of assessments measuring study skills and strategies, self-efficacy, academic emotion regulation, belongingness, and a number of other constructs that contribute to students' academic success in college; 2) complete an appraisal interview with a graduate student mentor; and 3) engage in three meaningful interactions with their mentor via in-person meet ups, phone conversations, text, or e-mail. Students must complete these requirements by Week 14, 11/21 - 11/23. Please note: The College of Education and Psychology is dedicated to ensuring students receive ample academic support. For this reason, Psychology and Education undergraduate faculty are able to refer students they believe are struggling to the Academic Success Assistance Program (ASAP) through the Mentor Center for mandatory mentoring services. Should you be referred to the Mentor Center by one of your professors, your participation will become mandatory. You will still receive extra credit in PSYC 2354 as long as you complete the mentoring requirements outlined above by Week 13, 11/14 - 11/16.

What to submit? Ms. Allen or her graduate assitant will send you an email stating you have completed your participation. You should take a screenshot of this and submit via `Canvas`.

Extra Credit Option #2: Counseling Clinic

You can participate in the Counseling Clinic. Students who choose this extra credit option need to participate in at least five counseling sessions. The need to let the staff know they want the extra credit for PSYC 2354. If your name does not appear on the end of the semester list, neither the TAs or me will make an inquiry on your behalf. A graduate student will make an announcement during the first week of class and you can give your contact information if you wish to take part in this activity.

What to submit? The Counseling Clinic will send me a spreadsheet with names. I will check your name appears for 5 sessions and assign credit, you don't have to submit anything.

Extra Credit Option #3: Research Component

In order to fulfill this requirement, all students should register in SONA within the first week of class. The registration will take only a few minutes, and will include a brief survey to collect demographic data. This data will serve as a screening tool to determine potential survey eligibility.

Once you register in the system, there are two ways to fulfill the research requirement:

Options:

1. You may complete research credits by participating in psychology studies. One credit is earned for every 30 minutes of research participation. Most studies are worth one credit.
2. The number of credits required to receive extra credit will be 3.

What to submit? You should take a screenshot of your credits assigned to this course and submit via `Canvas`.

- **University Policies** You can read the university policies here: https://www.uttyler.edu/links

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)

The University of Texas at Tyler Academic Calendar including: deadlines, important dates and more can be found here: https://www.uttyler.edu/schedule/files/2023-2024/academic-calendar-2023-2024-main-20230614b.pdf

***I RESERVE THE RIGHT TO MODIFY THIS SYLLABUS AT ANY TIME DURING THE SEMESTER.

References

Foster, G. C., Lane, D., Scott, D., Hebl, M., Guerra, R., Osherson, D., & Zimmer, H. (2018). *An introduction to psychological statistics*.