

# ST. FRANCIS XAVIER UNIVERSITY

DEPARTMENT OF PSYCHOLOGY

PSYC 394: ADVANCED STATISTICS FOR PSYCHOLOGICAL RESEARCH

FALL 2021 SYLLABUS

*We here at StFX acknowledge that we are on the traditional unceded territory of the Mi'kmaw people, known as Mi'kma'ki. Mi'kma'ki is also known as Nova Scotia, Prince Edward Island, New Brunswick, Newfoundland & Labrador, and the Gaspé region in Quebec. In the 18<sup>th</sup> century, Mi'kmaq people and the British Crown entered historic Peace and Friendship treaties; these treaties were based on friendship, sharing, and peace. We are committed to reconciling and honoring these treaty relationships, as we are all Treaty people.*

-Terena Francis, Coordinator of Indigenous Student Affairs, StFX

**Class meeting times:** Tuesdays 9:45 AM - 11:00 AM  
Thursdays 8:15 AM - 9:30 AM  
**Class location:** Coady 110 (CO110)  
**Lab meeting times:** Fridays 9:45 AM - 11:00 AM **or** 11:15 AM - 12:30 PM  
**Lab location:** Coady 265 (CO265)

## WELCOME TO ADVANCED STATS!

**Instructor:** Erin Mazerolle PhD

**Email:** [emazerol@stfx.ca](mailto:emazerol@stfx.ca)

**Extra help hours via Collaborate:**

Mondays 11:35 AM - 1:05 PM

Tuesdays 8:30 AM - 9:30 AM

Thursdays 10:00 AM - 11:30 AM



I'm looking forward to us exploring statistics and how they help us glean knowledge from data. I'm originally from Dartmouth NS, and lived in Ottawa, Montreal, and Calgary before settling in Antigonish. Like most psychology researchers, I use statistics extensively in my work. In my case, I'm a neuroimaging researcher with interests in brain function and structure in healthy control participants, as well as in persons with neurological diseases such as multiple sclerosis and tremor. I hope we can create a learning environment together that encourages critical thinking and supports diverse perspectives.

**Lab instructor:** Sherry Neville-MacLean MEd

**Office:** Annex 109E

**Email:** [sneville@stfx.ca](mailto:sneville@stfx.ca)

**Extra help hours via Collaborate:**

Mondays 1:00 PM - 2:30 PM

Thursdays 9:30 AM - 11:00 AM

I might say I have two homes: one here in Antigonish that I created and one in Cape Breton because it's where my roots are. In my studies of psychology and education, I have continued to learn about and apply statistical knowledge for my own research, to evaluate others' research, and to make day-to-day decisions. I am looking forward to working alongside you as you dive deeper into statistics.

**Extra help tips:**

- 1) Put our hours in your calendar so you can keep track of when we're available.
- 2) **Extra help is also available by appointment** - email Erin or Sherry to set one up. Be sure to suggest a few times that work for you in your email.

## COURSE OBJECTIVES

I believe that all students can and should learn statistics. The overarching goal of this course is to empower students to be critical consumers and/or competent users of statistics. For some students, PSYC 394 will provide critical training that is directly relevant to the statistical aspects of their honour's thesis research and future research endeavours. For other students, the course material will improve their ability to understand and critically evaluate the statistical aspects of research they encounter in their life, be it reading the news, getting advice from a doctor, or interpreting research reports as part of their future career in industry or healthcare.

Specifically, students will gain a theoretical understanding of intermediate and advanced statistical procedures used in psychological research, and will learn how to apply these techniques. Lectures and lab sessions will include content relevant to correlation, regression, t-tests, one-way analysis of variance (ANOVA), contrasts and comparisons, factorial ANOVA, repeated measures ANOVA, power, effect size, confidence intervals, and non-parametric tests. Class activities will also develop skills for critical analyses of statistical tests reported in research papers.

## LEARNING MANAGEMENT SYSTEM

We will be using [Moodle](#). On Moodle, you will find class announcements, lecture slides, surveys, forums, assignments, feedback forms, our Collaborate (online) classroom, and more.

User's names in Moodle and Collaborate are populated with information from Banner. If you use a different first name and would like Moodle/Collaborate to reflect that, you may have your student record updated by following these steps:

- Go to [Team Dynamix](#)
- Click on the "service catalogue" button
- When the service catalogue opens, click on Registrar's Office icon

- From the service list, select "Change of Name" and follow the instructions

No documentation will be required. Upon receipt of the request, your record will be updated with the Registrar's Office, IT Services, Residence, and Security.

In the meantime, if you wish to use a name other than your legal name in our Collaborate classroom, please use the guest link provided on our Moodle page. You may also temporarily change your "first name" in Moodle by clicking on your profile picture in the top right, selecting Profile, clicking the gear, and selecting "Edit profile." However, this must be repeated frequently, as Moodle syncs to Banner and overwrites your changes.

## COURSE FORMAT

The course will be primarily delivered in-person and has been designed with an in-person format in mind; however, I will have our Collaborate classroom open during all sessions in case you need to attend remotely (e.g., self-isolating due to COVID-19 symptoms or exposure). If I need to self-isolate, we will meet on Collaborate instead of in person. I will email the class as soon as possible should this occur. Please check your email before each class to avoid an unnecessary trip to campus!

## READINGS

There are no required textbook-related costs associated with PSYC 394. Before most classes, you will be asked to complete a reading and engage interactively on Perusall. Go to [Perusall](#) and create an account (feel free to use your Google, Facebook, or Twitter account to register). Our course code is: MAZEROLLE-VC26U.

Many of our readings will come from an Open Educational Resource (OER), [Answering Questions with Data](#), but will be uploaded to Perusall to allow us to interact with the readings collaboratively.

**Optional textbook:** Field, A. (2018). Discovering statistics using IBM SPSS statistics, 5<sup>th</sup> ed. Thousand Oaks: Sage. ISBN: 978-1-5264-3656-6

- Rent or buy the e-book at a lower price [here](#).
- Find the companion website [here](#).

I personally like the above textbook. I find the writing style approachable and the content modern and practical. It includes screenshots and examples for using SPSS. However, student feedback from last year was not very positive. For example, 6/11 students strongly or somewhat disagreed with the statement “I liked the PSYC 394 textbook.” Based on student feedback, the textbook is optional for 2021. You will not be assessed on any material that is only covered in the textbook.

**Suggested extra-curricular readings:** Want more statistics in your life? Here are a couple of very accessible reads!

Salsburg, D. (2002). The lady tasting tea: How statistics revolutionized science in the twentieth century. New York: W.H. Freeman.  
ISBN: 0716741067

Wheelan, C. (2012). Naked statistics: Stripping the dread from the data. New York: W.W. Norton.  
ISBN: 978-0-393-34777-7

## HARDWARE AND SOFTWARE

Recommended minimum hardware requirements can be found [here](#).

We will be using SPSS Statistics version 27. Instructions for downloading SPSS Statistics can be found [here](#). Please download and install SPSS Statistics on the laptop you will be using for this class before the beginning of the first lab session.

You may still be able to participate if you are using a Chromebook or tablet that does not conform to the minimum hardware requirements. In that case, you can use [MyLabApps](#). Files can be accessed on MyLabApps via your [H: drive](#).

## COMMUNICATING WITH EACH OTHER

I welcome you to contact me outside of class and extra help hours. Please use my StFX email address ([emazerol@stfx.ca](mailto:emazerol@stfx.ca)). In most cases, I will respond to emails within 24 hours during the work week.

For questions related to course material, consider posting on the Moodle Q&A forum. This allows other students to benefit from your questions and the answers, and also gives other students an opportunity to test and consolidate their knowledge by answering questions.

Extra help (office) hours are also an excellent option. You do not need an appointment to attend extra help hours. Extra help hours will be hosted in our Collaborate classroom. **Please note:** You don't need to have a specific question related to class material to join us for extra help hours. I am available for mentorship on a range of subjects including, but not limited to: research; careers; graduate school; professional development; science outreach; scientific writing; computer science and coding; and equity, diversity, and inclusion. I may not have all the answers, but I can help find them!

There is also the option of providing anonymous feedback, which will be available on Moodle throughout the semester.

## RECORDINGS OF LECTURES AND LABS

Course instructors may choose to record classroom and lab activities for various reasons, such as (but not limited to): sharing with a student who is experiencing COVID-19 symptoms and needs to self-isolate, or providing recordings as study material to members of the class. In addition, students who have received prior written permission from the instructor or with an approved Accommodation Plan in place may record classes.

Whether it is instructor- or student-initiated classroom recording, it is important to protect

intellectual property and maintain the privacy rights of individuals. The following list governs the use of recorded lectures by instructors and students in this class:

1. Recordings are not meant to replace attendance in normal circumstances.
2. The instructor will use Collaborate to make and store the recordings.
3. The instructor-initiated recordings must only be distributed to students who are enrolled in the course and only while the course is in progress.
4. All permitted recordings made by students are for personal academic use only. Unauthorized distribution or display of recorded lectures, in full or in part, to anyone inside or outside of the course (including other students) without additional permission from the instructor and any other presenters will be subject to disciplinary action.
5. The recorded lecture is treated as the intellectual property of the instructor.
6. It is the instructor's responsibility to ensure that any third-party intellectual property is used in accordance with the terms of the license governing its use and applicable intellectual property laws.

## EVALUATION

Component	Value
Lab homework	28%
Other homework	22%
Choice assignments	40%
Participation, effort, and integrity	10%

**Lab and other homework:** There will be 1-3 homework assignments per week, each worth 1-3 points. The goal of the homework is to provide structure and frequent feedback on your progress in the class. The format will vary, including Moodle quizzes, written reflections, SPSS assignments, discussion forums, and Perusall participation.

**Choice assignments:** As the name suggests, the Choice Assignments are designed to allow students to choose assignment topics and formats that most interest them. This is an opportunity for students to have agency over their own learning. You may select assignments totalling up to 40 points. I will meet with each student to help select your choice assignments. More details are provided in a separate document.

**Participation, effort, and integrity:** Every student starts with 50% for participation, effort, and integrity. Points will be earned (or lost) for attendance, participating in class, creating and maintaining a welcoming classroom environment, taking ownership of your own learning, helping other students learn, etc. I will keep notes on my assessments of these criteria throughout the semester. A summary will be available for both midterm and final grades.

**Midterm grade:** Your midterm grade will make up at least 30% of your final grade, and will be based on lab homework, other homework, participation, effort, and integrity, and any choice assignments you submit before October 18.

## BACKING UP YOUR WORK

Except in extreme circumstances, extensions will not be granted for data loss or computer problems. It is the student's responsibility to frequently back up all their work. It is strongly recommended that you save copies of all your work in two different physical locations, so that computer failures are less likely to cause you to lose your work. You may choose to do this any way you wish. StFX students have a OneDrive license which can be used to automatically save your files to both your local computer and the cloud. Information on OneDrive can be found [here](#). You may also consider Dropbox or Google Drive. I have personally had two hard drives fail simultaneously – please learn from my misfortune and back up your work to the cloud.

## CLASS AND LAB SCHEDULE

The class and lab schedule can be found at the end of this document. Please note: Although it is intended that the topics will be covered as above, some revision of the schedule may take place as deemed necessary. Any changes will be indicated in class and on Moodle.

## STUDENTS WITH DISABILITIES

If you anticipate needing accommodations in this course, please inform me. Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with the [Tramble Centre for Accessible Learning](#), if they have not already done so. Students who suspect they may have disabilities should contact the Tramble Centre for advice and referrals. Phone: 902-867-5349, email: [tramble@stfx.ca](mailto:tramble@stfx.ca).

## STUDENT SUCCESS CENTRE

The Student Success Centre offers free help to all students wishing to improve their academic and writing skills. You can visit the Student Success Centre's [website](#) for more information or to schedule an appointment.

## OTHER RESOURCES TO SUPPORT STUDENTS

A list of resources to support students has been compiled by the StFX Health and Counselling Centre [here](#).

StFX's Sexual Violence Prevention & Response Advocate, Heather Blackburn ([hblackbu@stfx.ca](mailto:hblackbu@stfx.ca)) is available to anyone on campus impacted by sexual violence. She can hear confidential disclosures, provide information about reporting options, and help you connect to the right support services to meet your needs. For more information about the services and supports available for those impacted by sexualized violence, please visit [this website](#).

Please note that I will keep any information you share with me private to the greatest extent

possible, however, I am required to share information regarding sexual violence in some situations (like if a member of StFX staff or faculty perpetrated the violence).

## LATE ASSIGNMENTS AND EXTENSIONS

Should a student submit work late without having requested an extension, there is a penalty of 5 percentage points per calendar day.

Extensions are available in a number of situations, including but not limited to:

- Emergencies.
- Requests made at least 24 hours in advance of the deadline.
- Longer-term issues (e.g., if you are fully or partially away from your studies due to extended illness, unexpected caretaking responsibilities, etc.).

Inaccurately estimating the amount of time an assignment will take to complete is not grounds for a last-minute extension. Data loss/computer problems are only grounds for an extension in extreme circumstances. To allow sufficient time for marking, December 13, 2021 is the last day late assignments can be submitted and the latest possible deadline extension.

### Example email to request an extension:

**Subject:** PSYC 394 extension for *assignment X*  
Dear Erin/Sherry:

I am not on track to complete *assignment X* due to *reason Y*. Would an extension until *date/time Z* be OK?

Sincerely,  
*Student name*

## LAPTOP AND CELL PHONE USAGE

All students are encouraged to bring their laptops to class. Please use it only for class-related activities while in class, and make sure the speakers are muted. It is preferred if you can turn off your cell phone when class starts, but if you must be available by phone at all times, keep it on vibrate and exit the room before taking your call.



## EMAIL

You are expected to maintain a working StFX email account; please check that account at least once per work day. Important notices will be sent to these email addresses.

## ACADEMIC INTEGRITY

St. Francis Xavier University values academic integrity. Therefore, all students must understand the meaning and consequences of such academic offences as plagiarism, cheating, tampering, and falsification under Section 3.8 of the Academic Calendar. The complete university policy and procedures is [here](#).

## EQUITABLE LEARNING ENVIRONMENT

Everyone learns more effectively in a respectful, safe, and equitable learning environment, free from discrimination and harassment. I invite you to work with me to create a classroom space that fosters and promotes values of human dignity, equity, non-discrimination, and respect for diversity. Please feel free to talk with me about your questions or concerns about equity in our classroom or in the StFX community in general. If I cannot answer your questions or help you address your concerns, I encourage you to talk to the Chair of the Department or the Human Rights and Equity Advisor. The Human Rights and Equity Advisor is Megan Fogarty (mfogarty@stfx.ca, 902-867-5306).

## POSSIBLE CONTINGENCIES

Given the dynamic nature of the COVID-19 pandemic, it is possible that major changes to this course may have to be implemented at any time,

including moving the course online if required. Should any changes be needed, they will be communicated in class (if possible) and on Moodle. Any such changes will be made with a commitment to meeting learning objectives, maintaining education quality, and ensuring fair and equitable treatment of our PSYC 394 community. I greatly appreciate your flexibility and welcome your feedback regarding any changes we need to make.

## DROP DATE

Students may drop a course, online in Banner, on or before the relevant deadline. See the calendar of events in the StFX Academic Calendar for the drop-date.

## LICENSE INFORMATION

With the exception of class and lab session recordings which are not intended to be distributed, all PSYC 394 course materials created by me (Dr. Erin Mazerolle) and Sherry Neville-MacLean are distributed in accordance with the [Attribution-NonCommercial-ShareAlike Creative Commons license](#). Third-party copyrighted materials (such as book chapters, journal articles, music, videos, etc.) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law.

## ACKNOWLEDGEMENTS

Thank you to Drs. Lindsay Berrigan, Karen Blair, and Donna Trembinski for sharing their syllabi.

*If you are struggling in the class for any reason and/or if you face a family or personal crisis and require accommodation, please contact us. We are always willing to find ways to support your successful completion of the class.*

Date	Topic
2021-09-07	Welcome and introduction
2021-09-09	Foundation and review
2021-09-10	Lab: Orientation and review of SPSS, Excel/Google sheets
2021-09-14	Criticisms of null hypothesis significance testing (NHST) and alternatives
2021-09-16	Data management/Choice assignment meetings
2021-09-17	Lab: Visualizing and cleaning data
2021-09-21	Comparing two means: Theory
2021-09-23	Comparing two means: Practice
2021-09-24	Lab: Comparing two means
2021-09-28	Comparing 3+ means: Theory
2021-09-30	Truth and reconciliation day (no classes)
2021-10-01	Lab: ANOVA
2021-10-05	Comparing 3+ means: Practice
2021-10-07	Repeated measures ANOVA: Theory
2021-10-08	Lab: Repeated measures ANOVA
2021-10-12	Repeated measures ANOVA: Practice
2021-10-14	Factorial ANOVA: Theory
2021-10-15	Lab: Factorial ANOVA
2021-10-19	Factorial ANOVA: Practice
2021-10-21	Multiple comparisons: Theory
2021-10-22	Lab: Multiple comparisons
2021-10-26	Multiple comparisons: Practice
2021-10-28	Correlation: theory
2021-10-29	Lab: Correlation
2021-11-02	Correlation: practice
2021-11-04	Regression: Theory
2021-11-05	Lab: Regression
2021-11-09	Study break (no classes)
2021-11-11	Study break (no classes)
2021-11-12	Study break (no classes)
2021-11-16	Regression: Practice
2021-11-18	Students' choice: Theory
2021-11-19	Lab: Students' choice
2021-11-23	Students' choice: Practice
2021-11-25	Extra help
2021-11-26	Lab: Extra help
2021-11-30	Presentations/Students' choice
2021-12-02	Presentations/Students' choice
2021-12-03	Lab: Extra help