FOUNDATIONS OF PSYCHOLOGICAL DATA SCIENCE   I   Cormack
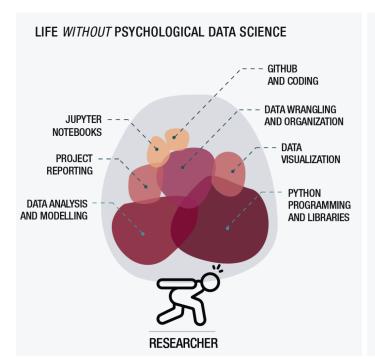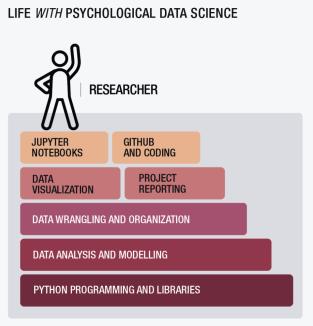
INSTRUCTOR

Lawrence Cormack

Canvas: https://utexas.instructure.com/courses/1347838
Course Page: https://utdirect.utexas.edu/apps/registrar/course_schedule/20229/42725/
Course tutorials: https://github.com/psychdatascience/FDS-CourseOne
Class communication: via Canvas only

COURSE DESCRIPTION

This course builds on the foundation for data science targeting psychological and brain science that you acquired in FDS I. We will review much of the material from FDS I, and then move on to slightly more advanced concepts and tools. The focus is on hands-on practice and enjoyable learning. The course will use python as the programming language, and Jupyter Notebooks as the development environment (our "home base") for the examples, tutorials, and assignments. We use Jupyterlab Notebooks because they are both the industry standard and a nice way to load, visualize, and analyze data and describe our findings in one environment. We will also learn GitHub to document changes and backup our work and, eventually, for use as a collaboration tool.

The course is flipped, meaning that the students will be required to follow short pre-recorded video lectures and or written tutorials, and then we'll spend the class time actually writing code and playing with data. Hands-on data analysis, final projects, and associated presentations will be mandatory for the completion of the course. There will be weekly hands-on assignments, and a final project of our own design that you will write up and push to your github repository.

Note: This is been a brand new course for Spring 2023, so it will be a (fun) work in progress. Details of the course content might deviate from this syllabus as we go.

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Course Prerequisites There are no prerequisites for the course.

REQUIREMENTS
- BYOL - Bring Your Laptop to class for hands-on participation. The College or Department might have a loaner service for the duration of the course.
- Software installed on your laptop:
  - `Python` installation via Anaconda: https://www.anaconda.com/products/individual.
  - The `git` code management too: https://git-scm.com/.
- Read Understand and Respect the class code of conduct (see below under POLICIES)
- Remember this class is about learning and having fun. We are here to provide you with the opportunity to learn something helpful for your future.

IN-PERSON
Classes will be held in person unless University policy mandates differently. Attendance will be taken and you must be present to get credit for that day's assignment..

LEARNING ACTIVITIES
This class will comprise various learning activities.
A. Papers, book chapters, videos, and notes might be required as reading in preparation for some classes.
B. In-class coding exercises to walk through the coding and data analysis tools.
C. Assignments that will be covered in class and turned in via Canvas
D. Project-driven data analysis students will complete a final project using the coding and data concepts covered by the tutorials.

Success in the most exciting research projects and jobs in Academia or industry requires mastering complex emotional, social, and technical skills. The most challenging and interesting jobs require the flexibility to master multiple types of theoretical understanding and technologies quickly. This course will teach not only about coding but also allow practice working in a project-oriented manner using modern data management and analysis tools.

STUDENT PERFORMANCE EVALUATION

1) **Final project.** A data analysis project report with text and figures describing the goals and results. A comprehensive GitHub repository with Jupyter notebooks to generate figures and analyses (15%).
2) **Exercises.** Each tutorial will have an exercise associated with it. The exercise will use the teachings of the recent tutorial and ask you to write some simple code to load data, generate calculations, compute stats on the data and use plots for visualization. The exercises will be cumulative. This means they will use the knowledge accumulated up to the tutorial the exercise refers to. In other words, you will practice coding at the end of every class or the day after (submissions will happen the day after class, on Wednesday and Friday by midnight, unless otherwise specified, 60%).
3) **GitHub activity.** Students' engagement on GitHub for the repositories relevant to each project and report will be evaluated using GitHub's metrics (10%).
4) **Attendance.** Come to class (10%).
5)

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PLANNED LECTURE TOPICS AND LAB ACTIVITIES

Semester Week	Class #	Topic
1	1	Introduction and overview
	2	File system review
2	3	Github review / github desktop
	4	jupyter notebook review / python in the terminal
3	5	python review I
	6	python review II
4	7	numpy review
	8	adv. numpy
5	9	matplotlib review
	10	adv. matplotlib
6	11	pandas review
	12	adv. pandas / seaborn
7	13	data wrangling I
	14	data wrangling II
8	15	A-B testing
	16	Simulation I
9	17	Simulation II
	18	curve fitting I
10		Spring Break
11	19	curve fitting II
	20	Machine Learning intro.
12	21	k-nearest neighbors classifier
	22	regression classifier
13	23	naïve Bayes
	24	svm

14	25	Final Projects
	26	
15	27	
	28	

UNIVERSITY POLICIES

Academic Integrity

Each student in the course is expected to abide by the University of Texas Honor Code: "As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity."
Plagiarism is taken very seriously at UT. Therefore, if you use words, ideas, or computer code that are not your own (or that you have used in a previous class), you must cite your sources. Otherwise, you will be guilty of plagiarism and subject to academic disciplinary action, including failure of the course. You are responsible for understanding UT's Academic Honesty and the University Honor Code which can be found at the following web address: http://deanofstudents.utexas.edu/sjs/acint_student.php

Q Drop Policy

If you want to drop a class after the 12th class day, you'll need to execute a Q drop before the Q-drop deadline, which typically occurs near the middle of the semester. Under Texas law, you are only allowed six Q drops while you are in college at any public Texas institution. For more information, see:
http://www.utexas.edu/ugs/csacc/academic/adddrop/qdrop

CLASSROOM POLICIES

Academic dishonesty

Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on academic dishonesty will be strictly enforced. For further information, please visit the Student Conduct and Academic Integrity website at:
http://deanofstudents.utexas.edu/conduct.

Grading Policy

Final grades will be assigned according to the UT Liberal Arts undergraduate plus/minus grading scale.
https://liberalarts.utexas.edu/ams/undergraduate/grading-scale.php

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	0-59

Your letter grades are computed automatically in Canvas. Canvas does not round, so a 92.99 is, unfortunately, an A-. To get an A, your number grade has to be 93.00 or higher. ***We will not entertain any requests to get your grade across a threshold.*** **This includes requests to regrade, round up, get extra credit, re-do an assignment, etc. If you do contact us with such a request, we will not respond.**

Late Submissions

Late submissions on everything except ungraded quizzes are penalized at 12.5% per hour late, except in the case of a legitimate ***documented*** emergency. The hour is rounded up, so if an assignment is due at 11:59pm, and you submit it at midnight, that counts as an hour late, just like 12:59am; 1:00am would count as 2 hours late. The rounding off of time is done automatically by Canvas.

STUDENT RIGHTS AND RESPONSIBILITIES

You have the right to
- a learning environment that supports mental and physical wellness.
- respect.
- be assessed and graded fairly.
- freedom of opinion and expression.
- privacy and confidentiality.
- meaningful and equal participation, to self-organize groups to improve your learning environment.
- learn in an environment that is welcoming to all people. No student shall be isolated, excluded or diminished in any way.

You are responsible for
- taking care of yourself, managing your time, and communicating with the teaching team and with others if things start to feel out of control or overwhelming.
- acting in a way that is worthy of respect and always respectful of others.
- creating an inclusive environment and for speaking up when someone is excluded.
- holding yourself accountable to these standards, and holding each other to these standards.

DIVERSITY STATEMENT

The Department of Psychology values the richness and open dialogue that diversity brings to our community. Diversity refers to individual differences that broadly include ability, age, culture, ethnicity, gender, nationality, race, religion, sexual orientation, and socioeconomic status. We appreciate that diversity enriches both the departmental social climate and the scope and depth of the department's research mission.

As a department, we are fully committed to a journey of inclusion and justice for all students from groups that are marginalized or minoritized. We acknowledge this has not always been the case to the extent that it should have been. Our department is in the process of diversifying and creating identity safety for all students.

In keeping with the department's values, I am committed to creating a learning environment that is safe and supportive of your identity and perspective. In addition, I will honor your request to address you by a name and gender pronoun you use (she/he/they/ze, etc). If you need additional support, these are some of the available resources on campus.

- Division of Diversity and Community Engagement https://diversity.utexas.edu/
- Gender and Sexuality Center https://diversity.utexas.edu/genderandsexuality/
- Multicultural Engagement Center https://diversity.utexas.edu/multiculturalengagement/

Personal Pronoun Use (She / He / They / Ze / Etc)

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name, unless they have added a "preferred name" with the Gender and Sexuality Center: http://diversity.utexas.edu/genderandsexuality/publications-and-resources/ . We will gladly honor your request to address you by a name that is different from what appears on the official roster, and by the gender pronouns you use she/he/they/ze, etc). Please advise me of any changes early in the semester so that we may make appropriate updates to our records.

UNIVERSITY RESOURCES FOR STUDENTS

Services for Students with Disabilities

This class respects and welcomes students of all backgrounds, identities, and abilities. If there are circumstances that make our learning environment and activities difficult, if you have medical information that you need to share with me, or if you need specific arrangements in case the building needs to be evacuated, please let me know. We are committed to creating an effective learning environment for all students, but we can only do so if you discuss your needs with me as early as possible. We promise to maintain the confidentiality of these discussions. Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities at 471-6259 (voice) or 512-410-6644 (Video Phone) as soon as possible to request an official letter outlining authorized accommodations.
For more information, visit http://ddce.utexas.edu/disability/about/.

Counseling and Mental Health Center

Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep, and taking some time to relax. This will help you achieve your goals and cope with stress.

All of us benefit from support during times of struggle. You are not alone. There are many helpful resources available on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner rather than later is often helpful.

If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. http://www.cmhc.utexas.edu/individualcounseling.html

When needed, please make use of the extensive mental health resources available to UT students through the UT Counseling and Mental Health Center (CMHC): http://cmhc.utexas.edu/; To find out about making an appointment: http://cmhc.utexas.edu/appointments.html/.

BeVocal

BeVocal is a university-wide initiative to promote the idea that individual Longhorns have the power to prevent high-risk behavior and harm. At UT Austin all Longhorns have the power to intervene and reduce harm. To learn more about BeVocal and how you can help to build a culture of care on campus, go to:
wellnessnetwork.utexas.edu/BeVocal.

SAFETY INFORMATION

If you have concerns about the safety or behavior of fellow students, TAs or Professors, call BCAL (the Behavior Concerns Advice Line): 512-232-5050. Your call can be anonymous. If something doesn't feel right – it probably isn't. Trust your instincts and share your concerns.

The following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767, http://www.utexas.edu/safety/

Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.

- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- Link to information regarding emergency evacuation routes and emergency procedures can be found at: www.utexas.edu/emergency

TITLE IX REPORTING

Title IX is a federal law that protects against sex and gender-based discrimination, sexual harassment, sexual assault, sexual misconduct, dating/domestic violence, and stalking at federally funded educational institutions. UT Austin is committed to fostering a learning and working environment free from discrimination in all its forms. When sexual misconduct occurs in our community, the university can:
1. Intervene to prevent harmful behavior from continuing or escalating.
2. Provide support and remedies to students and employees who have experienced harm or have become involved in a Title IX investigation.
3. Investigate and discipline violations of the university's relevant policies.

Faculty members and certain staff members are considered "Responsible Employees" or "Mandatory Reporters," which means that they are required to report violations of Title IX to the Title IX Coordinator. **I am a Responsible Employee and must report any Title IX related incidents** that are disclosed in writing, discussion, or one-on-one. Before talking with me, or with any faculty or staff member about a Title IX related incident, be sure to ask whether they are a responsible employee. If you want to speak with someone for support or remedies without making an official report to the university, email advocate@austin.utexas.edu For more information about reporting options and resources, visit titleix.utexas.edu or contact the Title IX Office at titleix@austin.utexas.edu.

The following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767, http://www.utexas.edu/safety/

CHANGES TO THE SYLLABUS

This syllabus is meant to give you a good idea of how the course will proceed. However, I reserve the right to make any necessary changes to the syllabus throughout the semester. Most likely this will amount to updating the content of the course. You will be notified in class, via Canvas, slack and/or via email if any changes are made to this syllabus. The updated syllabus will be provided on Canvas. If we make a change to this syllabus and notify the student the newest version of the syllabus becomes the official syllabus.

LAND ACKNOWLEDGEMENT

We would like to acknowledge that we are meeting on the Indigenous lands of Turtle Island, the ancestral name for what now is called North America.

Moreover, We would like to acknowledge the Alabama-Coushatta, Caddo, Carrizo/Comecrudo, Coahuiltecan, Comanche, Kickapoo, Lipan Apache, Tonkawa, and Ysleta Del Sur Pueblo, and all the American Indian and Indigenous Peoples and communities who have been or have become a part of these lands and territories in Texas.

COVID-19

The Behavior Concerns and COVID-19 Advice Line (BCCAL) has been created to address questions or concerns from our university community about COVID-19. Are you worried about a student in your class, bothered that your roommate has been acting differently, or concerned about the behavior of a co-worker? Do you have questions about COVID-19 and need support or resources? If so, contact the Behavior Concerns and COVID-19 Advice Line at 512-232-5050 or submit your behavior concerns or COVID-19 questions online.
https://safety.utexas.edu/behavior-concerns-advice-line/

ADDITIONAL RESOURCES

https://enexdi.sciencesconf.org/data/pages/windows_vs_mac_commands_1.pdf