PSYC 3325-001: Data Science in Psychology

Spring 2024

Instructor Information

Instructor(s):
Dr. Liegey Dougall

Office Number:
Life Science 523

Office Telephone Number:
817-272-0531

Email Address:
adougall@uta.edu (Please email via Canvas or indicate in which course you are registered)

Faculty Profile:
https://www.uta.edu/profiles/angela-liegey-dougall

Office Hours:
Tuesday & Thursday 11:00 AM-12:00 PM and by appointment

To accommodate all learners, office hours will be virtual (on Teams) or in-person.

To schedule an appointment, please follow the directions below:

- For office hours during Tuesdays and Thursdays 11:00 AM - 12:00 PM, you can sign up here. You have the choice to attend the meeting either using Microsoft Teams (the invite is automatically created), or you can arrive promptly at my office in Life Science 523 for an in-person meeting.
- For office hours outside of this time (by appointment), you can send an email to me via Canvas to schedule a meeting date and time. Then, I will invite you to a day and time. These meetings may be virtual (Microsoft Teams) or in-person.

Course Information

Section Information
PSYC 3325-001 Data Science in Psychology 3 hours credit

Time and Place of Class Meetings
SH330, Tuesday & Thursday 2:00-3:20 PM

Description of Course Content
This course is a survey of the benefits and challenges of data science in psychological research. The course includes discussions on advances in data collection and analysis, the applications and career opportunities within various psychology disciplines, and the best practices concerning ethics, privacy, security, and responsible conduct of research. Statistical concepts and techniques will be introduced using simple computing tools, such as Excel or code from programming languages, such as Python. Prerequisite: PSYC 2300 (or equivalent)

Student Learning Outcomes

1. After reading assigned material and participating in lecture, the student will actively discuss and apply course content by asking and responding to questions during class (class engagement) as well as completing in-class activities.

2. After reading a scientific article, viewing online content, or interacting with data science applications as part of the course assignments, the student will critically evaluate the information, relate the information to the course content, and generalize the findings as measured by class engagement and passing grades on in-class activities and Python assignments.
3. By the end of Module 1, the student will describe technological advances that foster collection and analysis of big data as measured by class engagement and passing grades on in-class activities and Python assignments.
4. By the end of Modules 2 and 3, the student will compare and contrast data science methods among disciplines of psychology as measured by class engagement and passing grades on in-class activities and Python assignments.
5. By the end of Module 4, the student will appraise the ethics, privacy, and security practices in data science as measured by class engagement and passing grades on in-class activities and Python assignments.
6. By the end of the semester, the student will identify and use commands or code to perform simple data science methods as measured by class engagement and passing grades on in-class activities and Python assignments.
7. By the end of the semester, the student will explain why data science is important in psychological research as measured by class engagement and passing grades on in-class activities and Python assignments.
8. By the end of the semester, the student will formulate questions and concerns for future applications of data science in psychology as measured by class engagement and passing grades on in-class activities and Python assignments.

Required Textbooks and Other Course Materials

- Woo, S. E., Tay, L., & Proctor, R. W. (Eds.). (2020). *Big data in psychological research*. American Psychological Association. Hardcover: ISBN: 978-1-4338-3167-6; e-Text: eISBN-13: 9781433832338
    - The UT Arlington Bookstore's list prices start at $76.49 for digital copies and $89.99 for new copies. [Note: to purchase books from the Schedule of Classes and/or MyMav, click on the "Buy Books" icon under the course listing. If nothing appears, you need to enable pop-ups.]
    - Please note that I do not control the price. This is the price at the time that I last checked; however, it may change depending on where and when the textbook is purchased and in what format. Used, digital, and rental copies also are available at cheaper rates. I recommend comparing prices, including those from Vital Source that start from $62.99.
- Assigned readings (free access through UT Arlington) will be available on the Canvas site for the course.

Technology Requirements

- You will need access to a computer with Excel software. The University of Texas at Arlington offers Microsoft 365 to all students, including Excel. Additionally, students have access to computers with Microsoft 365 in the OIT Labs, the library, and the Department of Psychology.
- You will need access to online teaching tools including Canvas and Teams (all available free with your UTA account). Students can access tutorials on these tools by clicking on the "Get Started" Box on their Canvas Homepage.
- You will need access to Google Colab, which is a free, online environment that lets you write and execute Python code. A video overview and additional information can be found on the welcome page.
- You will need a personal computing device (e.g., laptop) for running software and accessing the internet during class. If you do not have access to a laptop, you may check one out at the library.

CANVAS: Please see available training.

TEAMS: Please see available training.

GOOGLE COLAB: You will work with Python code using Google's free, online environment, Google Colab. A video overview and additional information can be found on the welcome page.

TECHNOLOGICAL DIFFICULTIES: Given that we are using online tools, technological issues are possible. It is your responsibility to make sure you have access to a computer or other networked device, the course assessments, and reliable Wi-Fi. The university provides access to computers on campus for your use, if needed. Therefore, it is assumed that you have access, and technological difficulties (Wi-Fi connectivity issues, browser issues, computer problems etc.) are not a valid reason to ask for an extension or ask that the work not be

considered late. For connection and other telecommuting technology issues, contact the Help Desk at 817-272-2208, helpdesk@uta.edu, or fill out a request form.

Descriptions of major assignments and examinations

Daily class engagement: I strongly encourage everyone to be active learners and to ask and answer questions. Therefore, class participation is required and will be assessed daily. You will need to read a scientific article, view online content, or interact with data science applications and participate in an in-class discussion. The Tentative Class Schedule of assigned class topics is provided below. I expect you to be prepared with knowledge of the topic(s) indicated on the schedule. Therefore, I expect that all students will have read and reviewed the assigned material prior to participating in class. Daily class engagement grades will consist of attendance and discussion and activity participation. Daily class engagement will be displayed as a percentage (i.e., 0% to 100%). The final Engagement grade will equal the average of all daily engagement grades, allowing four (4) days absent (the four [4] lowest scores dropped).

In-Class Activities. During class, you may work in groups of 2-3 students to complete the In-Class Activities. These In-Class Activities will occur approximately once a week and are your opportunity to get hands-on experience with data science skills and knowledge as well as actively receive feedback from your peers and the instructor. After you complete the In-Class Activity, you will have it in front of you and then transfer answers or portions of the details to Canvas using an assignment upload, discussion post, or quiz format. On Canvas, the In-Class Activities' submission pages will open at the start of the In-Class Activity and will close at **11:59 PM on the day it was assigned**.

You are encouraged to ask questions and receive feedback. If you are struggling with an activity, someone else is as well and if you reach out to your instructor for additional assistance, you may improve your learning outcomes as well as someone else's. Remember In-Class Activities should be completed during lecture, but you will have additional time to complete the submission if you need it after lecture. Each In-Class Activity will be graded as a percentage (0% to 100%). The final In-Class Activity points will equal the average of all In-Class Activity grades, allowing two (2) days absent (the two [2] lowest scores dropped). If you do not submit an In-Class Activity, it will be considered missing, and you will receive a grade of zero (0).

Python Assignments: As part of the course, you will learn basic Python coding skills. A Coursera Career Academy course on Python will be integrated into the course that includes assessments that you must complete to demonstrate your mastery of the material. Each of the 5 modules will be graded as a percentage (0% to 100%). The final Coursera Python Assignment points will equal the average of all Coursera module grades, dropping the lowest module score). If a module is not completed, it will be considered missing, and you will receive a grade of zero (0). An advantage of using Coursera is that you may continue taking courses on your own to earn a certificate. I also will cover Python skills during class, and you will use Python in some of the in-class activities.

Beginning and End of Semester Surveys: My goal is to use a student-centered approach that incorporates your voice into the design of the course materials and assessments. To do so, I am asking you to complete two surveys, one at the beginning of the semester and one at the end of the semester, to help guide – and personalize – the development of this course and the learning experiences. **Both surveys will be open for one week and will be due at 11:59 PM on the due date.**

Extra credit: Extra credit assignments may be offered during this course and are voluntary. The assignment must be completed correctly and submitted by the due date and time to receive extra credit.

Grading Information

Grading

	Weight
Daily In-Class Engagement	40%
In-Class Activities	40%
Python Assignments	15%
Beginning and End of Semester Surveys	5%
Final grade based on **100** points (100%)	

Missing daily class engagement, in-class activity submissions, and Python assignments will receive a grade of zero (0) in the grade calculations. **Students are expected to keep track of their performance throughout the semester which Canvas facilitates and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels;** see "Student Support Services," below. Final course grades will be calculated by weighting and adding together daily class engagement, in-class activities, Python assignments, beginning and ending semester surveys, and any extra credit points (see above), and assigning final letter grades as follows:

Letter Grade	Percentage of Points	Points required
A	89.5-100.0%	89.5-100.0
B	79.5-89.4%	79.5-89.4
C	69.5-79.4%	69.5-79.4
D	59.5-69.4%	59.5-69.4
F	0-59.4%	0-59.4

Make-up Work
There is no provision for making up daily class engagement, in-class activities, Python assignments, or a beginning or end of the semester survey. Missing work will result in a grade of zero (0); however, the lowest scores will be dropped for daily class engagement, in-class activities, and Python assignments (see descriptions above for more information). I will consider a request for an excused absence in this course only if documentation for a University-approved excuse (see current University Catalog) or a situation which is entirely out of your control (emergency), that covers the entire period for which the assessment was available, is received within one week of the assignment due date. Routine scheduled activities, such as work, doctor's appointments, vacations, weddings, or other conflicting appointments, will not be considered excused absences.

Expectations for Out-of-Class Study
A general rule of thumb is this: for every credit hour earned, a student should spend 3 hours per week working outside of class. Hence, a 3-credit course might have a minimum expectation of 9 hours of reading, study, etc. Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials and completing assignments, etc.

Grade Grievances
Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog. Use the following link to submit a grade grievance to the department: https://www.uta.edu/academics/schools-colleges/science/departments/psychology/degree-programs/graduate/graduate-resources/student-grievance-form.

Institution Information

UTA students are encouraged to review the below institutional policies and informational sections and reach out to the specific office with any questions. To view this institutional information, please visit the Institutional Information page (https://resources.uta.edu/provost/course-related-info/institutional-policies.php) which includes the following policies among others:

- Drop Policy
- Disability Accommodations
- Title IX Policy
- Academic Integrity
- Student Feedback Survey
- Final Exam Schedule

Additional Information

Face Covering Policy
Face coverings are not mandatory; all students and instructional staff are welcome to wear face coverings while they are on campus or in the classroom.

Attendance
Attending class sessions is a critical predictor and indicator of student success. The University of Texas at Arlington does not recognize a single attendance policy but encourages faculty to establish class-specific policies on attendance. As the instructor of this section, **I expect that you will attend class, and I will take daily attendance**. By enrolling in this course, you have made a commitment to attend at the scheduled meeting times. Research has shown that students who attend class regularly have higher course grades. Furthermore, students who actively listen and participate in class have higher course grades than students who attend class but engage in competing activities such texting, surfing the internet, reading, sleeping, etc.

The U.S. Department of Education requires that UT Arlington have a mechanism in place to verify Federal Student Aid recipients' attendance in courses. UT Arlington instructors are expected to report the last date of attendance when submitting students' final course grades; specifically, when a student earns a course grade of F, instructors must report the last date a student attended their class. For on-campus classes, last date of attendance can be based on attendance rosters or on academic engagements—a test, participation in a class project or presentation, or Canvas-based activity. Online or distance education courses require regular and substantive online interaction and participation. Students must participate in online course activities in Canvas to demonstrate attendance; logging into an online class is not sufficient by itself to demonstrate attendance. The last date of attendance is reported to the U.S. Department of Education for federal financial aid recipients.

Emergency Exit Procedures
Should we experience an emergency event that requires evacuation of the building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, do not take an elevator but use the stairwells instead. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Students also are encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at Emergency Communication System (https://www.uta.edu/uta/emergency.php).

Academic Success Center
The Academic Success Center (ASC) includes a variety of resources and services to help you maximize your learning and succeed as a student at the University of Texas at Arlington. ASC services include supplemental instruction, peer-led team learning, tutoring, mentoring and TRIO SSS. Academic Success Center services are provided at no additional cost to UTA students. For additional information visit: Academic Success Center (https://www.uta.edu/student-success/course-assistance). To request disability accommodations for tutoring, please complete this tutoring request form (https://www.uta.edu/student-success/course-assistance/tutoring/request).

The IDEAS Center (https://www.uta.edu/ideas/; 2nd Floor of Central Library) offers **FREE** tutoring and mentoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. Students can drop in or check the schedule of available peer tutors at www.uta.edu/IDEAS, or call (817) 272-6593.

The English Writing Center (411LIBR)

The Writing Center offers **FREE** tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at the Writing Center (https://uta.mywconline.com). Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see Writing Center: OWL for detailed information on all our programs and services.

The Library's 2nd floor Academic Plaza (http://library.uta.edu/academic-plaza) offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation.

Librarian to Contact

Each academic unit has access to Librarians by Academic Subject that can assist students with research projects, tutorials on plagiarism and citation references as well as support with databases and course reserves. Library information can be obtained through Rubab Shahzad, Data Science Librarian. Please contact her by email (rubab.shahzad@uta.edu) or phone (817-272-5147). You will find useful information for data and psychology on their website.

Emergency Phone Numbers

It is strongly recommended that you enter the UTA Police Department's emergency phone number into your mobile phone. In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381

Library Information

Research or General Library Help

Ask for Help

- Academic Plaza Consultation Services (library.uta.edu/academic-plaza)
- Ask Us (ask.uta.edu/)
- Research Coaches (http://libguides.uta.edu/researchcoach)

Resources

- Library Tutorials (library.uta.edu/how-to)
- Subject and Course Research Guides (libguides.uta.edu)
- Librarians by Subject (library.uta.edu/subject-librarians)
- A to Z List of Library Databases (libguides.uta.edu/az.php)
- Course Reserves (https://uta.summon.serialssolutions.com/#!/course_reserves)
- Study Room Reservations (openroom.uta.edu/)

Tentative Course Schedule

PSYC 3325 **Data Science in Psychology** **Spring 2024**

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. –Angela Liegey Dougall, PhD

Week	Class Meeting	Topic	Assignment	Assessment	Student Learning Outcome #
	Module 1				
1	T 1/16	Course Introduction/ Overview of Data Science in Psychology	Read Chapters 2 & 3	• In-Class Engagement • Possible In-Class Activity	1-3, 7
	R 1/18	Overview of Data Science in Psychology	Read Chapters 2 & 3	• In-Class Engagement • Possible In-Class Activity	1-3, 7
2	M 1/22		Beginning of the Semester Survey	• Beginning of the Semester Survey	1, 2
	T 1/23	Advances: Internet & Video Data	Read Chapters 4-6	• In-Class Engagement • Possible In-Class Activity	1-3, 7
	R 1/25	Advances: Internet & Video Data	Read Chapters 4-6	• In-Class Engagement • Possible In-Class Activity	1-3, 7
3	T 1/30	Advances: Images & Text Mining	Read Chapters 7 & 8	• In-Class Engagement • Possible In-Class Activity	1-3, 7
	R 2/1	Advances: Images & Text Mining	Read Chapters 7 & 8	• In-Class Engagement • Possible In-Class Activity	1-3, 7
4	T 2/6	Learning Basic Python	Python Assignment	• Python Assignments	2, 6
	Module 2				
4	R 2/8	Applications: Learning/Learning Analytics	Read Chapter 9 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
5	T 2/13	Applications: Learning/Learning Analytics	Read Chapter 9 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
	R 2/15	Applications: Social Psychology	Read Chapter 10 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
6	T 2/20	Applications: Social Psychology	Read Chapter 10 & assigned readings	• In-Class Engagement	1, 2, 4, 6, 7

Week	Class Meeting	Topic	Assignment	Assessment	Student Learning Outcome #
				• Possible In-Class Activity	
	R 2/22	Applications: Developmental Psychology	Read Chapter 13 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
7	T 2/27	Applications: Developmental Psychology	Read Chapter 13 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
	R 2/29	Applications: Cognitive/Neurocognitive Psychology	Read Chapter 12 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
8	T 3/5	Applications: Cognitive/Neurocognitive Psychology	Read Chapter 12 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
	R 3/7	Learning Basic Python	Python Assignment	• Python Assignments	2, 6
9	T 3/12	*Spring Break*			
	R 3/14	*Spring Break*			
	Module 3				
10	T 3/19	Applications: Health Psychology	Read Chapter 11 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
	R 3/21	Applications: Health Psychology	Read Chapter 11 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
11	T 3/26	Applications: Industrial & Organizational Psychology	Read Chapter 14 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
	R 3/28	Applications: Industrial & Organizational Psychology	Read Chapter 14 & assigned readings	• In-Class Engagement Possible In-Class Activity	1, 2, 4, 6, 7
12	T 4/2	Learning Basic Python	Python Assignment	• In-Class Engagement • Possible In-Class Activity	2, 6
	Module 4				
12	R 4/4	Applications: TBD	Read assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
13	T 4/9	Applications: TBD	Read assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
	R 4/11	Applications: TBD	Read assigned readings	• In-Class Engagement	1, 2, 4, 6, 7

Week	Class Meeting	Topic	Assignment	Assessment	Student Learning Outcome #
				• Possible In-Class Activity	
14	T 4/16	Applications: TBD	Read assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 4, 6, 7
	R 4/18	Best Practices: Ethics, Privacy & Security	Read Chapters 15, 17 & 18 and assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 5-8
15	T 4/23	Best Practices: Theory and Promoting Robust & Reliable Research	Read Chapters 1 & 16 and assigned readings End of the Semester Survey	• In-Class Engagement • Possible In-Class Activity • End of the Semester Survey	1, 2, 5-8
	R 4/25	Best Practices: Future Directions	Read Chapter 19 & assigned readings	• In-Class Engagement • Possible In-Class Activity	1, 2, 5-8
16	T 4/30	Learning Basic Python	Python Assignment	• Python Assignments	2, 6
	R 5/2	Finals Week – no class			