INR 3703 SCOPE AND METHODS
School of Politics, Security, and International Affairs
UCF
Spring 2024
Credit hours: 3

Course Syllabus

Instructor:	Maren J. Mainx	Term:	Spring 2024
Office Hours:	MW 1:00 PM – 2:30 PM via Zoom or by appointment*	Class Meeting Time:	10:30 AM - 11:50 AM
Phone:	(407) 823-2608	Class Location:	HPH 0310
Email:	maren.mainx@ucf.edu	Course Modality:	P (in-person)

*Please note that all meetings during office hours must be previously scheduled using the following link: https://calendly.com/mainx.
If you wish to meet outside my office hours, please send me an email to schedule an appointment.

Final Exam Date and Time: Monday, April 29, 2024, at 10:00 AM – 12:50 PM in Howard Phillips Hall (HPH) 0310

COURSE INFORMATION

Course Description:

Equal parts art, programming, and statistical reasoning, data visualization is critical for anyone who seeks to analyze data (big or small). Data analysis skills have become essential for those pursuing careers in politics, policy evaluation and research in fields like political science or broadly any social science. This course introduces students to the powerful R programming language, the basics of creating data-analysis graphics in R, and reasoning about what data visualizations can tell us, and an introduction to basic quantitative analysis in R.

The best way to understand the how and why of data analysis is to work with real-life data and questions. We will focus on a single political science subject: democracy and the relationship between macro-level indicators, such as economic development and the quality of democracy. Scholars who study global democracy are concerned with understanding what institutional changes in democracy result in an improvement in overall quality of democracy. This process is fundamental to political science research and to policies aiming to improve democracy in America and across the globe. In this class, you will gain a strong introduction to data analysis and visualization through reasoning about the empirical and theoretical challenges of visualizing and describing global democracy.

This is a class about making sense of data. Students will investigate relationships and discover patterns. This is an active process, driven by student engagement. Importantly, there will be weekly homework assignments that students must complete to stay on top of the class. In addition, there will be three main assignments: the midterm, a data visualization presentation, and the final exam.

Course Goals:

(1) The development basic coding skills in the R programming language.

(1.1) Producing an easy-to-understand figure

(1.2) Plotting data distributions

(1.3) Running and interpreting a linear regression (Ordinary Least Squares)

(2) The development of basic research skills:

(2.1) Basic statistics

(2.2) How to statistically analyze data and report one's results

(2.3) The ability to digest the report results in the political science discipline.

Important Dates

Drop/Swap and Add Deadline on myUCF	Friday, January 12, 2024,11:59 PM
Midterm Exam I	**Monday, February 12, 2024**
Midterm Exam II	**Monday, March 11, 2024**
Spring Break (no classes)	Monday, March 18, 2024 - Saturday, March 23, 2024
Withdrawal Deadline	Friday, March 29, 2024, 11:59 PM
Lightning Presentations	**Monday, April 15, 2024**
Classes End	Monday, April 22, 2024
Final Exam	**Monday, April 29, 2024 10:00 AM – 12:50 PM**

Required Materials

Students will need a **basic calculator** that performs the following functions: addition, subtraction, multiplication, division, squaring of variables, square root and natural log. One may be purchased at Walgreens or similar store; students do not need a highly complex instrument. Bring it, along with the other course materials, to class each day as it will be used to work problems assigned in class and on the tests. Such calculators may be used during the in-class exams, but cellphone-based calculators will NOT be allowed.

Graded Assignments:

Class Participation (10%)

HW assignments (20%)

Lightning Talk Presentation (10%)

Midterm I (15%)

Midterm II (15%)

Final Exam (30%)

Grading Scale

GRADE	PERCENTAGE
A	91.5-100
A-	89.5-91.5
B+	87.5-89.5
B	79.5-87.5
B-	77.5-79.5
C+	75.5-78.5
C	68.5-75.5
C-	66.5-68.5
D+	64.5-66.5
D	57.5-64.5
F	57.5 or less

Final Exam Format

You will be asked to define a list of terms that are listed in the textbook as key terms or I have gone over in class as a key term. You will then be asked to answer a number of long answer questions (answers should be about a paragraph) about important research design concepts. I will then ask you to complete a number of data science tasks.

Method of Grade Reporting

Webcourses@UCF.

Make-up Exam Policy

Per university policy, make-ups for exams will be given for documented circumstances of illness, official college activities, religious observances, and legal obligations (such as jury duty). Under such circumstances students are required to notify the instructor within 24 hours after missing the exam. In these instances, students are also excused from class without penalty. The Undergraduate Catalog states, "Reasons for acceptable absences may include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligations, severe weather conditions, and religious holidays".

Extra Credit

No extra credit.

Course Technologies

Our course website is hosted on Canvas. The main features of Canvas we will be using are the modules. The modules break the course content down into daily agendas. If you are unsure what you are supposed to be doing for a given day and when, visit the day's module on Canvas. The daily modules will also contain details and links to all the homework assignments and readings. I will show you how to submit your assignments and see your feedback during the first week of class.

In this class we will use R to work with data. R is free, open-source and interactive programming language for statical analysis. Rstudio is a versatile editor for working with R code and data that provides more intuitive interface to many features of the language.

Both R and Rstudio are widely available for all major operating systems (Windows, Mac OS, Linux). You should install them on your personal computer prior to attending tutorials. Use these links to download the installation files:

R - https://cran.r-project.org/

RStudio - https://www.rstudio.com/products/rstudio/download/

(choose free desktop version)

Readings

Every class period, except for the first week, students will have readings they should consult. Please don't purchase books until you attend first class. On the first day of class the course instructor will explain how to get access.

Required Readings:

- Llaudet, Elena and Imai, Kumai (2023). *Data Analysis For Social Science*. Princeton University Press.

Can be purchased here

Or can be purchased here

- Watkins, J. C. (2019). An introduction to the science of statistics: From theory to implementation (Pages 3-4; Pages 24-25).

Accessible for free online here

- King, G., Keohane, R. O., & Verba, S. (1994). *Designing social inquiry: Scientific inference in qualitative research*. Princeton University Press.

Accessible for free online here

- Wilke, Claus. Fundamentals of Data Visualization.

Accessible for free online here

- Grolemund, Garrett and Hadley Wickham. R for Data Science. https://r4ds.had.co.nz/

Core Syllabus Statements

This section contains course policies that are standardized across all UCF courses and are supplemental to all UCF course syllabi.

Academic Integrity

Students should familiarize themselves with UCF's Rules of Conduct at <https://scai.sdes.ucf.edu/student-rules-of-conduct/>. According to Section 1, "Academic Misconduct," students are prohibited from engaging in

1. Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
2. Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination, course assignment, or project.
3. Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
4. Falsifying or misrepresenting the student's own academic work.
5. Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.

6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping another violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, *The Golden Rule* <https://goldenrule.sdes.ucf.edu/>. UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designation on one's transcript. Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.
Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Course Accessibility Statement

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) <http://sas.sdes.ucf.edu/> (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

Campus Safety Statement

Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.

- Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide's physical location and review the online version at <https://centralflorida-prod.modolabs.net/student/safety/index>.
- Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency.
- If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see <https://ehs.ucf.edu/automated-external-defibrillator-aed-locations>.
- To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <www.getrave.com/login/ucf> and logging in. On the "My Account" tab, fill out the information, including e-mail address and cell phone number.
- Students with special needs related to emergency situations should speak with their instructors outside of class.
- To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video (<https://youtu.be/NIKYajEx4pk>).

Campus Safety Statement for Students in Online-Only Courses

Though most emergency situations are primarily relevant to courses that meet in person, such incidents can also impact online students, either when they are on or near campus to participate in other courses or activities or when their course work is affected by off-campus emergencies. The following policies apply to courses in online modalities.

- To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <www.getrave.com/login/ucf> and logging in. On the "My Account" tab, fill out the information, including e-mail address and cell phone number.
- Students with special needs related to emergency situations should speak with their instructors outside of class.

Deployed Active Duty Military Students

Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

Make-Up Assignments for Authorized University Events or Co-curricular Activities

Students who represent the university in an authorized event or activity (for example, student-athletes) and who are unable to meet a course deadline due to a conflict with that event must provide the instructor with documentation in advance to arrange a make-up. No penalty will be applied. For more information, see the UCF policy at <https://policies.ucf.edu/documents/4-401.pdf>

Religious Observances

Students must notify their instructor in advance if they intend to miss class for a religious observance. For more information, see the UCF policy at <http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALJan19.pdf>.

Title IX Policy

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at https://letsbeclear.ucf.edu and http://cares.sdes.ucf.edu/.

Additional Syllabus Statements

Culture of Inclusion

The University of Central Florida considers the diversity of its students, faculty, and staff to be a strength and critical to its educational mission. UCF expects every member of the university community to be respectful in classrooms, work environments, and at campus events. Dimensions of diversity can include sex, race, age, national origin, ethnicity, gender identity and expression, intellectual and physical ability, sexual orientation, income, faith and non-faith perspectives, socio-economic class, political ideology, education, primary language, family status, military experience, cognitive style, and communication style. The individual intersection of these experiences and characteristics must be valued in our community.

University Writing Center

Trevor Colbourn Hall 109
Satellite Locations: Main Library, Rosen Library, Online
407-823-2197
http://uwc.cah.ucf.edu/

The University Writing Center (UWC) offers writing support to students from first-year to graduate in every discipline. Tutors provide help at every stage of the writing process, including understanding assignments, researching, drafting, revising, incorporating sources, and learning to proofread and edit. The UWC's purpose is not merely to fix or edit papers, but to teach writing strategies that can be applied to any writing situation. Consultations are available for individuals and small groups. You may schedule a 45-minute appointment by clicking the *Success Resources* tab on Webcourses, calling the UWC at 407-823-2197, or through the UWC website. The UWC seeks graduate and undergraduate tutors from all majors. To learn more about becoming a writing tutor, please contact us.

Campus Resources

You should be aware that help is available if you are struggling with this course! First see me, your instructor: I want you to understand the material and would be most pleased to help if you

are having trouble. Other resources include the Student Academic Resource Center (SARC), for supplemental instruction and academic tutoring, and the University Writing Center.

Turnitin.com

In this course we will utilize turnitin.com, an automated system which instructors can use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. Accordingly, you will be expected to submit assignments through the Canvas Assignment Tool in electronic format. After the assignment is processed, as an instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process, visit http://www.turnitin.com.

Academic Activity and Financial Aid

All instructors/faculty are required to document students' academic activity at the beginning of each course. To document that you began this course, please complete the academic activity on Webcourses by the end of the first week of classes or as soon as possible after adding the course. Failure to do so may result in a delay in the disbursement of your financial aid.

Class Schedule

Date	Topic	Readings	Assignment
Jan. 8	Introduction to the course Course requirements Brief introduction to R	Syllabus	HW 1 Assigned (Jan. 10) HW 2 Assigned (Jan. 11)
Jan. 10	*** NO CLASS ***		
Jan. 15	The science in political science	KKV - Ch. 1	HW 3 Assigned (Jan. 23)
Jan. 17	Introduction to R	Llaudet & Imai (1-16)	HW 4 Assigned (Jan. 27)
Jan. 22	Working with dataframes in R	Llaudet & Imai (16-26) Watkins (Pages 3-4; Pages 24-25).	
Jan. 24	Randomized Experiments	Llaudet & Imai (27-38)	HW 5 Assigned (Feb. 1)
Jan. 29	Randomized Experiments (Examples)	Llaudet & Imai (38-50)	
Jan. 31	Inferring Population Characteristics (Two-way Tables)	Llaudet & Imai (50-65)	HW 6 Assigned (Feb. 7)

Feb. 5	Inferring Population Characteristics (Histograms)	Llaudet & Imai (66-78)	
Feb 7	REVIEW DAY		
Feb. 12	MIDTERM 1		
Feb. 14	Inferring Population Characteristics (Scatter Plots)	Llaudet & Imai (78-98)	HW 7 Assigned (Feb. 29)
Feb. 19	Predicting Outcomes using Linear Regression	Llaudet & Imai (98-107)	
Feb. 21	Natural Logarithm Transformation	Llaudet & Imai (112-120)	HW 8 Assigned (Mar. 7)
Feb. 26	Interpretation of Linear Regression	Llaudet & Imai (120-128)	
Feb. 28	Estimating Causal Effects with Observational Data	Llaudet & Imai (129-152)	
Mar. 4	Internal and External Validity Revisited	Llaudet & Imai (152-162)	
Mar. 6	REVIEW DAY		
Mar. 11	MIDTERM 2		
Mar. 13	Axioms of Probability	Llaudet & Imai (162-169)	HW 9 Assigned (Mar. 24)
Mar. 18 – Mar. 23	Spring Break		
Mar. 25	Normal Distribution	Llaudet & Imai (170-179)	
Mar. 27	Population Parameters Versus Sample Parameters	Llaudet & Imai (180-195)	HW 10 Assigned (Apr. 6)
Apr. 1	Quantifying Uncertainty	Llaudet & Imai (195-210)	
Apr. 3	*** NO CLASS ***		
Apr. 8	Hypothesis Testing	Llaudet & Imai (210-225)	HW 11 Assigned (Apr. 21)
Apr. 10	Data Visualizations	Wilke (Sections 1-25)	
Apr. 15	Lightning Presentations		
Apr. 17	STUDY DAY		
Apr. 22	REVIEW DAY		
Apr. 29	FINAL EXAM (10:00 AM – 12:50 PM)		

Syllabus is subject to change at the instructor's discretion. Any changes will be announced in class and on Webcourses.