



**JOUR 561: Fundamentals of Data
Journalism Reporting
2 Units**

Spring 2022 – Thursdays – 6:30-8:30 p.m.

Section: 21639D

Location: ANN 405

Instructor: Matt Stiles

Office: ANN lobby or classroom

Office Hours: 30 mins. before/after class

Contact Info: hustiles@usc.edu | 310.529.8749

I. Course Description

The amount of data in the world is vast and ever-expanding. Analyzing public sources like inspection records, election results, crime reports, property rolls or payroll databases can produce definitive, bulletproof stories about an issue. Every day, journalists cross reference people and organizations in databases and documents to discover conflicts of interest. Reporters are also pulling information from social media and the internet to capture trends in real-time or dissect an event after the fact. Data has become an essential resource for journalists to cut through the noise and tell the complete, accurate story.

II. Overall Learning Objectives and Assessment

Other programming courses at USC teach students how to write Python code, create interactive stories or virtual reality experiences. This is not that class. Instead, it will focus on advanced techniques for data analysis, mapping and visualization — all with news reporting in mind.

This course will build on the skills learned in JOUR 554, Reporting with Data. In this data-rich world, students should be able to explore and analyze a dataset with a powerful programming language like Python. They should know how to analyze data spatially with mapping software. They should be able to explore their data visually. They should also understand tools that help them do these tasks more efficiently and so their work is reproducible.

The course will be taught in a hands-on, boot-camp style. In the first half of the semester, students will gain deeper experience in how to analyze and visualize data using Python. They will learn how to use the Pandas library to clean, transform and model data with Python. They will also learn how to write basic functions and loops to automate their data analysis. The course will use Altair to visualize data with scatterplots, faceted charts and other graphics. All of this work will be documented in Jupyter notebooks and saved to Github.

In the second half of the class, students will dive into advanced mapping concepts such as projections, spatial analysis and basic interactive maps.

Beyond the concepts and skills, students will work on data analysis for two projects that tackle important local issues.

III. Course Notes

The course will use Blackboard for all assignment and project submissions. Copies of lecture slides, data sets and other class information will be also posted on Blackboard and on Github. Email should only be used by students for questions or clarifications.

IV. Description and Assessment of Assignments

There will be a series of practical assignments that align with the different subject areas – data tools, version control, data analysis, data visualization and mapping. You will be working with data sets to produce two projects that showcase all the skills acquired throughout the semester. For all assignments, in-class instruction should prepare students to complete the assignment.

V. Grading

a. Breakdown of Grade

Assignment	% of Grade
Assignments	40%
Two data projects	50%
Participation	10%
TOTAL	100%

b. Grading Scale

95% to 100%: A	80% to 83%: B-	67% to 69%: D+
90% to 94%: A-	77% to 79%: C+	64% to 66%: D
87% to 89%: B+	74% to 76%: C	60% to 63%: D-
84% to 86%: B	70% to 73%: C-	0% to 59%: F

c. Grading Standards

All assignments will be edited on a professional basis and you will be judged first on the accuracy, fairness and objectivity of your stories. You will then be evaluated for broadcast style, editing, production value, originality and the ability to meet deadlines.

“A” stories are accurate, clear, comprehensive stories that are well written and require only minor copyediting (i.e., they would be aired or published). Video work must also be shot and edited creatively, be well paced and include good sound bites and natural sound that add flavor, color or emotion to the story.

“B” stories require more than minor editing and have a few style or spelling errors or one significant error of omission. For video, there may be minor flaws in the composition of some shots or in the editing. Good use of available sound bites is required.

“C” stories need considerable editing or rewriting and/or have many spelling, style or omission errors. Camera work and editing techniques in video stories are mediocre or unimaginative, but passable. Sound bites add little or no color - only information that could be better told in the reporter’s narration.

“D” stories require excessive rewriting, have numerous errors and should not have been submitted. Camera work is unsatisfactory or fails to show important elements.

“F” stories have failed to meet the major criteria of the assignment, are late, have numerous errors or both. Your copy should not contain any errors in spelling, style, grammar and facts. Any misspelled or mispronounced proper noun will result in an automatic “F” on that assignment. Any factual error will also result in an automatic “F” on the assignment. Accuracy is the first law of journalism. The following are some other circumstances that would warrant a grade of “F” and potential USC/Annenberg disciplinary action:

- Fabricating a story or making up quotes or information.
- Plagiarizing a script/article, part of a script/article or information from any source.
- Staging video or telling interview subjects what to say.
- Using video shot by someone else and presenting it as original work.
- Shooting video in one location and presenting it as another location.
- Using the camcorder to intentionally intimidate, provoke or incite a person or a group of people to elicit more “dramatic” video.
- Promising, paying or giving someone something in exchange for doing an interview either on or off camera.
- Missing a deadline.

d. Grading Timeline

Instructor will endeavor to return all assignments in an expeditious manner.

VI. Assignment Submission Policy

- A. All assignments are due on the dates specified. Lacking prior discussion and agreement with the instructor, late assignments will automatically be given a grade of F.
- B. Assignments must be submitted via email.

Students are encouraged to submit their work for consideration to Annenberg Media or the Daily Trojan, or pitch it to mainstream media outlets. Visit <http://bit.ly/SubmitAnnenbergMedia> for more information about that submission and review process and email Daily Trojan news editors at dt.city@gmail.com for more on how to pitch your work to the campus newspaper.

VII. Required Readings and Supplementary Materials

Computer-Assisted Reporting: A Practical Guide (4th Edition), by Brant Houston, Routledge, 2014, 264 pages.

The Curious Journalist's Guide to Data, by Jonathan Stray, GitBook, 2016, 122 pages. Available online for free at <https://legacy.gitbook.com/book/towcenter/curious-journalist-s-guide-to-data/details>

The Data Journalism Handbook: How Journalists Can Use Data to Improve the News, edited by Jonathan Gray, Liliana Bounegru and Lucy Chambers, O'Reilly Media, July 2012, 220 pages. Available online for free at <http://datajournalismhandbook.org/1.0/en/>.

Other online readings will be added throughout the course.

The instructor will also share tip sheets and tutorials for specific lessons.

Required software:

Quantum GIS – free and open source mapping software

Anaconda - includes JupyterLab, data analysis packages, package management tools, and environment manager to create virtual environments.

VIII. Laptop Policy

All undergraduate and graduate Annenberg majors and minors are required to have a PC or Apple laptop that can be used in Annenberg classes. Please refer to the [Annenberg Digital Lounge](#) for more information. To connect to USC's Secure Wireless network, please visit USC's [Information Technology Services](#) website.

IX. Add/Drop Dates for Session 001 (15 weeks: 1/10/2022 – 4/29/2022; Final Exam Period: 5/4-11/2022)

Link: <https://classes.usc.edu/term-20221/calendar/>

Last day to add: Friday, January 28, 2022

Last day to drop without a mark of "W" and receive a refund: Friday, January 28, 2022

Last day to change enrollment option to Pass/No Pass or Audit: Friday, January 28, 2022 [All major and minor courses must be taken for a letter grade.]

Last day to add/drop a Monday-only class without a mark of "W" and receive a refund or change to Audit: Tuesday, February 1

Last day to withdraw without a "W" on transcript or change pass/no pass to letter grade: Friday, February 25, 2022 [Mark of "W" will still appear on student record and STARS report and tuition charges still apply.]

*Please drop any course by the end of week three for session 001 (or the 20 percent mark of the session in which the course is offered) to avoid tuition charges.]

Last day to drop with a mark of "W": Friday, April 8, 2022

X. Course Schedule: A Weekly Breakdown

Important note to students: Be advised that this syllabus is subject to change - and probably will change - based on the progress of the class, news events, and/or guest speaker availability. **Students should therefore rely on content and assignments posted on Blackboard for course-related work.**

	<i>Topics/Daily Activities</i>	<i>Readings and Homework</i>	<i>Deliverable/Due Dates</i>
Week 1 Date: 1/13	Course Overview: Class goals. What's possible with "hacker" journalism? Brainstorm data-driven story ideas in class. Software installation in class.	Readings: <i>First Python Notebook</i> <i>firstpythonnotebook.org</i> . Get a free Github account if you don't have one already.	
Week 2 Date: 1/20	Intro to Python and Pandas for data analysis with Jupyter notebooks <ul style="list-style-type: none">• <i>importing data</i>• <i>data structures</i>• <i>data types</i>	Assignment 1: Submit your github username via Blackboard	
Week 3 Date: 1/27	Basic descriptives with Python/Pandas <ul style="list-style-type: none">• <i>exploration</i>• <i>first Pandas methods</i>	Assignment 2: Create a Jupyter notebook and push it to Github	

Week 4 Date: 2/3	Data cleaning in a Jupyter notebook <ul style="list-style-type: none"> • data types review • column names • dates • string functions 	Assignment 3: More work in your Jupyter notebook and push it to Github	
Week 5 Date: 2/10	Merging/joining data in Python/Pandas <ul style="list-style-type: none"> • lookup tables • combining data frames 		Midterm pitch due
Week 6 Date: 2/17	Aggregating data in Python/Pandas <ul style="list-style-type: none"> • value_counts • groupby • sum, count, mean, etc. 	Assignment 4: Import data, basic aggregation, push to Github	
Week 7 Date: 2/24	Aggregating data in Python/Pandas, continued <ul style="list-style-type: none"> • value_counts • groupby • sum, count, mean, etc. 	Assignment 5: Show examples of more complex aggregation and save to Github	
Week 8 Date: 3/3	Introduction to acquiring data with APIs	Assignment 6: Find an API and get an API key. Save that to Github.	Midterm project due
Week 9 Date: 3/10	Review exercise based on class feedback	Assignment 7: Pull data from an API we haven't used in class into a notebook, save to Github	
Spring Break Date: 3/17	No Class		
Week 10 Date: 3/24	Intro to web scraping with Python <ul style="list-style-type: none"> • read_html • requests 		
Week 11 Date: 3/31	Creating a data pipeline <ul style="list-style-type: none"> • Scraping, continued • Github actions 	Assignment 8: Create a Github action to pull data from any source	Final pitch due
Week 12 Date: 4/7	Intro to visualization with Python <ul style="list-style-type: none"> • Altair • plot 		
Week 13 Date: 4/14	Mapping with Python/Pandas <ul style="list-style-type: none"> • Mapping best practices • GeoPandas • Data types 	Assignment 9: Independent work in your notebook(s)	

Week 14 Date: 4/21	Intro to QGIS <ul style="list-style-type: none"> • <i>Merging</i> • <i>Points, symbols, choropleths</i> 	Assignment 10: Independent work in your notebook(s)	
Week 15 Date: 4/28	Review exercise based on class feedback		
FINAL EXAM PERIOD Date: 5/5, 7-9 p.m.	Summative experience		Final project due

XI. Policies and Procedures

Internships

The value of professional internships as part of the overall educational experience of our students has long been recognized by the School of Journalism. Accordingly, while internships are not required for successful completion of this course, any student enrolled in this course that undertakes and completes an approved, non-paid internship during this semester shall earn academic extra credit herein of an amount equal to 1 percent of the total available semester points for this course. To receive instructor approval, a student must request an internship letter from the Annenberg Career Development Office and bring it to the instructor to sign by the end of the third week of classes. The student must submit the signed letter to the media organization, along with the evaluation form provided by the Career Development Office. The form should be filled out by the intern supervisor and returned to the instructor at the end of the semester. No credit will be given if an evaluation form is not turned into the instructor by the last day of class. Note: The internship must be unpaid and can only be applied to one journalism or public relations class.

Statement on Academic Conduct and Support Systems

a. Academic Conduct

Plagiarism

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

USC School of Journalism Policy on Academic Integrity

The following is the USC Annenberg School of Journalism’s policy on academic integrity and repeated in the syllabus for every course in the school:

“Since its founding, the USC School of Journalism has maintained a commitment to the highest standards of ethical conduct and academic excellence. Any student found plagiarizing, fabricating, cheating on examinations, and/or purchasing papers or other assignments faces sanctions ranging from an ‘F’ on the assignment to dismissal from the School of Journalism. All academic integrity violations will be reported to the office of Student Judicial Affairs & Community Standards (SJACS), as per university policy, as well as journalism school administrators.”

In addition, it is assumed that the work you submit for this course is work you have produced entirely by yourself, and has not been previously produced by you for submission in another course or Learning Lab, without approval of the instructor.

b. Support Systems

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symplcity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services - (213) 740-0776

osas.usc.edu/

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

uscса.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.

Annenberg Student Success Fund

<https://annenberg.usc.edu/current-students/resources/annenberg-scholarships-and-awards>

The Annenberg Student Success Fund is a donor-funded financial aid account available to USC Annenberg undergraduate and graduate students for non-tuition expenses related to extra- and co-curricular programs and opportunities.

XII. About Your Instructor

Matt Stiles is a senior data visualization reporter at a Washington, D.C.-based news startup launching soon. His work combines traditional reporting with computer programming, data analysis and data visualization to find and tell compelling stories. Until recently, Stiles worked at the Los Angeles Times, where he covered Los Angeles County, the nation's largest local municipal government, and reported on North and South Korea in Seoul for the newspaper's foreign desk. Prior to joining the Times, Stiles wrote about national economics at *The Wall Street Journal*, served as data editor at NPR headquarters and was the founding news applications editor at The Texas Tribune. He lives in Los Angeles and tweets as @stiles.

Bio: <https://annenberg.usc.edu/faculty/matt-stiles>