

## MMC6936 Computational Methods for Media Research

Spring 2023

Fridays 9:35am – 12:15 pm

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**Office Hours:** Fridays 12:30 pm-2:30 pm and by appointment.

### Course Description

Computational social science is an exciting, emerging field which also offers a wide range of research tools. This course is an introductory and project-oriented course with an emphasis on data collection and computational methods. In this course, students will learn how to conduct social research using digital trace data (broadly defined as data collected through digital means) and computational methods (including but not limited to text analysis and social network analysis). Throughout the semester, students will practice translating their ideas into empirical research. Each week, students will have the opportunity to try their hands at analyzing data from a wide range of data sources. The goal is to help students identify datasets and apply proper methods to analyze their own data. We will be mainly using the R software environment for collecting, cleaning, and analyzing data. Previous experience with R is not assumed.

### Course Goals

Upon successful completion of this course, students will be able to

1. Collect digital trace data from the webs
2. Become familiar with computational methods and tools to analyze the data
3. Construct and execute basic programs in R
4. Use techniques to effectively visualize information
5. Understand the advantages and limitations of digital data

### Course Schedule

Schedule	Module	Assignment
Week 1 (Jan. 13)	Module 0. Introduction	✓ Download R ✓ Download R studio
Week 2 (Jan. 20)	Module 1. R programming	✓ Lab1 : Vector, List, and Data frame
Week 3 (Jan. 27)	Module 2. Volume data	✓ Lab 2 : Counting values, Data manipulation
Week 4 (Feb. 3)	Module 3. Text data (part 1)	✓ Lab 3 : Pattern matching and String replacement
Week 5	Module 4. Text data (part 2)	✓ Lab4

(Feb. 10)		: Sentiment analysis
Week 6 (Feb. 17)	Module 5. Network analysis (part 1)	✓ Lab5 : Network size, centrality measures
Week 7 (Feb. 24)	Module 6. Network analysis (part 2)	✓ Lab 6 : Reciprocity, transitivity
Week 8 (Feb. 25)	Module 7. Network Analysis (part3)	✓ Lab7 : Community detection
Week 9 (Mar. 3)	Module 8. Application programming interface	✓ Lab 8 : Data collection through API
Week 10 (Mar. 10)	Module 9. Survey	✓ Lab 9 : Merge of survey + digital trace data
Week 11 (Mar. 24)	Module 10. Machine learning (part1)	✓ Lab 10 : Topic modeling
Week 12 (Mar. 31)	Module 11. Machine learning (part2)	No Lab
Week 13 (Apr. 7)	Final presentation	✓ Presentation : 30-minute talk
Week 14 (Apr. 14)	Final presentation	✓ Presentation : 30-minute talk
Week 15 (Apr. 28)	Final project	Submit the paper

### Required Text

All required readings are in the Course Shell. There are no required textbooks.

### Note.

1. Please ask class-related questions in the question forum, not in the “comments” section of an assignment. This way, you can share the answers with other fellow students.
2. For technical issues with Canvas, please contact E-learning technical support, 352-392-4357 (select option 2) or e-mail to [Learningsupport@ufl.edu](mailto:Learningsupport@ufl.edu). <http://helpdesk.ufl.edu/>

### GRADING

Grades are *earned* via 5 modes: Assignments, Discussions, Exam, Certificate, and Final analytics report.

Area	Percent of Grade
<b>10 Labs (5 % each)</b>	<b>50%</b>
<b>Final presentation</b>	<b>10%</b>
<b>Final paper</b>	<b>40%</b>
<b>Total</b>	<b>100%</b>

### Grading scale

100-93 A; 92-90 A-; 89-87 B+; 86-84 B; 83-80 B-; 79-77 C+; 76-74 C; 73-70 C-; 69-67 D+; 66-64 D; 63-60 D-; 59 and below E

### **Labs (assignments)**

All labs are due at the specified dates – usually due on Sunday by midnight. Any assignments turned in after the designated due date will receive penalty (50 % of the available points within 24 hours after the due date). Assignments will not be accepted after 24 hours. Additionally, with respect to assignments and discussions, it is assumed that students will present them professionally. This means students will use proper grammar, word usage, spelling, and content organization. Academic honesty is expected on all assignments and discussions.

### **Final Presentation**

Each student will present their project (in-progress) for my feedback. Aim for a 30-minute PowerPoint presentation followed by a 10-minute Q&A session. The presentation should include the main research question and/or hypotheses, detailed methods, and major findings.

### **Final Project**

As a part of the assigned work for this course, you are required to complete a research project of your own choosing one or two methods covered in this course. The premise of the project must be closely related to some aspect of the course material but may explore an avenue that was left un-addressed in class. The final project report should be around 20 pages. Please submit your report by April 28.

The final report should include the following elements. Prepare your manuscript in APA style.

1. Literature review: This section should include motivation and background of your project. Explain the context and why the problem matters. Why are they worth studying? What difference would knowing the answers make?
2. Methods: (A) Dataset- Describe the real, existing dataset that you used. (B) Data Analysis- Describe how you analyzed the data.
3. Results: Present and discuss your research results. Focus in particular on the results that are most interesting, surprising, or important. Discuss the consequences or implications. Make sure to include tables, graphs, or figures.
4. Discussion: Interpret and describe the significance of your findings in light of what was already known about the research problem. Also include the limitations of your approach.

### **OTHER CLASS POLICIES**

- ✓ **Students with Special Needs:** Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.
- ✓ **Course Evaluations:** Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students

will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.”

- ✓ **Academic Honesty:** The University of Florida Honor Code applies to all activities associated with this class. UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. You can review UF’s academic honesty guidelines in detail at: <https://www.dso.ufl.edu/sccr/seminars-modules/academic-integrity-module>
- ✓ **Religious Observance:** Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence.
- ✓ **Attendance:** Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>
- ✓ **Recording lectures:** Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.
 

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.”
- ✓ **Campus Resources:** Health and Wellness • U Matter, We Care: If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) or 352 392-1575 so that a team member can reach out to the student. • Counseling and Wellness Center: [counseling.ufl.edu/cwc](http://counseling.ufl.edu/cwc), and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies. • Sexual Assault Recovery

Services (SARS): Student Health Care Center, 392-1161. • University Police Department at 392-1111 (or 9-1-1 for emergencies), or [police.ufl.edu](http://police.ufl.edu).