EDH 7916
CONTEMPORARY RESEARCH IN HIGHER EDUCATION

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Class Meeting Time	Wednesday (5:10p - 8:10p)
Class Location	NRN 2033
Office Hours	TBD

COURSE DESCRIPTION

Higher education researchers have a wide variety of quantitative tools at their disposal. Yet as the number and sophistication of these tools grows, so too do expectations about the quality of final analyses. Furthermore, increasing scrutiny of non-replicable results demands that researchers follow a proper workflow to mitigate errors. In this course, students will learn the fundamentals of a quantitative research workflow and apply these lessons using common open-source tools. We will cover project organization, data cleaning, and exploratory analyses as well as how to run basic econometric models and recover estimates for publication. Time and interest permitting, students will also cover some special coding and/or data gathering techniques. Throughout, students will use coding best-practices so that their workflow may be shared and easily reproduced.

COURSE OBJECTIVES

Students will learn:

1. A number of tools useful for conducting applied quantitative research, including:
    - R w/ RStudio
    - git w/ GitHub
    - R Markdown
2. To properly organize a project for maximum clarity and reproducibility
3. Best practices for cleaning/tidying/wrangling raw data into analysis-ready data

TEXTS

REQUIRED

All necessary materials are online at `edquant.githbu.io/edh7916` or can be downloaded from external sources. There are no required text books for the course.

RECOMMENDED

Students may find some of the following books / online resources helpful:

Chacon, S., & Straub, B. (2014). *Pro git*. Apress.

Healy, K. (2018). *Data visualization: A practical introduction*. Princeton University Press.

Wickham, H., & Grolemund, G. (2017). *R for data science*. O'Reilly Media.

REQUIRED TOOLS, SOFTWARE, AND REGISTRATIONS

Students will be expected to bring a laptop to class. It does not matter whether the machine runs MacOS, Windows, or Linux; however, the student's machine needs to be relatively up to date and in good running order. It needs to be able to connect to the internet during class.

All software is freely available. Students need to download and install the following software on their machines:

- R : `cran.r-project.org`
- RStudio : `rstudio.com`
- git : `git-scm.com`

NOTE that if you have installed R or RStudio on your machine in the past, make sure that you have the most up-to-date version (new versions are released about once a quarter).

You'll also need a distribution of LaTeX. You have two options:

- **Recommended small install** tinytex R package
- **Optional full install** `latex-project.org`

Students also need to sign up for a free GitHub account if they haven't already: `github.com/join`. Students should sign up using their University of Florida email address and request a Education discount at `education.github.com/benefits`.

ASSIGNMENTS

Class participation (10%): We will use class time to work through lesson modules together. Students are expected to follow along with the presentation and run code on their own machine. Students are also expected to answer questions and work through example problems throughout the class session.

Problem sets (45%): Every lesson module will end with a set of questions that students must answer. Students can work together to solve the problem sets, but everyone must submit their own work and do their best to give accurate attribution for borrowed/repurposed code. In general, problem set answers will need to be submitted via GitHub a week after they are assigned.

There are a few supplemental lessons that include supplemental assignments. Though these are not required, you may find them useful. Please note that the supplemental assignments may be more difficult than the normal problem set assignments. Students may complete more than the required numbered of lessons during the second half of the course and submit the problem sets as supplemental assignments. Students may replace up to two (2) problem set submissions with submissions from the supplemental assignments.

Reproducible report (45%): Everyone must produce a 3-5 page report on a higher education topic of interest. The report should be a combination of writing, tables, and figures, have minimal citations (if any), and be fully reproducible with minimal effort. You must use data that is either publicly available or that can be shared with others (no IRB restrictions). Everyone will submit three preliminary assignments in addition to the final report. Each product is worth the following percentage of the final grade:

- Proposal (5%)
- Initial set of analyses (10%)
- Draft of final report (10%)
- Final report (15%)
- Presentation (5%)

GRADING

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`.

Grades are assigned in accordance with current UF grading policies, which may be found here:
`https://catalog.ufl.edu/ugrad/current/regulations/info/grades.asp`

Final course grades will be assigned using the following scale:

A	93–100
A-	90–92
B+	88–89
B	83–87
B-	80–82
C+	78–79
C	73–77
C-	70–72
D+	68–69
D	63–67
D-	60–62
F	59 and lower

HONOR CODE

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. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

ACCOMMODATIONS

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting `https://disability.ufl.edu/students/get-started/`. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

COURSE EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at `https://gatorevals.aa.ufl.edu/students/`. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via `https://ufl.bluera.com/ufl/`. Summaries of course evaluation results are available to students at `https://gatorevals.aa.ufl.edu/public-results/`.

IN-CLASS RECORDING

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.

A NOTE ABOUT TAKING CLASS DURING THE COVID-19 PANDEMIC

The ongoing COVID-19 pandemic continues to disrupt the ways we live each day. We are each trying to keep to "normal" routines all while attending to our health and the health of those we care about—sometimes nearby and sometimes from far away. I find this difficult and I imagine that you might as well.

Two things are true this term. On one hand, we are to continue working with and learning from one another. It's what we do as scholars, yet more mundanely, taking this course also represents progress toward your degree and career goals, which haven't necessarily paused. On the other hand, many of the structures that support your academic progress are currently lacking and, in some cases, non-existent. People are different. Some will appreciate the distraction that coursework can offer; others will find it difficult to concentrate. During this term, you may yourself alternate between being both of these people.

All of this is to say that *flexible* will be our watchword this semester. In the next pages, you will see the assignments that determine your grade as well as the tentative course schedule. Who knows what this semester will bring, so if you will be flexible with me, I promise to be flexible with you. This is my typical policy, but I want to make it explicit this term. If you are having difficulties, please let me know so that we can do whatever needs to be done for you to be well and successful. You need not share personal details—please simply keep me in the loop.

TENTATIVE SCHEDULE

In the schedule below, items are marked as follows:

- ▷ Required for you to do or participate in
- ⇐ Required for you to submit
- \+ Optional

WEEK 1 ..... (1/5)

TOPICS

- ▷ Course welcome
- ▷ Getting and installing required software
- ▷ Introduction to RStudio (R, Markdown, git)

WEEK 2 ..... (1/12)

TOPICS

- ▷ Computer file structure
- ▷ Organizing a script and project directory
- \+ **Supplemental:** Getting higher education data from common sources

ASSIGNMENTS

- ⇐ Assignment 1

WEEK 3 ..... (1/19)

TOPICS

- ▷ Data wrangling I: Enter the Tidyverse
- \+ **Supplemental:** Data wrangling with base R

ASSIGNMENT

- ⇐ Assignment 2
- ⇐ Final project: proposal

WEEK 4 ..... (1/26)

TOPICS

- ▷ Data wrangling II: Appending, joining, and reshaping data

ASSIGNMENT

⇐ Assignment 3

WEEK 5 ..... (2/2)

TOPICS

▷ Data visualization with ggplot

ASSIGNMENT

⇐ Assignment 4

WEEK 6 ..... (2/9)

TOPICS

▷ Creating research reports with RMarkdown

ASSIGNMENT

⇐ Assignment 5

WEEK 7 ..... (2/16)

TOPICS

▷ Data wrangling III: Working with strings and dates

ASSIGNMENT

⇐ Assignment 6

WEEK 8 ..... (2/23)

TOPICS

▷ Functional programming

ASSIGNMENT

⇐ Assignment 7

WEEK 9 ..... (3/2)

TOPICS

▷ Data wrangling IV: A philosophy of data cleaning

ASSIGNMENT

⇐ Assignment 8

WEEK 10 ..... (3/9)

No class meeting due to Spring Break

WEEK 11 ..... (3/16)

TOPICS

▷ *Choose your own module based on interests*

ASSIGNMENT

⇐ Assignment 9

⇐ Final project: initial set of analyses

WEEK 12 ..... (3/23)

TOPICS

▷ *Choose your own module based on interests*

ASSIGNMENT

⇐ Assignment 10

WEEK 13 ..... (3/30)

TOPICS

▷ *Choose your own module based on interests*

ASSIGNMENT

⇐ Assignment 11

WEEK 14 ..... (4/6)

TOPICS

▷ *Choose your own module based on interests*

ASSIGNMENT

⇐ Assignment 12

⇐ Final project: draft of final report

WEEK 15 . . . . . (4/13)

TOPICS

▷ *Choose your own module based on interests*

ASSIGNMENT

⇐ Assignment 13

WEEK 16 . . . . . (4/20)

TOPICS

▷ Presentations

ASSIGNMENT

⇐ Final project: final report

⇐ Supplemental problem sets (if any)