Skills Camp: Introduction to Graduate School for Political Science

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Vanderbilt University - Department of Political Science

Instructors: Lucas Borba & Addison Emig

Dates: August 17-21, 2026

Time: 9:00am-12:00pm & 1:00pm-4:00pm

Location: Commons 349

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Overview

This week-long course is designed to introduce incoming PhD students to the methodological tools they will need throughout their coursework and research process, and familiarize them with graduate school through professionalization sessions. Students will learn about the tools and techniques utilized throughout the research flow in political science. Our goal is to lay the foundation for students to jump into their coursework when the semester starts. We will particularly prepare them to begin work in the first two courses in the department's methods sequence: Brenton Kenkel's *Mathematical Foundations of Political Analysis* and Jenn Larson's *Statistics for Political Research I*. We will introduce and familiarize students with R, a free, open-source programming language utilized in statistics in the social sciences. We will also introduce students to a variety of technical tools used in research production and presentation and familiarize them with the norms and professional standards of the program.

Learning Objectives

By the end of this week, students will

- Establish a foundation in the use of R.
- Be familiar with common technical tools and platforms used for organization, workflow, data management, and presentation.
- Understand the norms and expectations of graduate-level studies.

Materials

Students will need their computer and any materials they use to take notes.

Software

We will use **R**, an open-source statistical language. You can download **R** at https://cran.r-project.org/ and **R Studio** (recommended IDE) at https://posit.co/download/rstudio-desktop. (R Studio is the most beginner friendly IDE, but feel free to use others like VSCode or Positron.)

We will use **Overleaf** (https://www.overleaf.com/login) for an overview of Latex. Create an account using your Vanderbilt email to access premium features through Vanderbilt. If you already have an account, you can add your Vanderbilt email to it to gain access.

We will be discussing note-taking/organization software including **Obsidian** (downloadable at https://obsidian.md/download), **Notion** (downloadable at https://www.notion.com/desktop), and **Goodnotes** (downloadable at https://www.goodnotes.com). These are just examples of platforms that are commonly used among graduate students. Using any of these is not mandatory for this course or for any classes, and you might as well take notes and organize your workflow using whatever tools you prefer.

Schedule

Monday, August 17

Morning: 9am-12pm **Welcome to Grad School**

- Introductions.
- What this week does and does not cover.
- The PhD milestones: coursework, comprehensive exams, the second-year paper, the prospectus, the dissertation, and the job market.
- The methods sequence at Vanderbilt.
- Norms of a graduate seminar: reading loads, participation, and expectations.
- Setup (final 20 minutes): confirm that R, RStudio, and Overleaf work on your machine so that the afternoon is not spent on installation.

Afternoon: 1pm-4pm **Starting out with R**

- Why R, and what it is good for.
- RStudio: console, script editor, environment, files pane.
- Projects and relative file paths.
- Objects and assignment; vectors, data types, and coercion.
- Functions and arguments.
- Installing and loading packages; what tidyverse is.
- Reading data; a first look at a data frame.
- Error messages.
- A good use of AI tools: debugging and figuring out error messages.
- *Exercise:* load a dataset and answer three descriptive questions about it.

Tuesday, August 18

Morning: 9am-12pm **Working with data in R**

- The pipe and the grammar of data manipulation.
- Some `dplyr` verbs: `filter`, `select`, `mutate`, `arrange`, and `group_by` with `summarize`.
- Tidy data and reshaping: `pivot_longer` and `pivot_wider`.
- Merging datasets.
- The three things that quietly break an analysis: missing values, factor levels, and dates.

- Writing a cleaning script that runs from top to bottom in a fresh session.
- *Exercise:* clean a dataset.

Afternoon: 1pm-4pm **Establishing an organization flow for classes and research**

- One project, one folder: naming conventions, folder structure, and the difference between files you keep and files you regenerate.
- Note-taking softwares: Obsidian, Notion, Notability, and Goodnotes, with a short demonstration of each.
- Notes on readings, notes on lectures, and notes on your own ideas are three different things.
- Reference management with Zotero.
- Storage and backup: Box, Dropbox, and OneDrive.
- Reading for seminars: how to read a book and how to read an article.
- *Exercise:* set up your semester folder structure and your Zotero library.

Wednesday, August 19

- No sessions to allow for ISSS Orientation and TA Training.
- You can reach us by email if anything from Monday or Tuesday is still not working on your machine.

Thursday, August 20

Morning: 9am-12pm **Reading mathematical notation**

- Why this session exists.
- The Greek alphabet and what each letter conventionally stands for.
- Sets: membership, subsets, unions, intersections, complements, and set-builder notation.
- Functions as mappings: domain, image, and composition.
- Summation and product notation, indices, and how to unpack a nested expression.
- Logical symbols: implication, equivalence, negation, "for all," and "there exists."
- Vectors, matrices, subscripts, and transposes.
- Working problem sets: study groups, how long to struggle before asking, and AI policies.
- *Exercise:* translate three expressions from a published article into plain English sentences.

Afternoon: 1pm-4pm **Tools for research and presentation**

- What LaTeX is for, and when a word processor is the better choice.
- Overleaf: project structure, compiling, and reading a compilation error.
- The skeleton of a document: preamble, packages, sections, labels, and cross-references.
- Math mode: typing the notation from the morning session.
- Tables and figures, with captions and references that update themselves.
- Bibliographies: `.bib` files, citation commands, and the Zotero-to-Overleaf pipeline.
- Beamer: building a minimal presentation.
- Markdown and Quarto: prose, code, and output in a single document.

- *Exercise:* build the problem-set template you will actually use in PSCI 8356.

Friday, August 21

Morning: 9am-12pm **Analysis and presentation in R**

- Descriptive statistics and summary tables.
- Visualization with `ggplot2`: the grammar of graphics, the plots you will use most, and labeling a figure for an audience that is not you.
- Getting results out of R: `ggsave` for figures, `stargazer`, `modelsummary`, and `kableExtra` for tables that drop into LaTeX.
- A first regression with `lm()`: the syntax and how to read the output. A preview of Larson's course, not a substitute for it.
- Reproducibility: scripts that run top to bottom in a clean session, setting seeds, and recording your session information.
- Getting unstuck: documentation, package vignettes, Stack Overflow, and using AI as a supplement to your own effort.
- *Exercise:* raw data to a cleaned dataset to a figure and a table to a rendered document.

Afternoon: 1pm-4pm **The first semester and beyond**

- What a week actually looks like: coursework, teaching or research assistantships, and where the hours go.
- Working with faculty: finding an advisor, developing your project, using office hours.
- Coursework strategy: problem sets, study groups, seminar preparation.
- Departmental life: workshops, working groups/labs, funding opportunities.
- Conferences: APSA, MPSA, and SPSA, what to submit, and when in the year to submit it.
- Workload, isolation, imposter syndrome, and campus resources.

Resources

- Wickham: R for Data Science
- Quarto Guides
- RStudio Cheat Sheets
- Brenton's Book on Data Analysis
- Tidyverse Guide
- Nick Klein's Resources on R
- Steve Miller's Guide to Merging Data
- Overleaf Guides

Acknowledgments

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