

Math Camp I/Fellowship Camp Schedule

September 11–22, 2017

Instructors

Francesca Parente (Math)

fparente@ucla.edu

Carley Fernandez (Fellowships)

carleyfernandez@ucla.edu

Kathleen Bawn (Supervising Faculty)

kathleenbawn@me.com

Schedule

Monday, September 11

9–11am: Introduction; Why learn math for political science? Algebra.
[200A, B & C; 204A & B]

1–3pm: Off.

Homework:

- EMEA 1.2 (6, 8); 1.3 (8, 12)
- Worksheet Problem 1

Tuesday, September 12

9–11am: Simplifying expressions and solving equations; Functions.
[200A, B & C; 204A & B]

Lunch: Meet the first-year methods faculty.

1–3pm: Study hall/office hours.

Homework:

- EMEA 1.4 (8); 1.6 (2, 3, 7); 1.7 (3); 2.1 (2); 2.4 (2)
- Worksheet Problems 2, 3 & 4

Wednesday, September 13

9–11am: Derivatives; Limits. [200A; 204A & B]

1–4pm: *Fellowship Workshop 1*

- **1-2pm:** Introductions; Fellowship basics.
- **2-3pm:** Meeting with Cherie Francis, Coordinator of Fellowship Services from Grad Division.
- **3-4pm:** Research proposal writing.

Homework:

- EMEA 4.4 (2); 2.3 (4); 4.6 (5)
- EMEA 6.2 (6); 6.3 (1); 6.5 (4)

Thursday, September 14

9-11am: Computing derivatives; Exponential and log functions. [200A, B & C; 204A & B]

1-3pm: Study hall/office hours.

Homework:

- EMEA 6.6 (4); 6.7 (2, 6); 6.8 (2, 4, 12)
- EMEA 4.10 (2, 3, 4, 6)
- EMEA 6.10 (4, 6); 6.11 (2)

Friday, September 15

9-11am: Univariate optimization; Integration. [200A, B & C; 204A & B]

Lunch: *Fellowship Workshop 2*

- Advice from professors.

1-3pm: *Fellowship Workshop 3*

- Personal statements.
- Research proposal writing, cont.

Homework:

- EMEA 6.11 (4, 6)
- EMEA 8.2 (4, 8); 8.7 (6); 8 Review (2, 3); 8.5 (1, 4)
- EMEA 9.1 (4); 9.2 (8)

Monday, September 18

9-11am: Sequences and series; Matrices. [200A, B & C]

Lunch: *Fellowship Workshop 4*

- Advice from graduate students.

1-3pm: Study hall/office hours.

Homework:

- EMEA 10.4 (2, 3); 10.5 (6, 7)
- EMEA 15.2 (2, 3); 15.3 (3, 4, 6)
- EMEA 15.4 (5, 6); 15.5 (2, 7)

Tuesday, September 19

Off. Graduate Student Orientation all day. Details here.

Wednesday, September 20

9-11am: Probability models; Set theory. [200A]

1-3pm: Study hall/office hours.

Homework:

- Worksheet Problems 5, 6 & 7

Thursday, September 21

9am-12pm: *Fellowship Workshop 5*

- **9-10:30am:** Comments from colleagues on draft research proposals.
- **10:30am-12pm:** Comments from colleagues on draft personal statements.

1-3pm: Combinatorics. [200A]

Homework:

- Worksheet Problems 8, 9 & 10
- Review for final exam

Friday, September 22

9-11am: Review.

1-3pm: Final exam.

First Year Methods Sequence

Below are the sequences for your first year of methods training in statistics and game theory. While some students choose to do statistics and game theory at the same time, others wait until their second year in the program to take game theory.

Statistics

Math Camp I (Francesca Parente). We begin with a math camp in the two weeks prior to your first Fall quarter. This will give you the opportunity to learn or refresh all the basic mathematical skills you will need, and to get a first exposure to some skills that will be strengthened in the following courses.

PS 200A Probability and Inference for Political Science (Kathy Bawn). In the Fall of first year, the first course of the sequence provides a strong basis in probability and mathematical statistics, which you will need in all the following courses.

Basic R camp (Tyler Reny). Prior to Winter Quarter. This camp will help students get up to speed with coding and computation in the R statistical language.

PS 200B Regression Analysis for Political Science (Erin Hartman). In the Winter quarter, you proceed to a course that – in the context of learning to use regression as a statistical tool – teaches you how to pose a research question, identify a quantity of interest, and characterize an appropriate estimator.

PS 200C Causal Inference for Political Science (Chad Hazlett). Spring. Very often the goal of social science research is to establish or measure the causal effect of one variable on another. In 200C you will learn when you can and cannot say that an estimate represents a “causal effect”. You will learn the key assumptions required for making causal claims, and a variety of methods for estimating causal quantities. In particular we focus on cases where one is unfortunately not necessarily able to run a randomized experiment.

Game Theory

PS 204A Game Theory in Politics I (Michael Chwe). The game theory sequence begins in Winter quarter. The first course is a survey of game theory, with emphasis on using mathematical models to understand political and economic phenomena.

PS 204B Game Theory in Politics II (Barry O’Neill). Intermediate game theory in the Spring quarter. You will learn static and dynamic games of incomplete information and some of their common applications to political science, including bargaining, costly signaling, cheap talk, and Markov games.

Additional Resources

Math maven. A graduate student holds weekly office hours during the quarter to answer questions related to methods courses (statistics and game theory).

- 2017–2018 math maven: Caleb Ziolkowski (cziolk01@ucla.edu).

R maven. A graduate student holds weekly office hours during the quarter to answer questions related to using the statistical software R.

- 2017–2018 R maven: Tyler Reny (ttreny@gmail.com).

Writing mavens. Graduate students are available to assist in the process of writing fellowship applications and field papers.

- 2017–2018 writing mavens: Mack Eason (mack.eason@ucla.edu) and Angela Ocampo (angelaxocampo@ucla.edu).