

# Keck School of Medicine of USC

## PM 516A/B: Statistical Problem Solving

Units: 1  
Term: Summer 2021  
Location: ONLINE  
Tuesdays 4:00 – 5:30pm  
Instructor: Trevor Pickering  
Office: SSB 210B  
Office Hours: By Appointment  
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## Course Overview

### Course Description

This course will provide statisticians and data analysts the necessary skills for successfully interacting with non-statistician collaborators. We will primarily be working with an investigator to determine the research question and scope, formulate and implement our analyses, and convey our findings. Therefore, the main goals of the course are 1) developing qualities necessary for an effective statistical consultant and 2) working with an investigator on an actual analysis problem.

### Learning Objectives

Through this course, students will become familiar with the process of statistical consulting.

Students will learn:

- The importance of statistical consulting and its usefulness in the public health environment
- How to improve their understanding of an unfamiliar topic and translate researchers' questions into a statistically testable set of hypotheses
- To choose the best statistical approach for answering a collaborator's questions
- Ways of communicating effectively by clearly explaining statistical concepts
- To understand ethical considerations for statisticians
- To appropriately analyze and interpret analyses for dissemination materials, such as brief reports or results sections of manuscripts

### Course Preparation

Prerequisites PM510 or equivalent course

Recommended Preparation Familiarity with basic statistics and regression analysis

## Course Requirements

### Communication

Blackboard (slides, data sets, assignment submission), USC e-mail (communication)

### Required Textbooks

Weekly reading materials will be assigned through Blackboard.

### Required Software

Students may choose which statistical software to use for this course (e.g., R, SAS, Stata, SPSS) but must have proficiency in at least one of these.

## **Assessments**

### **Grading Breakdown**

Each week will contain a variety of activities (see below), and each week will be weighted equally when contributing to the final grade.

### **Late Submission Policy**

As many of the assignments pertain to preparation for in-class activities, late assignments are not accepted. However there may be opportunities to make-up assignments in rare circumstances.

### **Description of Assessments**

<b>In-Class Activities</b>	Weekly in-class activities will focus on developing skills for statistical consultations (e.g., client-consultation role-playing, group discussion, interacting with an investigator, presenting results, etc.). There will be a worksheet each week to accompany these activities.
<b>Take-Home Activities</b>	Weekly take-home activities will include readings, reflections, and data analysis for the primary consultation.
<b>Participation</b>	Class sessions will cover a variety of material, such as practice consultations and other skills development, and students must be present for this content.
<b>Final Project</b>	The last week's activity will be a final presentation and analysis report to address the researcher's question from the initial consultation.

## Course Schedule

	Topic	In-Class	Take-Home
<b>516A</b>			
<b>Week 1</b> T 5/25	<b>Course Introduction</b> <b>Active Listening</b>	Communication Activity	Self-Assessment & Preparation
<b>Week 2</b> T 6/1	<b>Investigator Meeting: Project A Orientation</b>	Consultation Meeting, Preparation, Debriefing	PICOT, Exploratory Data Analysis
<b>Week 3</b> T 6/8	<b>EDA Review</b> <b>Practice Consultations</b>	EDA Practice Consultations	Preliminary Analyses
<b>Week 4</b> T 6/15	<b>Project A Check-In</b> <b>Reproducible Research</b>	Preliminary Presentations Reproducibility	Refined Analyses
<b>Week 5</b> T 6/22	<b>Statistical Tables &amp; Figures</b>	Refined Analyses	Final Project
<b>Week 6</b> T 6/29	<b>Investigator Meeting: Project A Final</b>	Final Project	
<b>516B</b>			
<b>Week 7</b> T 7/6	<b>Communicating Results</b>	Communication Examples	Assessment & Preparation
<b>Week 8</b> T 7/13	<b>Investigator Meeting: Project B Orientation</b>	Consultation Meeting, Preparation, Debriefing	Advanced Exploratory Data Analysis
<b>Week 9</b> T 7/20	<b>Practice Consultations</b> <b>Personality Types</b>	Personality Workshop Practice Consultations	Preliminary Analyses
<b>Week 10</b> T 7/27	<b>Project B Check-In</b> <b>Ethics</b>	Preliminary Presentations Ethics	Refined Analyses
<b>Week 11</b> T 8/3	<b>Statistical Writing</b>	Refined Writing	Final Project
<b>Week 12</b> T 8/10	<b>Investigator Meeting: Project B Final</b>	Final Project	

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

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” <https://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, <http://policy.usc.edu/scientific-misconduct>.

### Support Systems:

*Student Counseling Services (SCS)* - (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. <https://engemannshc.usc.edu/counseling/>

*National Suicide Prevention Lifeline* - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

*Relationship and Sexual Violence Prevention Services (RSVP)* - (213) 740-4900 - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

*Office of Equity and Diversity (OED)/Title IX compliance* – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

*Bias Assessment Response and Support*

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

*The Office of Disability Services and Programs*

Provides certification for students with disabilities and helps arrange relevant accommodations. <http://dsp.usc.edu>

*Student Support and Advocacy* – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

*Diversity at USC*

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. <https://diversity.usc.edu/>

*USC Emergency Information*

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, <http://emergency.usc.edu>

*USC Department of Public Safety* – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime

Provides overall safety to USC community. <http://dps.usc.edu>