



THE UNIVERSITY OF ARIZONA

Mel & Enid Zuckerman
College of Public Health

Mel and Enid Zuckerman College of Public Health
University of Arizona

BIOS 688 Statistical Consulting

Catalog Description: The goal of this course is to teach statistics students to be effective statistical consultants. This is an advanced course in the selection and use of tools and statistical methods to analyze and interpret scientific, business and medical studies. This course will provide students with the ability to effectively and accurately acquire and convey information in verbal and written presentations. (3 units)

Course Topics:

- Consulting Process
- Anatomy of a Study
- Communicating Statistics
- Measurement in Clinical Trials
- Sample Size and Statistical Rules of Thumb
- Split Plot-Repeated Measures
- Design of Observational Studies
- Data Visualization
- Statistics in Industry
- Workflows for 'Big Data' management

Course Objectives: During this course, students will:

- Identify and practice communication styles to ensure accurate flow of information between the client and the statistical consultant.
- Identify the needs of the client through various questioning techniques, select and apply appropriate methods of analysis, and effectively communicate results through oral and written presentations.
- Practice statistical consulting in a real-world setting.

Learning Outcomes (Competencies Obtained): Upon completion of this course students will be able to:

1. Participate in real-world, interdisciplinary consulting experiences
2. Assist the client to think through their scientific goal using a variety of questioning techniques
3. Employ listening skills to formulate direct, responsive answers from the client
4. Verify the needs of the client by restating the objectives
5. Compose and deliver clear presentation to the client, based on their specific request
6. Demonstrate the ability to skillfully engage in statistical collaboration with mentors, colleagues, and clients
7. Recognize strengths and weaknesses of proposed statistical approaches, including alternative designs, data sources, and analytical methods
8. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question
9. Communicate understanding of the assumptions necessary for a given statistical procedure as well as the ability to determine if the assumptions are met for a given study design or data set