



EMORY

ROLLINS
SCHOOL OF
PUBLIC
HEALTH

DEPARTMENT: Biostatistics and Bioinformatics

COURSE NUMBER: BIOS 745R **SECTION NUMBER:** 1

CREDIT HOURS: 2.0 **SEMESTER:** Fall 2019

COURSE TITLE: Statistical Collaboration

INSTRUCTOR NAME: Reneé H. Moore, Christina Mehta

INSTRUCTOR CONTACT INFORMATION

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SCHOOL ADDRESS: GCR #228, GCR #232

OFFICE HOURS: TBD

Teaching Assistant(s): TBD

COURSE DESCRIPTION

This course will cover topics dedicated to preparing doctoral students to lead biostatistical collaborations with non-statisticians in public health, biology, and medicine academic environments. Covered collaboration topics will include consulting versus collaboration, ethics, non-statistical aspects of collaboration (e.g. interpersonal communication), and negotiating expectations with clients. Covered biostatistical topics will include specific aim refinement, appropriate study design for the research question, assessment of feasibility (time and effort) of different statistical methods for the same problem, statistical review of grant proposals including power calculations, and appropriate summarization/presentation of results to non-statistical audiences.

Experience is the best way to nurture the critical thinking skills necessary for excellent biostatistical collaboration. Students will be given weekly assignments to further develop skills in each of the topic areas. Assignment tasks will be drawn from completed projects the course instructors have encountered. In addition, each student, under the mentorship of the course instructors or faculty in the Department of Biostatistics and Bioinformatics will engage in a collaboration experience. Each student will collaborate with a clinical investigator and provide biostatistical support to all aspects of their project. True to real-life experiences, types of projects will vary depending on the investigator and their research question of interest.

TEXTBOOK: None required.

SUGGESTED TEXTBOOKS:

Janice Derr: Statistical Consulting: A Guide to Effective Communication, Duxbury Press, 2000;

Patricia Goodson: Becoming an Academic Writer: 50 Exercises for Paced, Productive, and Powerful Writing, Sage Publications, 2012.

Gerald van Belle: Statistical Rules of Thumb, 2nd edition, Wiley, 2008.

COURSE LEARNING OBJECTIVES:

The primary learning objective is to develop skills necessary to be an effective biostatistics collaborator. Success requires an environment in which the biostatistician is an integral part of all phases of a research project (design, implementation and analysis). Strong communication skills [a mix of tact, persistence, compromise, willingness to listen, and friendly persuasion] are necessary to be successful in consulting and collaboration. Working with experienced biostatisticians and investigators is central to developing the skills necessary to be an effective consultant and collaborator. The course will facilitate students achieving these learning objectives via the following activities:

1. Readings on statistics and ethics: Current literature on statistics and ethics will help students to better appreciate that the discipline of statistics and provide the training necessary to 'deal with data with integrity'. Students will complete CITI human subjects training (Biomedical tract).
2. Individual Collaboration Project: Students will work with a clinical investigator to learn about a research project and provide the appropriate biostatistical support required for that project. Tasks may include clarifying the specific research questions, designing the statistical analysis plan, conducting the statistical analysis, presenting results, statistical review of grant proposal. The goal will be to establish 'the two-way-street' on both scientific issues and research roles as an aid to effective statistical consulting. THREE deliverables from the project will be required. Examples include statistical program, manuscript tables, figures/plots, analytic methods section, results section, abstract, poster presentation, manuscript, power calculations, revised research aims, etc.
3. Homework assignments: Students will be given a historical collaboration project with all of the same information as was provided initially for the project (data, proposal, research question, preliminary research, etc.) and asked to provide biostatistical support for the project. Students will work independently and classroom discussion of completed assignments will focus on different approaches and challenges encountered.

EVALUATION

- Class attendance, participation 30%
- Homework 35%
- Collaboration Project 35%

COURSE STRUCTURE

During the weekly class meetings, there will be presentations to facilitate the primary learning objective of developing skills necessary to be an effective biostatistics collaborator. In addition,

students will provide biostatistical support (under the supervision of course instructors or other biostatistics faculty with experience performing collaborative biostatistics) on a collaborative project with a clinical investigator. This project will require individual meetings with the clinical investigator outside of class to learn about their project and then additional effort outside of class to provide the appropriate biostatistical support. There will be homework assignments to reinforce the learning objectives and encourage practicing critical thinking skills.

COURSE POLICIES

As the instructors of this course we endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Equity and Inclusion, 404-727-9877.

RSPH POLICIES

Accessibility and Accommodations

Accessibility Services works with students who have disabilities to provide reasonable accommodations. In order to receive consideration for reasonable accommodations, you must contact the Office of Accessibility Services (OAS). It is the responsibility of the student to register with OAS. Please note that accommodations are not retroactive and that disability accommodations are not provided until an accommodation letter has been processed.

Students who registered with OAS and have a letter outlining their academic accommodations are strongly encouraged to coordinate a meeting time with me to discuss a protocol to implement the accommodations as needed throughout the semester. This meeting should occur as early in the semester as possible.

Contact Accessibility Services for more information at (404) 727-9877 or accessibility@emory.edu. Additional information is available at the OAS website at <http://equityandinclusion.emory.edu/access/students/index.html>

Honor Code

You are bound by Emory University's Student Honor and Conduct Code. RSPH requires that all material submitted by a student fulfilling his or her academic course of study must be the original work of the student. Violations of academic honor include any action by a student indicating dishonesty or a lack of integrity in academic ethics. *Academic dishonesty refers to cheating, plagiarizing, assisting other students without authorization, lying, tampering, or stealing in performing any academic work, and will not be tolerated under any circumstances.*

The RSPH Honor Code states: "Plagiarism is the act of presenting as one's own work the expression, words, or ideas of another person whether published or unpublished (including the work of another student). A writer's work should be regarded as his/her own property." (http://www.sph.emory.edu/cms/current_students/enrollment_services/honor_code.html)

COURSE CALENDAR/ COURSE OUTLINE

| Week of | Topic |
|----------------|--|
| 08/26 | Introduction, Consulting versus Collaboration |
| 09/02 | Nonstatistical aspects of statistical consulting |
| 09/09 | Grant proposal: Research aims, study design, statistical methods |
| 09/16 | Grant proposal: Power calculations |
| 09/23 | Professional ethics in statistics |
| 09/30 | Reading the biomedical literature |
| 10/07 | Data collection and management |
| 10/14 | Best practices in programming |
| 10/21 | Cleaning data, preparing analytic dataset |
| 10/28 | Tables! |
| 11/04 | Manuscript: Statistical methods |
| 11/11 | Manuscript: Results |
| 11/18 | Graphing/plotting, summarizing results |
| 11/25 | Data Coordinating Center |
| 12/02 | Peer review of a project |
| 12/09 | Individual Project Deliverables Due |

*This is a tentative course calendar.