

**BOSTON UNIVERSITY SCHOOL OF PUBLIC HEALTH**

**SPRING 2020**

**Applied Research Methods in Global Health**

**INSTRUCTOR**

Prof. Andrew Stokes

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Office hours: Tuesdays 5-6pm

**MEETING TIME AND PLACE**

***Class:***

Thursday, 6:00-8:50 pm

Room: Instructional Building 206

***Lab:***

Thursday, 5:00-5:50 pm

Room: Instructional Building 206

**TEACHING ASSISTANT**

Joshua Smith-Sreen

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Office hours: by appointment

**PREREQUISITES**

Introductory Epidemiology and Biostatistics

**COURSE WEBSITE:** <http://sites.bu.edu/gh811/>

**COURSE DESCRIPTION**

The goal of this 4 credit course is to teach student teams how to answer study questions using both quantitative and qualitative research methods. The student teams will conduct a research study to answer these study questions with multiple research methods including a cross-sectional survey and their choice from a variety of qualitative methods. The scope of the research questions addressed will be limited to minimal risk research conducted with students on the Boston University Medical Campus in the space of a semester. Each team will design a questionnaire, administer it, and enter and analyze the data using R. In conjunction with the cross-sectional survey, each team will also use some form of qualitative method, such as in-depth interviews or focus group discussions (FGD). The student teams will analyze the data, integrating the results of the cross-sectional survey and the qualitative research, and produce and present a report with findings and recommendations to their peers and faculty members.

**COURSE REQUIREMENTS**

## **REQUIRED TEXTS**

Peter G. Smith. *Field Trials of Health Interventions: A Toolbox*. *This text is open access and available at the following link: <https://goo.gl/IcBqtZ>.*

## **REFERENCES (OPTIONAL)**

Varkevisser CM, Pathmanathan I, and Brownlee A. 2003. *Designing and Conducting Health Systems Research Projects*. Vols. 1 & 2. Available free online (link on course website).  
Jacobsen, Kathryn H. 2012. *Introduction to Health Research Methods: A Practical Guide*. Sudbury, MA: Jones and Bartlett.

Leanpub Data Science Series by Brian Caffo and Roger Peng (see course website for links)

Mack, N, Woodsong, C, MacQueen, KM, Guest, G and Namey, E (2005), *Qualitative Research Methods: A Data Collector's Field Guide*, Family Health International, available online, [http://www.fhi.org/en/RH/Pubs/booksReports/QRM\\_datacoll.htm](http://www.fhi.org/en/RH/Pubs/booksReports/QRM_datacoll.htm).

## **SOFTWARE**

We will be making use of a variety of software in this class for designing and fielding surveys, cleaning and analyzing data, report writing and managing bibliographic information. You may ask why these and not others? For bibliographic management, perhaps you have heard of or used Endnote. For data analyses, you might be familiar with Stata, SAS or Matlab. However, in this class the aim is to rely as much as possible on free and open access software programs. There are many advantages to doing so, including the increased practicality of these tools for work in low-income settings.

### **Required**

- Kobo Toolbox
- Mendeley
- R & R Studio

### **Optional**

- R Markdown
- NVivo

## **ASSIGNMENTS**

### **Group Research Report and Presentation**

The research report will be prepared in stages throughout the semester. Students will submit their work each week for feedback and some components will be graded (Introduction, Methods, Results Sections). By the end of the semester, each group will prepare a written report that will include text, tables and graphics. A half-page abstract will be prepared for distribution at the project presentations. The report must include the following:

- Abstract
- Problem definition
- Research objectives

- Methods
- Results
- Discussion
- Conclusion
- References
- Appendices (including variable list)

Find more detailed descriptions of individual graded project components on the course website. The research report and presentation serve as the final examination.

### **Problem Sets**

In this class, you will complete 3 problem sets designed to assist in your mastery of R. These assignments should be complete individually although we encourage students to consult their peers to troubleshoot any challenges through use of the course listserv.

### **Group Charter and Midterm Evaluation**

Each group will develop a charter and evaluation form outside of class before Session 2, and send it to the instructor. At mid-term, groups should schedule a meeting to review the charter, reflect on work dynamics to date, and plan for any needed changes going forward. Each group should write a short summary of this meeting (maximum one page) and send it to the instructor.

### **End of Semester Group/Peer Evaluation**

At the end of the semester, each student will complete an evaluation form to assess overall group dynamics and individual contributions. This will be considered as part of the “Participation” portion of the final grade (detailed below).

### **Peer Review**

Feedback is an essential part of the research process. In this class, you will get a lot of experience giving feedback and have a lot of opportunities to receive it. You will provide feedback to one other team each week on whichever project component was submitted. Insightful and thoughtful comments and those which present effective critiques will receive full credit. The peer review schedule is rotating, so you will review work from a different group each week and become familiar with the work of all groups throughout the course of the semester. Peer reviews should be structured as follows:

- Briefly summarize the project
- Give your main impressions of the project component being reviewed
- Give 3 specific comments and suggestions for improving upon it

### **Individual Applied Research Methods Journal**

Three (3) entries to be handed in periodically (see below). Two pages (double-spaced) covering:

1. Group process
2. Group decision-making
3. Assignments and progress on the research project
4. Putting course lessons in real-world context

## **GRADING**

Grades will be distributed according to the following weights:

1. Final written research report	25%
2. Introduction, Methods, Results Sections (x3)	5%
3. Final presentation	10%
4. Problem sets (x3)	5%
5. Peer reviews	10%
6. Participation	10%
7. Journal entries (x3)	5%

Classroom participation will be assessed on the basis of preparation for class, active involvement in discussions, and end-of-semester peer evaluations. Sections of the research report as well as the final presentation and the final research report will be a group project and each member of the group will receive the same grade. The individual component of the grade includes problem sets, peer reviews, participation and journal entries.

## **COURSE ORGANIZATION**

The course will consist of lectures and group work on the research project. All aspects of research will be covered in theory and in practice. Participants will be asked to contribute their experiences.

## **COURSE OBJECTIVES:**

After taking this class, you will be able to:

- Implement a mixed methods study from start to finish
- Design and implement a questionnaire
- Conduct a literature review and integrate bibliographic software
- Use R for applied data analysis
- Conduct qualitative data analysis
- Visualize data
- Apply, interpret and communicate results from regression analyses
- Write a clear and effective research paper
- Effectively communicate results with diverse audiences

## **WORKFLOW**

Weekly schedule in overview:

- Submit project component to Blackboard by Sunday 5 pm
- Complete peer review by class time
- Revise based on instructor and peer feedback (you will receive written feedback from me by end of Wednesday each week)
- Re-submit project component for further feedback (optional but encouraged)

Weekly schedule in detail:

- Week 1: Research ideas & team charter
- Week 2: Final research topic

- Week 3: Annotated bibliography, problem diagram, research objectives & variables worksheet
- Week 4: Survey questionnaire
- Week 5: Qualitative interview guide & introduction section
- Week 6: Sampling plan, power calculations & data collection plan
- Week 7: Questionnaire (final) & interview guide (final)
- Week 8: Data dictionary, table shells & methods section, comments on team charter
- Week 9: Qualitative themes
- Week 10: Descriptive tables & bivariate tables
- Week 11: Multivariate tables & results section
- Week 12: Complete draft
- Week 13: Final research report
- Week 14: Final presentation!

### Problem Sets Schedule

Date	Time	Assignment
13-Feb	6 pm	Problem Set 1
19-Mar	6 pm	Problem Set 2
9-Apr	6 pm	Problem Set 3

### Journal Assignments Schedule

Date	Time	Assignment
20-Feb	2 pm	Journal 1
26-Mar	2 pm	Journal 2
7-May	2 pm	Journal 3

### JOURNAL ASSIGNMENT FORMAT

Each journal entry should be no more than 2 pages, double spaced. It should include your reflections on all time spent on GH811 (in and out of class) from the previous entry, but can refer to things mentioned in previous entries. Every journal entry must include (at least) the following four components:

1. Group process in general (housekeeping)
2. Group decision-making in specific
3. Progress on weekly assignments and research project
4. Practical application

### Examples

**Group process in general (housekeeping).** What meeting times have you chosen for group work? Do you prefer supervised group work or meeting on your own? How have you divided up tasks to be done within the group? How were these decisions made? What software are you each working on and how do you plan to produce the final proposal? Etc.

**Group decision-making in specific.** Describe group brainstorming sessions. What ideas emerged? What option was decided upon? How did the group reach that decision? What ideas didn't work out and why? Etc.

**Progress on weekly assignments and research project.** What has been completed? What is still being worked on? What is your time line for completing upcoming tasks? Are you comfortable with your progress? Etc.

**Practical application.** Describe how you might take skills from this course and put them to use in your work (real or hypothetical). What obstacles might you encounter? How might you approach those problems? Etc.

*Example questions are only for illustration. While I expect you to cover each of the four categories, I encourage you to be creative and include additional material as you wish.*

The final journal will be in the form of a letter to next year's students, and should include advice and experience from the entire course.