

SPPH 506: Quantitative Research Methods

School of Population and Public Health
Term 2, Academic Year 2022-2023

Course Logistics

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Course Description

This course provides an overview of quantitative research methods, focusing on approaches central to undertaking quantitative studies in the various fields of public health. The intent is to familiarize students interested in conducting quantitative research with key concepts, tools and ideas that can support them in assessing the quality of existing studies, developing their own research proposals, and ultimately conducting more rigorous research.

Areas of emphasis related to methodology include: concepts of association and causality; developing research questions; approaches to measurement, including reliability and validity; common data sources used in public health research; sources of bias; and a comprehensive overview of observational study design.

Students will learn to develop and enhance designs for research proposals, and critically examine research proposals, and published health research. The course is intended for doctoral- and masters-level graduate students in public health and related fields. It is designed to be complementary to departmental courses in epidemiology, measurement principles, program evaluation, administrative data analysis, and economic evaluation.

Course Structure

Each week will typically be structured into two components. First, each will include online content on a specific topic in the area of research methods. This will be based largely on a “transmission” approach to teaching using the edX platform, and be heavily reliant on the mandatory readings for the week (which will be incorporated into the online content flow). Reading the material for each class in the edX flow will be critical to fully understanding the lecture content. This content will all be opened to students on the first day of classes, so you can pace yourself accordingly and/or skip forward to particular topics if they will be helpful for your proposal development.

The online content will focus on key methods and approaches; they involve a series of interactive units – with discussion forums in which students will be expected to actively participate. The content of the materials is flexible, and students are encouraged to highlight methods or approaches that are not currently covered in the online content. Should there be specific methods not outlined in the course syllabus that any student would like to discuss, they are encouraged to highlight this gap to the instructor for consideration.

The class time each week will use a problem-based learning approach to research methods. The “problems” we will discuss will be students’ proposals, which will be developed over the course of the semester. It is the intent of the course that students will be able to work toward a proposal that could become part of their later thesis work. These groups will be convened both in person and online based on student preferences.

It is expected that the course will be useful to the extent that students actively participate in applying the approaches being studied. Accordingly, a number of aspects of the course are intended to encourage such application. Students are expected to actively engage in the group activities each week. Where issues and approaches arising from individual proposals may contribute to the learning of the entire class, students will be invited to share their work from these exercises, most commonly through the creation of short screencast discussions that will be shared with other students.

Students will also be expected to participate in a mock ‘peer review committee’ process. This will involve providing a verbal and written critique of a peers’ proposal using a format that simulates the approach used by the Canadian Institutes of Health Research (CIHR). The exercise is intended to provide perspective on developing a strong proposal, and also to provide peer feedback to students.

Learning Objectives

1. Gain an understanding of observational research methods typically used in health research by becoming familiar with prevailing threats to validity and common research designs and approaches.
2. Understand issues of internal and external validity in observational studies.
3. Have an understanding of what data would be required and how one would statistically approach different methods.
4. Demonstrate an ability to thoughtfully apply the concepts in order to critique published research and research proposals, as well as to develop a cohesive research proposal as a final project.

Course Readings

The document entitled ‘Reading List’ provides readings and guidance for each topic that is covered in the course. Note that all required readings will be linked in the appropriate section in the edX content, so for the core material there will be no need to consult the reading list. Each topic area on the reading list contains a series of optional readings and resources for those who wish to understand a given topic in greater depth.

Required readings

Required readings for each content area will be explicitly linked to in the course edX content. There is no required textbook for the course.

Optional textbooks

The following textbook is very helpful for understanding study design principles. A copy is on reserve at the Woodward Library:

- Experimental and Quasi-experimental Designs for Generalized Causal Inference. Shadish, Cook & Campbell. Houghton Mifflin 2002.

I also highly recommend the following textbook for students planning a dissertation at either the MSc or PhD level:

- **Proposals That Work: A Guide for Planning Dissertations and Grant Proposals** (6th Edition). Locke LF, Spirduso WW, Silverman SJ. Sage Publications 2013.

Document Sharing

Document sharing for the course will be conducted using Canvas, and course content will be available on edX Edge. Students should automatically be granted access to the Canvas platform, and registration in the edX site will be done using a survey prior to the start of the class in January.

Student Evaluation

Students will be evaluated on three major areas of activity: a mid-term paper; a final assignment; and assessment of peers' proposals.

Mid-term paper (30% of grade)

This exercise involves undertaking a critical review of a quantitative health research study. Students are expected to provide a brief review (maximum 5 pages) that summarizes their assessment of a number of key areas, using a format that will be provided. Students may critique an article related to a health research topic of interest, using a process that will be outlined in class. In order to proceed, a suitable article must be approved by the instructors and submitted along with the review; guidance will be provided in class. The following journals regularly feature health services and policy research (all are available online through the UBC library) and could be a source for articles to review: CMAJ, BMJ, JAMA, NEJM, PLoS Medicine, Healthcare Policy, Health Policy, Health Services Research, Health Affairs, Medical Care, the American Journal of Public Health, and others.

Final assignment (50% of grade)

Students will prepare a health services research proposal that could be submitted to a granting agency. Papers should be approximately 10 to 13 pages in length (single spaced). We will develop the proposals throughout the semester and discuss these in small groups of our peers. Further guidance on this assignment will be provided in class. Students will also be asked to formally respond to feedback provided by their peers during a mock committee exercise.

Peer Assessment of Proposals (20% of grade)

At four points during the semester, students will be assigned a proposal from another student for their review and comment. Students will be graded on the quality of the comments and suggestions they provide on other students' proposals at the second and third instance, and for the quality of the one-page review they produce during the peer review exercise. We may conduct these evaluations using an online survey tool.

Late submissions

Extensions will not normally be given, and late assignments will be given a mark of zero unless prior permission is obtained. Please notify the instructor or TA as soon as you anticipate not being able to fulfil a course requirement by the deadline due to

circumstances outside of your control. We will assess these requests on a case-by-case basis.

Marking reassessments

Should you have concerns about the mark you have received on an assignment, you are welcome to request a re-assessment from the instructor. In order to request such a reassessment, please write one paragraph explaining why you believe you deserve a different mark from the one you received. This will be read in conjunction with your original submission. The instructor will reassess your assignment based on this information, and your mark may increase, stay the same, or decrease as a result. Requests for changes in marking made in any other manner will not be considered.