

Course Outline – Fall 2023

BACKGROUND

Knowledge accumulates in many different ways. Scientific research methods constitute one “way of knowing”. This approach to “knowing” is characterized by systematic study of a phenomenon of interest. Systematic implies that the research process is based on agreed upon rules and processes which are rigorously adhered to and against which the research can be evaluated.

Health researchers need to be familiar with a wide range of research methodologies and understand their strengths and limitations. Moreover, it is increasingly apparent that fields and disciplines other than the health sciences can suggest exciting new ways of thinking about how to approach a particular research problem. These insights can stimulate new methods of research which can increase our understanding of the topics we are studying. Although the focus of this course is on quantitative research methods, HRM 721 aims to introduce students to a wide range of perspectives and research methodologies that are relevant to the study of health and wellness phenomena. The course emphasizes that it is more fruitful to think about a variety of research approaches, each with their own strengths and limitations rather than to think about a right or wrong way to approach a particular research problem.

Health researchers also need to understand the interactive nature of the relation between theory and research. HRM 721 aims to increase participants’ understanding of how theory provides guidance for research, and how research can generate, verify, modify and re-construct theory. The course balances content on how health research is designed and completed with that of acquiring skills and practice in reading and analyzing original studies and systematic reviews.

The course begins by considering the questions-based nature of research and the importance of good questions. We then introduce you to different quantitative research designs and discuss their relevant conceptual and methodologic issues:

- Evaluation of therapy/interventions through clinical trials
 - Assessment of etiology, association, and causation with observational methods
 - Evaluation and application of diagnostic processes
 - Assessment and prediction of prognosis

We next address the research aspects that are common to all health research designs: ascertaining disease frequency, measurement, and sampling, and we will also discuss ethical concerns in performing health research. We will also learn methods to synthesize and use existing data: systematic reviews, practice guidelines, and economic evaluations. Although not the focus of this course, we will also give you an introduction to qualitative

methods that address important health questions that cannot be measured quantitatively. The course concludes with a session devoted to research presentations by each course participant that addresses a health question of choice and how best to address that question using an appropriate quantitative research methodology.

You are expected to bring to the course the research topics of interest to you in your own field. One of the strengths of the course is that participants represent many disciplines both within and outside health. Understanding the links between your own areas of interest and discipline and the approaches to inquiry covered is one of the main goals of the course. The course is structured to facilitate this linking process. Those of you who are starting to develop interests or who do not have a research field yet will still be able to apply the concepts through the use of health questions that are of interest to you.

We also hope that you will identify research topics and interests that you may pursue in greater depth in other courses offered in the Health Research Methodology (HRM) Program or other programs within the university. HRM721 should help you decide which specialized courses are most relevant to the research program you intend to pursue. Almost all of the units can be considered an introduction to further existing study possibilities.

The course is organized to enable learning to occur in a variety of ways. First, your HRM Program faculty advisor or your supervisor (or whoever is be your tutor if you are not an HRM student) are key resources who can assist you in ensuring that the issues covered are applied to your own area of interest. Second, in the small group tutorials faculty tutors will assist you in learning the concepts, approaches and the interpretation of the course material. In addition, we include large group lectures at the start of each session will help you synthesize key areas and introduce you to experts on a specific topic. And finally, don't forget that your student colleagues in the course will have much to offer in terms of expertise, cross-discipline knowledge, and ways of learning the areas covered!

COURSE OBJECTIVES

1. To examine quantitative research approaches to understand their principles, strengths and limitations.
2. To learn how to apply these health research approaches and methods by preparing for weekly tutorials and a research protocol outline in your own area of interest.
3. To identify further learning objectives related to in-depth study of specific research methods.

FORMAT

The course uses integrative large group sessions and problem-based learning in small groups. Each session will focus on a learning package that includes the unit learning objectives, required readings, supplementary material (optional), and tutorial description including the preparation needed (problems). We expect students to read all required readings and completed the tutorial preparation **before the session**. The class sessions will be run under the guidance of an experienced tutor. You will have a range of tutors representing the strengths of the various faculty members involved in the course.

The anticipated number of hours that a student should allocate to HRM 721 depends on a number of factors, including: the student's background, research experience, the session, and the readings. Students typically spend 3 hours in class and another 6-10 hours reading the material and completing the preparation for each session. This does not include time spent studying for each quiz or completing the final assignment.

EVALUATION METHODS

How students will be evaluated

Our intent is to provide many opportunities to demonstrate your mastery of HRM 721 material:

1. Weekly problems discussed in the tutorial
2. Tutorial participation
3. Short (60 minute) quizzes
4. Final course paper on issues covered during the course
5. Course paper presentation

1. Weekly Assignment: Each unit will include exercises that we will review during the tutorial. Although these will not be marked, they can be considered assignments and we expect you to do them every week. The exercises are designed to ensure that the student understands and can apply the core concepts covered in each unit. Students will be expected to prepare responses to the exercises and to discuss them each week with their tutorial group. Participation in the discussion during tutorial based on your answer to the exercises will be evaluated.

2. Tutorial Participation: The success of the course depends, to a considerable degree, on the extent to which you and the other students engage in small group interaction. This also depends, naturally, on the effort you put into understanding the materials and solving the unit problems before class. As tutorial participation is an essential and mandatory component of the course, students will not receive credit for the course **if they miss more than 2 tutorial sessions**.

3. Quizzes: Every 3-4 units, there will be a quiz to evaluate your knowledge and ability to consolidate your learning across units. They are short answer questions, and some will require calculations. You may use any materials to help you answer the question (open book), but you may not contact anyone. Quizzes will be conducted via Avenue to Learn.

4. Course Paper: You will take a health research problem and write a brief research proposal.

This research proposal must address a primary research question, i.e., it cannot be a systematic review or meta-analysis. The question must involve human participants or human participant data. It must use 1 of 3 quantitative designs: experimental, observational or diagnostic testing/screening. It cannot be a qualitative study, as this course only offers a brief introduction to that design. The paper should be a maximum of 10 pages double-spaced, 12 point font, 2.5 cm margins and focus on using the information from the course to elaborate on the methodological issues specific to your proposed study. Substance counts over style. Extensive budgets, sample size calculations, statistical analysis, etc., are discouraged. More extensive instructions and a sample paper are found on Avenue to Learn.

5. Presentation: During the last session students will present their final course papers in the small group tutorials. Time will be allotted for discussion and comments from both faculty and students.

PLEASE NOTE - This course moves quickly and there is a lot of information to cover. Start thinking about your final project now. You can bring up questions regarding your proposal (methodological and resource questions, etc.) to your tutorial sessions. Students may use tutorial sessions to discuss and ask questions regarding the session topic, and also to discuss their research question **as it pertains to the topic of the week**. You will also be able to bring questions to the course coordinators and TAs during office hours or through email.

Breakdown of student evaluation:

• Quarterly quizzes (4 quizzes - 60 marks in total)	60%
• Tutorial participation (13 tutorials)	12%
• Final paper (written document and presentation)	25%
• Submission of your biography (on time)	1%
• Submission of your research question for the final paper (on time)	1%
• Completion of course evaluations	1%

How the course and tutors will be evaluated

An online course evaluation will be completed by each student for each unit (Avenue to Learn) for the unit, the large group presenter, and your tutor. Course coordinators, tutors and presenters, and the department administration value these evaluations which are used in planning revisions to the content and recruitment of faculty tutors. Because we value your evaluations you receive 1% towards your final mark for completion of the evaluations.

LATE SUBMISSION POLICY

It is expected that all course work and quizzes are completed on time. Unless an extension was agreed with the course coordinator, we will deduct 5% of the mark for every day that the assignment is late. We will count on a per day basis (eg. 1 minute to 24 hours late, 5% deduction).

TEXTBOOKS

Browner, W.S., Newman, T.B., & Cummings, S.R. (2022). *Designing Clinical Research* (5th Ed.), Philadelphia: Lippincott Williams & Wilkins.

(OR older edition)

Hulley, S.B., Newman, T.B., & Cummings, S.R. (2013). *Designing Clinical Research* (4th Ed.), Philadelphia: Lippincott Williams & Wilkins.

AND

Guyatt G, & Rennie D, & Meade M.O., & Cook D.J.(Eds.), (2015). *Users' Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice*, 3rd ed. McGraw Hill.

CONTACT INFORMATION

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PLEASE NOTE - When emailing, you must include "HRM 721" in the subject line.

Please email the course coordinator and TAs to let them know that you would like to attend the office hours. If there are no requests and no shows for the first 10 minutes, there will be no office hours for that day. If you cannot attend the office hours, please get in touch with the TAs to ask for alternative times.

Please contact us early with concerns. This is a fast-paced course with much content to assimilate and it is easy to fall behind.