

## Course Outline – Fall 2019

### HRM 721: Fundamentals of Health Research and Evaluation Methods

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#### **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 with true experimental methods
- Assessment of etiology and causation with observational methods
- Evaluation and application of diagnostic processes

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 study the methods that are syntheses of existing data: systematic reviews and economic evaluations. We will have a session on knowledge translation—how to translate our research findings to get them

appropriately applied. 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. We include students from Health Research Methodology, Nursing, Medical Sciences, Mathematics and Statistics, and many other areas of degree and post degree students and university staff and faculty. We try to reflect this multidisciplinary strength in our choice of large group speakers and weekly tutors.

Also, we expect 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 to be an introduction to further existing study possibilities.

The course is organized to enable learning to occur in a variety of ways. First for those of you in the HRM program, your HRM Program faculty advisor is a key resource who can assist you in ensuring that the issues covered are applied to your own area of interest. For those of you outside HRM, your tutor or advisor in your home department or other mentors can assist you. Second, in the small group tutorials your faculty tutor will assist you in learning the concepts, approaches and the interpretation of the course material. Large group presentations are also included at the start of each session to 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 strengths and limitations.
2. To learn how to apply these health research approaches and methods by completing weekly assignments and preparing 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 problem-based learning in small groups and integrative large group sessions. Each tutorial session will focus on a learning package that includes the unit objectives, required and additional readings, key concepts and the unit problem(s). Participants are expected to have read all the readings and completed the weekly assignment for the tutorial discussions 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 assignments for each session. This does not include time spent studying for each quiz, 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:

- i) weekly assignments discussed in class
- ii) tutorial participation
- iii) short (60 minute) quizzes every 3 units that evaluate your knowledge and ability to consolidate your learning across units (4 mini-examinations using short-answer questions)
- v) a final course paper on issues covered during the course
- vi) in-class presentation.

**1. Weekly Assignment:** Each unit will include an assignment. The assignments are designed to ensure that the student understands the core concepts covered in each unit. Students will be expected to prepare responses to the assignments included in the course and to discuss them each week with their tutorial group. This material will not be marked but participation in the discussion during tutorial 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 participate in the 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. Course Paper:** You will take a health research problem from your own experience, and write a brief research proposal (outline).

This 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 course paper is NOT intended to be a “grant application” 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 the Avenue ([avenue.mcmaster.ca](http://avenue.mcmaster.ca)) course site.

**4. Presentation:** During the last unit of the course students will present the final course papers in the small group tutorials. Time will be allotted for discussion and comments from both faculty and students.

Please note that this course moves quickly and there is a lot of information to cover. Start thinking about your final project now. You should bring up questions regarding your proposal (methodological and resource questions, etc.) during your tutorial sessions. Students typically 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**.

**5. Breakdown of Student Evaluation Components:**

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| • Quarterly quizzes 4 X 15 marks                                     | 60% |
| • Tutorial participation*  | 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%  |

\* You get marks for participation at each tutorial (12 X 1 mark).

**How the HRM 721 curriculum and the tutors will be evaluated**

An online course evaluation will be completed by each student for each unit (Avenue) 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.

## **Textbooks:**

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

Plus either, but not both, of the following texts:

1. The Evidence Based-Medicine Working Group. Guyatt G, ed. *Users' Guides to the Medical Literature*. 2<sup>nd</sup> edition. McGraw Hill. Chicago. 2008.

2. DiCenso D, Guyatt G, Ciliska D. *Evidence-Based Nursing: A Guide to Clinical Practice*. Sigma Theta Tau Honor Society of Nursing. Elsevier Mosby. Philadelphia. 2005.

## **People important to know:**

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## **Course TA's:**

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Farid Foroutan  
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Please email the TA's to arrange a meeting to ensure that they are available at that time.

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