Course Dates/time:
Wednesday 11:30 – 12:20, Friday 13:30 – 14:20, HSC 1A1

Course Instructor and Coordinator:
Russell de Souza, RD, ScD
MDCL, Room 3210 x. 22109
Office Hours: Tuesdays between 11:00 am and 12:00 pm by appointment
rdesouz@mcmaster.ca

Teaching Assistants:
Arti Bhasin, Harsukh Benipal, Jayneel Limbachia, Linda Nguyen, Sujane Kandasamy, Tamana Yousof, Yasir Rehman

Recommended Text:

**IF YOU PURCHASE ANY OTHER EDITION, IT IS YOUR RESPONSIBILITY TO ENSURE YOU COVER THE MATERIAL ASSIGNED IN THIS SYLLABUS. I WILL NOT BE CONFIRMING PAGE NUMBERS**

Additional readings are required for some modules (see links below). These readings may only be accessible on campus.

Supporting Texts (Not required!):

**I find that often, a textbook will explain a concept in a way that “clicks” with some students, but not others. Here are 2 other textbooks which you might find helpful. They are not required, nor are they reserved for our course. The Gordis text (above) and/or my lecture notes shall be considered the definitive source, in the case of discrepancy **


Course Description:

This course is an introduction to Epidemiology. The purpose is to introduce students to measures of health (incidence, prevalence), standard epidemiologic study designs (randomized controlled trials, cohort studies, case-control studies), and measures of association (relative risk, odds ratio). We will also examine crucial issues in the design and analysis of epidemiologic studies.
(bias, confounding, effect modification) and conclude with some specialized topics (screening, causation, evidence-based medicine and systematic reviews, health economics, survival analysis), and overviews of issues unique to specialized fields of epidemiology (nutritional epidemiology, genetic epidemiology, and infectious disease epidemiology). Students will be expected to read the assigned chapters and any additional reading before lectures. Tutorials will offer students a chance to clarify concepts and work on examples in smaller groups. The course will help students to be better-informed consumers of health information and it will reinforce the critical approach needed to ask the right questions in health research.

**Course Objectives:**
1. To understand the basic measures of disease quantification (e.g. incidence and prevalence)
2. To understand the design, conduct, strengths and weaknesses of ecologic, cross-sectional, case-control, prospective cohort, and randomized controlled studies
3. To understand how to calculate and interpret basic measures of association derived in observational studies (e.g. odds ratio, risk ratio)
4. To understand the concepts of bias, confounding and effect modification in epidemiology
5. To gain a basic understanding of other important elements of epidemiologic thinking and study, such as evidence-based medicine, health economics, systematic reviews.

**Tutorial Schedule:**

T01  We  10:30AM-11:20AM  T13  1015
T02  Tu  10:30AM-11:20AM  MDCL  1115
T03  We  09:30AM-10:20AM  MDCL  1016
T04  Tu  09:30AM-10:20AM  MDCL  1115
T05  We  08:30AM-09:20AM  MDCL  1016
T06  We  02:30PM-03:20PM  MDCL  1115
T07  We  01:30PM-02:20PM  MDCL  1115
T08  Tu  08:30AM-09:20AM  MDCL  1115
T09  Tu  12:30PM-01:20PM  MDCL  1115
T10  Tu  08:30AM-09:20AM  MDCL  1116
T11  We  12:30PM-01:20PM  MDCL  1115
T12  We  08:30AM-09:20AM  MDCL  1115

**Tutorials:**

Prior to tutorial sessions, please complete the assignments if posted on LearnLink. During tutorials, students will have the opportunity to discuss the assignments and ask questions. The answers to assignments will also be posted on LearnLink at the end of each module’s group of tutorials. Tutorials will begin on Monday, September 11. To keep the group numbers small, and as even as possible, you have been assigned to a specific tutorial session and are expected to attend your assigned session. Conflicts due to dropped or added courses may be addressed using MOSAIC (On-line Course Selection). Students may select an unassigned tutorial when MOSAIC re-opens after sectioning. Students may modify their selections until the end of the official drop and add period (Wednesday September 13, 2017).
Teaching Assistants
Please refer to LearnLink for the contact information for teaching assistants.

Evaluation:

Assignment # 1 – Due October 4  15%
Midterm Exam -- October 25  20%
Assignment # 2 – Due November 8  25%
Final Exam – December exam period  40%

Additional assignments/extra work: Students will NOT be permitted to do additional assignments or extra work at the end of the term to boost their grades. Giving some students ”special deals” is unfair to the rest of the class.

”Bumping-up” grades: All requests to”bump-up” grades at the end of the term will be ignored. Giving a student a grade they did not earn is (really) unfair to the rest of the class.

Assignments:

The assignments will provide a means for students to integrate topics from several lectures. Students will be graded on their ability to critically summarize material and present coherent arguments.

The instructor will post the assignments on LearnLink. Students may work in groups of up to three people (you may work alone if you wish, but no groups of more than three people). Assignments will be randomly assigned to TAs for correction and random spot checks for duplicate papers will be conducted (we have caught people submitting duplicate papers – the penalty for doing so will be a grade of zero for ALL members of the groups involved).

Assignments are due at the end of class on October 4 (Assignment # 1) and November 8 (Assignment # 2). Assignments must be submitted to the instructor in-person only (NO e-mail submissions). If you submit an assignment by e-mail, then I will consider it to be late until you give me a hard copy.

Late penalties will apply (see assignments for more details). You should complete a McMaster Student Absence Form (MSAF) if you will require an extension due to a minor medical situation that you expect to last for up to three days. If you will be absent for reasons other than medical reasons, or your medical absence will be more than three days, or you have already exceeded one MSAF request in the term, then you MUST visit your Associate/Assistant Dean's Office (Faculty Office) to request an extension. You may be required to provide supporting documentation to the Dean. If I do not receive an MSAF from you, or the Dean’s Office does not contact me with a request to give you an extension, then you will lose points due to lateness.
The planned return dates for your assignments are October 19 (Assignment # 1) and November 23 (Assignment # 2). This is subject to change. Arrangements for return of assignments will be announced on LearnLink and/or in class.

Assignment regrade requests:
You may be surprised to learn that on occasion, I encounter students who are dissatisfied with their grades. We have a procedure in place to help accommodate this dissatisfaction. This is the professor-dreaded regrade. You must wait at least 24 hours after the assignment is returned to you before requesting a regrade, and requests must be made within 72 hours after the assignment is returned to you. This timeframe will be announced in class (or via LearnLink) when the time arrives. The teaching assistants will not discuss grades.

Students requesting a regrade must drop off the original graded assignment (with TA comments) to the instructor (MDCL, Room 3210), and send a request via e-mail to the instructor (rdesouz@mcmaster.ca). This e-mail request must include the names and student numbers of all students (in the case of a group assignment) requesting the regrade, all of whom must be copied (“cc’d”) on the e-mail request. Upon receiving an e-mail from the instructor acknowledging the request, the entire assignment will be re-graded by another teaching assistant without knowledge of the first grade. Your final mark will be an average of your original grade and the re-grade.

Midterm Exam:
The midterm will cover material in the lectures, tutorials, and assigned readings (but NOT the “supporting texts”) up to, and including material covered on October 20th 2017. The exam will have questions requiring calculations, so bring a calculator! Only the standard McMaster calculator, i.e., Casio FX-991, will be permitted during the exam. Students must also bring an HB pencil to the exam.

Exam format: The format will be very similar to the final exam. Students will be responsible for material covered in the lectures, tutorials, and assigned readings. The exam may be a combination of multiple choice and short-answer questions (no more than 40 questions) and cover the material we have discussed up through and including October 20. The exam will last 1 hour.

Final Exam:
Students will be responsible for material covered in the lectures, tutorials, and assigned readings in syllabus and provided by guest lecturers. The exam will have questions requiring calculations, so bring a calculator! Only the standard McMaster calculator, i.e., Casio FX-991, will be permitted during the exam. Students must also bring an HB pencil to the exam.

Exam format: The exam may be a combination of multiple choice and short-answer questions (no more than 80 questions) and cover the entire course (although an emphasis will be placed on materials covered in lectures after October 25). The final exam will last 2.5 hours.

LearnLink:
LearnLink will be used to post tutorials, assignments, and lectures. LearnLink also provides a forum for interactive discussions between students on course content. If you have a question related to course content, you should post it on LearnLink to get feedback from your classmates. The teaching assistants will monitor the discussions to make sure that erroneous information is not disseminated. The course instructor will NOT monitor the LearnLink discussions. Please do not submit e-mails related to course material directly to the instructor unless you have used LearnLink and your teaching assistant to address your question first.
**Lecture and Tutorial Sessions:**

**At certain points in the course, it may make good sense to modify the schedule outlined below. I reserve the right to change elements of the course, and will notify students accordingly. I will provide this notice in class, and through LearnLink as necessary. Chapters provided in the readings refer to the Gordis textbook.**

Module 1 – September 6 & 8

*Introduction, Health Measures I*

- To become acquainted with the course objectives and procedures
- Definition and history of epidemiology
- To begin to understand how epidemiology can be used as a tool for clinical practice and public health
- To understand some basic statistical terminology and concepts that you will encounter over the course of the semester

Reading: Chapters 1, 3

NOTE: TUTORIALS BEGIN WEEK OF SEPTEMBER 11

Tutorial 1: Health Measures

Module 2 – September 13 & 15

*Health Measures II*

- Important health surveillance measures (e.g., standardization)
- Mortality, proportionate mortality
- Case fatality rate
- Standardization

Reading: Chapter 4 (module 2)

Tutorial 2: Health Measures and Case-control Studies

Module 3 – September 18 & 22

*Observational Studies (I & II)*

- Definition of observational study
- To understand the design features, strengths, and weaknesses of case-control studies, case series, and case reports
- Odds ratio
- To understand the design features, strengths, and weaknesses of cohort and cross sectional studies
- To be able to calculate a relative risk, understand what it means, and know how to interpret it
- To be able to calculate attributable risk and population attributable risk, understand what they mean, and know how to interpret them
- To be able to understand and calculate person-years and the incidence density ratio
- To understand the definition of nested case-control and case-cohort studies

Reading: Chapters 9-13 of textbook (continued from module 2)

Tutorial 3: Review of cohort studies, relative risks, attributable risk, population attributable risk, incidence density ratio
Module 4 – September 27 & 29
Randomized Controlled Trials

- To understand the design features, strengths, and weaknesses of randomized controlled trials and their use in health research
- Internal versus external validity

Reading: Chapters 7 and 8 of textbook
Tutorial 4: Randomized controlled trials

Module 5 – October 4
Bias

- To understand the concepts of selection and information bias
- To differentiate between these concepts and see how they can affect the results of a study
- To learn strategies for handling these biases in randomized controlled trials and observational studies

Reading: Chapter 15 of textbook (sections on bias, pp. 247-251)
Additional readings available at the following links:


  Bias – Data Analysis Questions.
  http://epiville.ccnmtl.columbia.edu/bias/data_analysis_questions.html

Tutorial 5: Review of selection and information bias

***Assignment # 1 due at beginning of October 4 class***

Module 6 – October 6
Confounding and Effect Modification (interaction)

- To understand the important concepts of confounding and effect modification
- To differentiate between these concepts and see how they can affect the results of a study
- To learn strategies for handling confounding and effect modification in observational study designs

Reading: Chapter 15 (sections on confounding and interaction, pp. 251-263)
Tutorial 6: Review of confounding and effect modification

NOTE: TUTORIALS AND CLASSES CANCELLED ON MONDAY, OCTOBER 9 THROUGH 13 (THANKSGIVING AND READING WEEK).
Module 7 – October 18 & 20

Infectious Disease Epidemiology, Screening, Diagnostic Tests

- Infectious disease terminology
- Unique issues in infectious disease epidemiology: causality, dynamics
- Outbreaks
- To understand how epidemiology can be used to evaluate the effectiveness of screening programs
- To understand the means of evaluating diagnostic tests (sensitivity, specificity, ROC curves)

Reading: Chapters 2, 5, 14, and 18 of textbook
Tutorial 7: Review of infectious disease, screening, diagnostic tests,

***Midterm Exam – October 25 (11:30 to 12:30)***

Module 8 – October 27

Evidence-based Medicine and Systematic Reviews

- To understand the concept of evidence-based medicine and its clinical and research applications
- To explain systematic reviews and understand their clinical and research uses

Additional readings available at the following links:


Sackett, DL, Rosenberg WM, Gray JA, Haynes RB, and Richardson WS. Evidence-based medicine: what it is and what it isn’t. (1996) BMJ. 312(7023): 71-72. [Available through McMaster HSL and posted in Readings folder, also free on PMC]


Tutorial 8: Review of EBM, SRMA
Module 9 – November 1 & 3
Health Economics
- To introduce students to the field of health economics (why do economic evaluations in health care, types of economic studies, interpretation of results)

Reading: Additional readings available at the following links:

[Available through McMaster HSL and posted in Readings folder]

[Please see “Readings” folder]


Tutorial 8: Review of health economics

Module 10 – November 8 & 10
Survival Analysis
- To introduce students to survival analysis, Kalpan-Meier curves, log rank tests, and the hazard ratio

Reading: Textbook – start reading on page 116 and continue reading until the section called 'Apparent Effects on Prognosis of Improvements in Diagnosis' on page 131. You do NOT have to read the section called 'Apparent Effects...'.

Tutorial 10: Review of survival analysis

***Assignment #2 due at the beginning of November 8 class***

Module 11 – November 15 & 17
Genetic epidemiology

Readings to be posted

Module 12 – November 22
Advanced Epidemiologic Study Designs
- To introduce students to topics in epidemiologic study designs
Additional readings available at the following links:


Module 13 – November 24 & 29
Nutritional Epidemiology (Nov. 24), Causation (Nov. 29)
To introduce students to nutritional epidemiology, and finish up with a review of causation in epidemiology.

Additional readings available at the following links:


Tutorial 11: Review of module 11 topics

Review Class I – December 1

Dr. de Souza will review the material and take questions.

Review Class II – December 6

The TA’s will review the material and take questions.

Tutorials: Review and questions for TAs

LAST LECTURE DECEMBER 6
TUTORIALS END DECEMBER 1
**Academic Integrity**

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g., the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty, please refer to the Academic Integrity Policy, specifically Appendix 3, located at [http://www.mcmaster.ca/senate/academic/ac_integrity.htm](http://www.mcmaster.ca/senate/academic/ac_integrity.htm).

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.

**Academic Accommodation of Students with Disabilities**

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone at 905-525-9140 ext 2865, or e-mail sas@mcmaster.ca. For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities.