

School of Population and Public Health (SPPH)

SPPH 502: Epidemiological Methods I

Syllabus – Fall, 2016

1. Course Description

SPPH 502 is an introductory level course intended to provide students with a working knowledge of the basic concepts and methods of epidemiology, with a focus on approaches for the acquisition, analysis and interpretation of information about disease. It provides the basis for describing and explaining disease occurrence, and introduces methods for developing, prioritizing and evaluating public health programs.

- SPPH 502 is a three credit course;
- There are no prerequisites for SPPH 502 and it may be taken concurrently with SPPH 400;
- SPPH 502 is a prerequisite for SPPH 500-506, 510-514, 530-31, and 543;
- SPPH 502 is required for all Graduate Degree students in the School of Population and Public Health. However, students with equivalent preparation in epidemiological methods may be eligible for an exemption if they demonstrate excellent knowledge of the course material by performing well on an exemption exam that covers core concepts of SPPH 502, by arrangement with the course instructor prior to the course starting;
- Students in other related disciplines may take the course with approval of Dr. Dummer. However, space is limited and enrolment is based on a first come first serve basis. Final decisions on the enrolment of non-SPPH students will be made in July/August.
- A clinical/public health background is an asset but not necessary.

2. Course operation

Instructor: Trevor Dummer, PhD, Associate Professor, SPPH
Room 165, SPPH, trevor.dummer@ubc.ca

Teaching Assistants: Allison Ezzat, spph502.2016@gmail.com
Molly Sweeney Magee, spph502.2016@gmail.com

Office Hours: Instructor, by appointment
Weekly TA drop-in sessions (time/location to be arranged)

Class times: Tuesdays 2:30-5:30 PM in Lecture Theatre 101, Centre for Brain Health, 2215 Westbrook Mall. See map:

http://www.maps.ubc.ca/PROD/index_detail.php?show=y,n,n,n,n,y&bldg2Search=n&locat1=N047

Q&A related to weekly course content will be maintained on CONNECT discussion board

3. Learning Goals and Objectives

SPPH 502 provides the basis for describing and explaining disease occurrence in a community and an introduction to concepts and methods for developing, prioritizing, and evaluating public health programs.

On completion of this course students will be able to:

- Use epidemiological concepts such as person, place and time to describe the distribution and determinants of disease;
- Apply different measures of disease occurrence to examine exposure-disease associations;
- Calculate rates and risks to describe the health status of populations;
- Assess the relevance, and understand the limitations, of various research designs in the study of disease causation, the assessment of effectiveness of clinical interventions, and the distribution and general impact of health services;
- Formulate and apply logical statements of causation based on a firm understanding of the criteria for drawing causal inferences from data;
- Address threats to the validity of study design, including bias, misclassification, confounding, and effect modification;
- Evaluate the validity of screening and diagnostic tests;
- Understand issues related to measurement of prognosis of disease;
- Critically appraise published research;
- Identify, discuss and illustrate the basic principles, objectives, and elements of public health surveillance;
- Demonstrate a working knowledge of sources of population data;
- Describe standard approaches to investigations of disease outbreak;
- Formulate an approach, based on sound epidemiological principles and methods, to etiologic and health services questions of public health importance.

4. Course Structure

Lectures and pre-assigned readings will outline epidemiologic concepts and methods. In class quizzes (online via CONNECT), a major written assignment, a midterm exam and class discussions will provide an opportunity for the application of concepts. A discussion board on CONNECT will allow students to raise issues and discuss topics with other students, TAs and the course instructor.

We encourage the following approach to completing SPPH 502:

1. Please try as much as possible to find answers on your own first, using the textbook, assigned readings and other resources
2. Use of the discussion board is highly encouraged; please help answer each others' questions
3. If you still require assistance, please come to one of the scheduled TA office hours
4. Contact Dr. Dummer if you are still struggling after trying the above avenues

5. Text book and Course Materials

Gordis L. Epidemiology, 5th edition. Philadelphia, Sanders, 2014. The course syllabus, lecture slides, additional readings and review material will be available on CONNECT.

6. Student Evaluation

Students will be evaluated according to their performance on 4 in class (online) quizzes (20%), a structured midterm exam (40%), a major written assignment (40%).

In class/Online assessments/quizzes (20%)

Students will be required to complete 4 assessments (i.e., quizzes) during the course of the term. Each quiz will contribute 5% towards students' final grade for a total contribution of 20% and will be held in class via the CONNECT system:

Please ensure you bring a laptop, tablet or other wifi-enabled device to the class to ensure you can login to CONNECT.

The quiz schedule is listed below, although these may change once the course is underway.

Exam (40%)

The midterm exam will be held on Tuesday Nov 1, 2016 (week 9 of term) and will focus on core concepts of epidemiology covered in the previous 8 classes. The exam is worth 40% of your final grade and you can bring a formula / key concepts sheet (maximum of 3 pages, and you can use both sides of the sheet for your notes). Questions are a mix of long and short answer. You should bring a calculator. An example mid-term exam with model answers will be provided to help you prepare.

Major Written Assignment (40%)

The major assignment is worth 40% of the final grade and is due by Monday Dec. 12, 2016. The goal is for each student to apply the epidemiological skills they have learned in the course. Each student will identify a problem (clinical or public health question) in their field of choice and identify 3 relevant peer-reviewed scientific papers to answer their question. They will need to critically appraise the papers and consider the application of the evidence to practice—i.e. what knowledge gained could be passed to relevant stakeholders (e.g., clinical leads, public health officials or policy makers). Guidance, a marking rubric and example papers will be provided.

7. Course Schedule

Week 1 (Sept. 6): Course overview: The epidemiologic approach

- Gordis, Ch. 1

Week 2 (Sept. 13): Measures of disease frequency: Incidence and prevalence

- Gordis, Ch. 3

Week 3 (Sept. 20): Measures of disease risk: Comparison and standardization of rates, risk, absolute and relative measures of effect

- Gordis, Ch. 4, 11,12
- **Quiz 1**

Week 4 (Sept. 27): Design of experimental studies

- Guest speaker: Dr. Joel Singer, Professor SPPH
- Gordis, Ch. 7, 8

Week 5 (Oct. 4): Design of observational studies

- Note change of venue to Michael Smith Lab and timing 2:30 - 4: 30.
- Gordis, Ch. 9, 10, 13.
- **Quiz 2**

Week 6 (Oct. 11): Threats to the validity of studies: Part 1

- Guest speaker: Dr. Jacek Kopec: Senior Scientist at the Arthritis Research Centre of Canada and Professor in SPPH
- Gordis, Ch. 14, 15

Week 7 (Oct. 18): Threats to validity of studies: Part 2

- Gordis, Ch.14, 15
- **Quiz 3**

Week 8 (Oct. 25): Evaluation of screening tests

- Guest speaker: Chris Richardson, Associate Professor SPPH
- Gordis, Ch. 5, 6, 18.

Week 9 (Nov. 1) Mid-term exam: Core concepts of epidemiology (40% of final grade)

Week 10 (Nov. 8): Public Health Surveillance: Health registries, administrative databases and Population Health Surveys

- Guest Speaker: Dr. John Spinelli; Head of Cancer Control Research, BC Cancer Agency and Professor, SPPH
- Gordis Ch. 3

Week 11 (Nov.15): Causation, evidence based medicine and critical appraisal.

- Guest speaker: Pauline Voon, PhD Candidate, SPPH
- Gordis, Ch.19, 20

Week 12 (Nov. 22): Application of epidemiologic methods to outbreak investigation

- Gordis, Ch. 2, 3
- **Quiz 4**

Week 13 (Nov. 29): Review of core concepts and discussion of new directions

- Guest speaker: Dr. Jennifer Gardy; Assistant Professor, SPPH; Canada Research Chair in Public Health Genomics; Senior Scientist, BC Centre for Disease Control
- Gordis, Ch. 16

Monday Dec. 12th : Hard Copy of Written Assignment due at SPPH Reception Desk by 4:30 PM

8. Important notes on grading standards, late assignments and academic integrity

Grading standards

Assessment for SPPH 502 is a mix of multiple choice quizzes, a midterm exam with short and long answers, and a final written assignment. A detailed marking rubric will be provided for the written assignment but the following describes the overall grading scheme at UBC.

A Level (80% to 100%)

A+ is from 90% to 100%: It is reserved for exceptional work that greatly exceeds course expectations. In addition, achievement must satisfy all the conditions below.

A is from 85% to 89%: A mark of this order suggests a very high level of performance on all criteria used for evaluation. Contributions deserving an A are distinguished in virtually every aspect. They show that the individual (or group) significantly shows initiative, creativity, insight, and probing analysis where appropriate. Further, the achievement must show careful attention to course requirements as established by the instructor.

A- is from 80% to 84%: It is awarded for generally high quality of performance, no problems of any significance, and fulfillment of all course requirements.

B Level (68% to 79%)

This category of achievement is typified by adequate but unexceptional performance when the criteria of assessment are considered. It is distinguished from A level work by problems such as:

- One of more significant errors in understanding
- Superficial representation or analysis of key concepts
- Absence of any special initiatives
- Lack of coherent organization or explanation of ideas.

The level of B work is judged in accordance with the severity of the difficulties demonstrated. B+ is from 76% to 79%, B is from 72% to 75%, and B- is from 68% to 71%

C Level (55% to 67%)

Although a C+, C, or C- grade may be given in a graduate course, the Faculty of Graduate Studies considers 68% as a minimum passing grade for doctoral graduate students.

Late assignments

The final written assignment is due to be submitted to the reception desk at SPPH on time and on the designated due date. Typically, no late assignments will be accepted. Extensions of the due date for the written assignments will be considered pending extenuating circumstances with the approval of the instructor. The instructor will require documentation of extenuating circumstances (medical certificates, etc.). Assignments submitted later than the due date will be penalized 10% of the possible grade for each day past due (i.e. one minute past the due date/time is considered a day late).

Academic Integrity

UBC Vancouver Senate Curriculum Committee recommends that the following academic integrity statement is included in course syllabi distributed to students.

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

A more detailed description of academic integrity, including the University's policies and

procedures, may be found in the Academic Calendar at:

<http://calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0>

Students are expected to know what constitutes plagiarism, that plagiarism is a form of academic misconduct, and that such misconduct is subject to penalty. Please review the Student Discipline section of the UBC Calendar, available online at:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,959>

UBC Plagiarism Resource Centre for Students: www.library.ubc.ca/home/plagiarism/