

SPPH 502: Epidemiological Methods I

Syllabus – Fall, 2018

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; space is limited and enrolment is based on a first come first serve basis. Final decisions on the enrolment of non-SPPH students are 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: Sophie Kitchen, spph502.2018@gmail.com
Sanjana Mitra, spph502.2018@gmail.com

Office Hours: Instructor, by appointment
Weekly TA drop-in sessions (Room B132, SPPH, Monday 2-3pm)

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

http://maps.ubc.ca/PROD/index_detail.php?show=y,n,n,n,n,y&bldg2Search=&locat1=465

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

3. Learning Goals and Objectives

SPPH 502 provides the basis for describing and explaining disease occurrence in populations and an introduction to the 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 study designs for the analysis 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 CANVAS), a midterm exam, a final major written assignment, and class-based discussions will provide an opportunity for the application of concepts. A discussion board on CANVAS 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. Please come to class prepared by reading the assigned Gordis chapters and other material presented on CANVAS
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 still require support 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 CANVAS. It is essential that you read the assigned chapters from Gordis prior to each class.

6. Student Evaluation

Students will be evaluated according to their performance in: (i) 5 in-class (online) multiple choice quizzes (25%), (ii) a structured midterm exam (35%), (iii) a final written assignment (40%).

(i) In-class quizzes (25%)

Students will be required to complete 5 assessments (i.e., quizzes) during the course of the term. Each quiz is multiple choice in format and contributes 5% towards students' final grade for a total contribution of 25%. Quizzes are held during class via the CANVAS system.

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

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

(ii) Exam (35%)

The midterm exam will be held on Tuesday Oct 30, 2018 (week 9 of term) in class and will focus on the core concepts of epidemiology covered in the previous 8 classes. The exam is worth 35% 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 midterm exam with model answers will be provided to help you prepare. The exam is scheduled to be completed in 2.5 hours but you will have the full 3 hours of class time to complete the exam.

(iii) Final Report (major written assignment) (40%)

The major assignment is worth 40% of the final grade and is due by Monday Dec. 10, 2018, 11:59pm (submitted online via CANVAS). 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. 4): Course overview: The epidemiologic approach

- Gordis, Ch. 1

Week 2 (Sept. 11): Measures of disease frequency: Incidence and prevalence

- Gordis, Ch. 3

Week 3 (Sept. 18): Measures of disease risk: Comparison and standardization of rates, risk, absolute and relative measures of effect

- Gordis, Ch. 4, 11,12
- **Quiz 1** (weeks 1 through 3)

Week 4 (Sept. 25): Design of experimental studies

- Guest speaker: Dr. Quynh Doan, Clinician Scientist BCCHRI
- Gordis, Ch. 7, 8

Week 5 (Oct. 2): Design of observational studies Part 1

- Gordis, Ch. 9, 10, 13.
- **Quiz 2** (weeks 4 and 5)

Week 6 (Oct. 9): Design of observational studies Part 2; Threats to the validity of studies Part 1

- Gordis, Ch. 14, 15

Week 7 (Oct. 16): Threats to validity of studies Part 2

- Guest speaker: Dr Jacek Kopec, Professor SPPH
- Gordis, Ch.14, 15
- **Quiz 3** (weeks 6 and 7)

Week 8 (Oct. 23): Evaluation of screening tests

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

Week 9 (Oct. 30) Mid-term exam: Core concepts of epidemiology (weeks 1 through 8). 35% of final grade

Week 10 (Nov. 6): Causation, evidence based medicine and critical appraisal; sources of data.

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

Week 11 (Nov. 13): Applications of epidemiological data and linked datasets

- **Quiz 4** (recap weeks 1 through 7 – bring all formula sheets)
- Gordis Ch. 3

Note this is a shortened session, comprising a lecture and quiz (~1.5 hours) and will be followed with an opportunity to review the midterm exam with the TAs.

Week 12 (Nov. 20): Application of epidemiologic methods to outbreak investigation

- Gordis, Ch. 2, 3
- Guest speaker: Dr David Patrick, Professor, SPPH

Week 13 (Nov. 27): Review of core concepts and discussion of new directions

- **Quiz 5** (weeks 8 through 12)
- Gordis, Ch. 16

**Monday Dec. 10th : Hard Copy of Written Assignment due by 11:59 PM –
submitted online via CANVAS**

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 online via CANVAS by 11:59pm 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/