

SCHOOL OF POPULATION AND PUBLIC HEALTH
SPPH 515- Surveillance and Monitoring in Public Health
Syllabus– Winter 2017

1. COURSE DESCRIPTION

This course is intended to provide students with a strong foundation in public health surveillance of infectious and chronic diseases, as well as an introduction to other surveillance topics, such as injury, exposure/risk factor and clinical surveillance. The course will teach the theory and practice of surveillance supported by examples of surveillance systems from British Columbia and other areas. Students will learn to: describe the principles of public health surveillance; design and evaluate a basic public health surveillance system; analyze and interpret surveillance data; describe the application of surveillance to various settings and diseases including communicable diseases, environmental health issues, chronic diseases and public health emergencies; and describe how surveillance data may be used to inform public policy.

- Three credits
- Elective
- Students in other related disciplines may take the course with approval of the course instructor
- Prerequisites for this course: SPPH 502 (Epidemiological Methods I) or equivalent graduate epidemiology course; **and** SPPH 400 (Statistics for Health Research) or equivalent graduate biostatistics course; **and** basic data manipulation skills using a statistical software package (e.g., R, SAS, SPSS).

2. COURSE OPERATION

Class: Wednesdays 0900-1200

Room: SPPH B108

Instructors: Eleni Galanis, MD MPH FRCPC, Clinical Associate Professor
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Office Hours: By appointment

Teaching assistant: Jen Guthrie
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3. LEARNING GOALS AND OBJECTIVES

SPPH 515 provides an in-depth review of concepts and methods for developing and evaluating surveillance systems and analysing and interpreting surveillance data for both infectious and non-infectious diseases.

The overall goals of this course are to:

- (a) Understand the purpose and principles of surveillance;
- (b) Identify and understand the elements required in the development of a surveillance system;
- (c) Learn how to analyse and interpret surveillance data;
- (d) Identify and measure attributes used in the evaluation of a surveillance system.

On completion of this course the student will be able to:

- (a) Identify and describe the principles, objectives and elements of public health surveillance for infectious and non-infectious diseases and conditions;
- (b) Identify and select appropriate data sources for disease and health event surveillance;
- (c) Conduct basic analysis of surveillance data
 - using appropriate graphical methods to visualise trends, patterns and data quality;
 - using the epidemiological concepts of person, place and time to describe the data;
 - calculating appropriate rates, including standardised rates;
 - developing a focused analysis plan as the cornerstone of statistical analysis; and
 - determining appropriate statistical methods to answer key analysis questions
- (d) Interpret surveillance findings taking into account potential biases;
- (e) Identify effective means to disseminate surveillance findings;
- (f) Enumerate possible actions resulting from surveillance findings and describe how they may be used to inform public policy;
- (g) Explain how to conduct surveillance in a variety of public health situations;
- (h) Identify and explain ethical and legal issues related to surveillance;
- (i) Develop a surveillance system for an emerging public health issue, adhering to key attributes for evaluating surveillance systems;
- (j) Communicate recommendations to stakeholders.

4. COURSE STRUCTURE

Lectures, combined with pre-assigned readings will outline concepts, methods and examples. Small group work, class discussions, tutorials and assignments will provide an opportunity for application of these concepts. The first half of the course will review the theory of surveillance (infectious and chronic diseases) as well as the theory and application of surveillance data analysis. The second half of the course will consist of guest lectures on various local surveillance systems as well as student group time to plan the development of a surveillance system.

5. RECOMMENDED RESOURCES

The course syllabus can be downloaded from the SPPH website. There is NO REQUIRED TEXTBOOK, only recommended textbooks, for this course. Recommended texts are listed below. A few copies of the first text will be available at the UBC bookstore and an additional copy is on reserve at the Woodward Library. Online editions of the last two texts are available through the UBC library website.

- Lee LM, Teutsch SM, Thacker SB, St. Louis ME (eds). Principles and Practice of Public Health Surveillance, 3rd edition. Oxford: Oxford University Press; 2010.
- M'ikanatha NM, Lynfield R, Van Beneden CA, de Valk H, eds. Infectious Disease Surveillance, 2nd edition. Malden MA: Blackwell Publications; 2013.
- Porta M, Greenland S, Last JM, eds. A Dictionary of Epidemiology, 5th edition. New York: Oxford University Press; 2008.

Useful URLs include:

- BC Centre for Disease Control: www.bccdc.ca
- BC population statistics
<http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography.aspx>
- PHAC Disease Surveillance Online: www.phac-aspc.gc.ca/dsol-smed/index.php
- Statistics Canada: National and provincial statistics related to diseases and health conditions:
<http://www5.statcan.gc.ca/subject-sujet/subtheme-soustheme.action?pid=2966&id=1887&lang=eng&more=0>

6. STUDENT EVALUATION

A variety of methods will be used to accumulate marks to a potential total of 100 as follows:

Distribution of Marks:

Individual Assignments	
– Analysis and Interpretation of Infectious Disease Surveillance Data	25 marks
– Analysis and Interpretation of Chronic Disease Surveillance Data	25 marks
Group In-Class Presentation - Development of a Surveillance System (Group Mark)	40 marks
Class Participation	10 marks

6.1 Assignments – Analysis and Interpretation of Surveillance Data

Students will be given two surveillance databases (in Classes 2 and 5) to work with individually for the analysis assignments. Students are responsible for cleaning the data; linking databases; calculating standardized rates; visualising trends and data quality issues; constructing an analysis plan; identifying and carrying out appropriate statistical analyses; and interpreting the findings for surveillance purposes. Students will be introduced to key concepts in working with, analysing and interpreting surveillance data during in-class lectures, examples and tutorials (Classes 3, 4, 5 and 6).

For both analysis assignments, students are required to answer a set of questions related to data sources, data quality, epidemiological (descriptive) analysis and interpretation of patterns and trends. Assignment questions involving calculations will require clear illustration of the steps involved as well as the final results; students will be asked to submit electronic spreadsheets or code illustrating their calculations. The write-ups are to be a maximum of 4 pages inclusive of the tables/figures (12 point font, single spaced, 1" margins). The infectious disease surveillance analysis report is due Jan 25 2017 by 5pm and the chronic disease surveillance analysis report is due Feb 15 2017 by 5 pm. Electronic copies are to be emailed to the instructor or the TA by the deadline. For late assignments for which there has been no prior discussion, 10% will be deducted per day (1 minute past the due date is considered a day late). The assignments are each worth 25% each of the final grade (50% in total).

6.2 Group Presentation – Development of a Surveillance System

The instructors will assign students to groups early in the term. Groups must work together to develop a surveillance system in response to a new/emerging public health issue or an existing public health issue that is in need of a surveillance system. Development of the surveillance system must include a clearly articulated surveillance purpose with target population; key surveillance system attributes; a clearly defined outcome; practical data sources/data collection procedures including data on person, place and time variables; an analysis plan including key indicators which would be derived from the data; identification of stakeholders/organizations responsible for surveillance within the public health system/infrastructure; identification of (any) ethical/legal considerations; and articulation of the key limitations of the surveillance system and methods. Groups will present their surveillance system proposal, covering the topics listed above, to the class and public health stakeholders (this will include your peers/instructors and well as invited guests from public health organizations).

Groups can select their topic for the development of a surveillance system that meets a real and current (i.e. within last 2 years or next 2 years) public health need at the local, provincial, national or international level. Potential examples include: surveillance of illness using poison centre calls after a disaster (e.g. gas spill in Haida Gwaii), surveillance of respiratory/cardiovascular disease following an environmental exposure (e.g. among firefighters in BC forest fires), surveillance of injuries during a mass gathering (e.g. 2016 Olympic Games in Rio), surveillance of overdoses associated with legalized marijuana, surveillance of an emerging multi-drug resistant strain of bacteria, ...

A one-page proposal outlining the topic for the group presentation including a description of the public health surveillance issue is due Feb 8 2017 by 5 pm. Proposals are to be emailed to the instructor or TA by the deadline. Presentations are scheduled for a maximum of one-hour duration, including 15 minutes for questions and answers on Mar 29 and Apr 5 2017 (schedule of day and time will be confirmed by the instructors). Each member of the group is expected to contribute to the oral presentation and to the Q&A session.

Presentations will be evaluated on content (75%) and format (25%) including presentation skills and clarity of slides. Marking is based on group performance as a whole and the final grade for the group will be assigned to each individual in their group. The presentation is worth 40% of the final grade.

6.3 Participation

Students are expected to attend all classes and to come to class prepared. Readings are to be completed before class and students should be ready to participate actively in class discussion and activities, to critically appraise evidence presented in class, and to offer content to the class discussion based on your readings, experiences and opinions. The instructor and guest speakers take responsibility for learning in the classroom, but as a graduate-level course you are primarily responsible for your own learning, and you will learn best by taking part in the range of activities offered in the course in a constructive and thoughtful manner.

Participation is assessed by regular attendance, active engagement (e.g. asking questions, relating readings to course content, showing evidence of having prepared for a tutorial or having worked on an assignment) and making contributions to the course content (e.g. providing critical analysis of course content based on your experiences and opinions). Please note that you are not expected to attend, engage and contribute in every single class. Rather, participation will be assessed over the balance of the course. Participation is worth 10% of the final grade.

GRADING (*adapted Dr. Dan Pratt, Depart. of Educational Studies, UBC, Graduate Course Grading Policy*):

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 or more significant errors in understanding, superficial representation or analysis of key concepts, absence of any special initiatives, or 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.

IMPORTANT NOTE

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 on-line at www.ubc.ca). Please also visit the UBC Plagiarism Resource Centre for Students (available on-line at www.library.ubc.ca/home/plagiarism/).

7. Course Schedule

READINGS WILL BE DISTRIBUTED ONE WEEK IN ADVANCE OF CLASS LECTURES.

Class	Date	Topic	Professor	Assignments
1	Jan 4	Course overview Introduction to public health surveillance	Michael Otterstatter Eleni Galanis	
2	Jan 11	Infectious disease surveillance Presentation of infectious disease assignment	Eleni Galanis	
3	Jan 18	Analysis and visualisation of surveillance data I Infectious disease surveillance data analysis tutorial	Michael Otterstatter	
4	Jan 25	Analysis and visualisation of surveillance data II Chronic disease and injury surveillance	Michael Otterstatter Kamran Golmohammadi	Infectious disease assignment due
5	Feb 1	Analysis and visualisation of surveillance data III Chronic disease assignment presentation Group work to prepare surveillance systems	Michael Otterstatter All professors	
6	Feb 8	Evaluation of surveillance systems Chronic disease surveillance data analysis tutorial	Eleni Galanis Michael Otterstatter	Proposal for surveillance system due
7	Feb 15	Perinatal health surveillance Discuss surveillance system proposals Group work to prepare surveillance systems	Lily Lee All professors	Chronic disease assignment due
8	Feb 22	Mid-term Break – No Class		
9	Mar 1	Mass gathering surveillance Group work to prepare surveillance systems	Bonnie Henry All professors	
10	Mar 8	Environmental health surveillance Group work to prepare surveillance systems	Sarah Henderson All professors	
11	Mar 15	Overdose and illicit drug use surveillance Group work to prepare surveillance systems	Jane Buxton All professors	
12	Mar 22	Mental health surveillance Group work to prepare surveillance systems	Joseph Puyat & Travis Hottes All professors	
13	Mar 29	Presentations on surveillance systems	Students	Group presentations
14	Apr 5	Presentations on surveillance systems	Students	Group presentations