

SPPH 522: Topics in Environmental Health (2015)

Room B108, School of Population and Public Health, UBC.

Instructor: Anders Erickson, PhD

Tel 604-822-9763 e-mail: anders.erickson@**ubc.ca** Office: 370A SPPH, 2206 East Mall

Course Description: This course is a survey of approaches to effectively understand and assess environmental health topics and offers an introduction to specific issues of importance to the public health practitioner. Environment is approached as one of the determinants of health for individuals and human populations and framed to consider implications across cultures in Canada and globally. Methods for the evaluation of environmental health are introduced, including: exposure assessment, toxicology, epidemiology, risk assessment and standards. Exposures to chemical, biological and physical hazards in air, water, food, consumer products and soil/solid waste are considered while global climate change, sustainability, and urban/ecosystem health are included as overarching issues. The course emphasizes prevention rather than treatment of human illness with specific emphasis on measures and programs currently in place in Canada to address risks from environmental hazards.

Course Format SPPH 522 is a blended course, which means that you will be working with your instructor and fellow students both within CANVAS and 3 face-to-face full day seminars. Resources are available for students unfamiliar with CANVAS. It is necessary for you to participate fully in all parts of this course to successfully complete it. Lectures by the instructor and online material, combined with pre-assigned readings and resources, will outline key issues and concepts in Environmental Health. All components of this course have been designed to provide an opportunity for application of these concepts.

The online component includes course materials, activities, class discussion and additional readings to provide you with the necessary components for achieving a sufficient level of understanding. There are a total of three (3) online modules which will be distributed over the entire term. The face-to-face component will focus on in-class discussions lead by the instructor, active learning exercises, and student presentations. Student presentations (15 min each) will consist of a current topic that will be followed by in-class discussion moderated by the presenters.

Course Readings The required text for this course is **Environmental Health: From Global to Local** edited by Howard Frumkin (2nd Edition, 2010). The text, while US-focused, has a more global perspective than most texts and best used as a reference to describe general principles and concepts. Links to more specific and more Canadian material will be posted on CANVAS and highlighted during class discussions. A limited number of copies of the text have been pre-ordered and are available at the UBC Bookstore (in the SPPH section). Free (unlimited) online access to the text is available via the Vancouver Public Library (the online version has no page numbers, so chapter/section headings have been added to the syllabus to find the relevant sections). Reading requirements for specific sessions are listed in the online material and on the course schedule. In addition, there are links to an extensive list of additional readings and to related news items on the course website (including an archive of news stories from the past 4

years). These are especially useful for student presentations and assignments to provide more detailed/current information on specific topics.

CANVAS Course website

The course site will include all course materials as well as student presentations. Students are required to post their presentation to the CANVAS course site by 10 p.m. on the day before their in-class presentation. News items of interest and related to course material (see above) will also be posted on the website along with optional, but recommended, readings. Detailed Learning Objectives and Discussion Questions for each weekly session will be posted on the course CANVAS site (<https://canvas.ubc.ca/courses/1746>).

Learning Objectives, Modules and Topics

At the completion of the course, students are expected to be able to:

- Discuss environmental determinants of health within the population health paradigm.
- Explain the main scientific and legal approaches used to assess potential environmental health hazards. Discuss the benefits and limitations of these approaches with reference to specific hazards. Describe the major agencies/organizations involved in environmental health protection in Canada and internationally and explain their basic responsibilities.
- Explain how risks are perceived by the public and how risk perception can be incorporated into the management of environmental health risks
- Describe fundamental principles by which contamination of specific media (air, water, soil, food) may impact human health. Support this description with specific examples.
- Discuss examples of the effectiveness of interventions to mitigate impacts of environmental contamination on human health.
- Discuss major human health impacts associated with global environmental change, including an understanding of important uncertainties.
- Explain the linkages between public and ecosystem health and apply the ecosystem approach to health to the management of an emerging environmental health hazard.
- Analyze at least one current environmental health issue of concern to assess its potential health significance and the scientific, social and legal/political approaches to its management.

Module 1: Introduction to Environmental Health / Environmental Health Tools

1.1 – Introduction to Environmental Health

- a. Describe the general role and magnitude of environmental influences on health in Canada and globally
- b. List and define common metrics used to assess disease burden
- c. List and describe key determinants of health

1.2 – Tools

- a. Demonstrate the application of exposure assessment, geospatial analysis, toxicology and epidemiology to the assessment of environmental health hazards

1.3 – Risk Assessment, Perception, Communication, and Management

- a. Describe the basic components of the risk assessment/risk management paradigm used by many government agencies
- b. List some common uses of risk assessment
- c. Perform a simple risk assessment for an environmental hazard
- d. List key factors influencing public perception of risk to explain how a given risk source is likely to be perceived

1.4 – Environmental Health in Canada: Federally and Locally

- a. Differentiate and describe the roles of major Canadian agencies/organizations involved in the protection of environmental health
- b. List and describe the services provided through Health Protection programs in Regional Health Authorities
- c. Discuss how Health Protection services provided by Regional Health Authorities align with services provided and regulations enforced by other levels of government and departments other than Health

Module 2: Media-Specific Environmental Contamination

2.1 – Food Contamination and Food Security

- a. Describe the major sources of foodborne illness in Canada
- b. List the major regulatory and other programs designed to protect food safety in Canada and describe their respective roles
- c. Provide examples of linkages between the food production system and health, and discuss how changes in these systems relate to health risks

2.2 – Water

- a. List the major drinking water contaminants of concern in the context of a source to tap approach to drinking water quality
- b. Describe and provide an example of the multi-barrier approach to the protection of drinking water
- c. Provide examples of health impacts in BC, Canada and globally related to drinking water contamination

2.3 – Waste Management and Soil

- a. Classify the various types of waste and describe the environmental health concerns associated with each
- b. List pathways by which solid waste and soil can impact human health

- c. Discuss the policy challenges associated with the management of contaminated sites

2.4 – Outdoor Air

- a. Describe the major air pollutants that contribute to population health impacts
- b. Discuss the types of evidence suggesting relationships between air pollution and mortality
- c. Explain the general mechanisms by which particulate matter exposure affects cardiovascular disease

2.5 – Indoor Air

- a. Describe the major air pollutants that contribute to population health impacts
- b. Discuss the utility of traditional hygiene approaches and exposure limits with regard to typical indoor air quality issues
- c. Discuss management strategies for specific indoor air quality issues of concern

2.5 – Physical Hazards

- a. Describe the major source of exposure to ionizing and non-ionizing radiation
- b. Describe health risks associated with community noise exposure
- c. Discuss the application of the precautionary principle with respect to exposure to physical hazards

Module 3: Climate Change, Sustainability and other Global Issues

3.1 – Climate Change and other Global Issues

- a. Provide examples of current and past global environmental health issues of importance
- b. Describe the successes, failures and tradeoffs in addressing global environmental health issues
- c. List the major health impacts associated with climate change – globally and in Canada, including estimates of relative uncertainty of occurrence

3.2 – Disaster and Learning from Mistakes

- a. Describe general trends in occurrence and impact of natural and technological disasters
- b. Discuss common factors inherent in major technological disasters
- c. Describe what happened in significant technological disasters of the last 50 years, including examples of lessons learned

3.3 – Sustainability and Ecosystem Health

- a. Provide a working definition of sustainability and apply it to global and local contexts
- b. Describe the major barriers to global sustainability and their general trends over time

- c. Discuss the ecosystem approach to health and compare it to the traditional biomedical approach
- d. Discuss trends in major indicators related to global sustainability and health

Assessment of Student Performance

Assessment of student performance will be through participation in class discussions, selected topic oral and written presentation, assignments and a take-home final examination:

- Assignments (3) 45%
- Oral Presentation 20%*
- Written Briefing Note 15%*
- Online posts and discussions (participation, thought and effort) 10%
- Participation - in class 10%

*described in detail in separate document

Regular attendance is expected from all students. Poor attendance and/or poor participation in class discussions will be reflected in marks for participation. If you are unable to attend a class meeting it is the student's responsibility to notify the instructor in advance (whenever possible). No late assignments will be accepted without approval in advance from the instructor. UBC accommodates students whose religious obligations conflict with attendance, submitting assignments, or completing scheduled examinations. Please let the instructor know in advance, preferably in the first week of class, if you will require any accommodation on these grounds.

A portion of each written assignment/exam will require the use of additional resources besides the course text. Many relevant readings are already posted on the course website which will continue to be updated throughout the course.

Your participation mark will be based upon your active contribution to class discussions. For a participation mark of 75% you are expected to speak at least once (a comment or a question) in **every** class session and provide at least one comment for each online discussion. Higher participation marks require sustained contributions to discussions and/or bringing insight from your own reading or experiences to discussions.

Laptop/tablet/phone etiquette

Feel free to use your laptop/tablet/smartphone **for activities directly related to the class** including note taking or reference to the readings. Using your laptop/tablet/smartphone while the class is in progress for non-class related activities such as email, social media or looking up unrelated web pages is not allowed. These practices are disrespectful to the instructor and to other students, and are distracting and disruptive. Texting, answering or making phone calls during class is also prohibited.

Illness/ flu/H1N1

As per UBC policy, those displaying flu symptoms are being advised to self-isolate, which means staying home and limiting contact with others, including not going to work/school for at least 24 hours after the fever is gone. Students who display flu symptoms should contact the instructor as soon as possible regarding assignments and class attendance. Without advance notification of class absence, no consideration will be given for late assignments or missed class sessions (i.e. students will be given a zero for participation and any assignments that are due).

Academic Dishonesty:

It is the responsibility of all students to review the UBC Calendar “Academic regulations” for the university policy on cheating, plagiarism, and other forms of academic dishonesty. You may also wish to visit <http://www.arts.ubc.ca/arts-students/plagiarism-avoided.html> for useful information on avoiding plagiarism and on correct documentation. For assignments, students may work together/in groups but responses to questions must be unique, individual, and in your own words.

Accommodation for students with disabilities

If you have a learning, psychological or physical disability, you may be eligible for reasonable academic accommodations or services. To request accommodations or services, please contact the UBC Access and Diversity Office.

Student Presentations - See separate document

*Contact or visit the **Sustainability Education Resource Centre** in CIRS for information on other sustainability-oriented courses, events, and opportunities.
Website: www.sustain.ubc.ca/resourcecentre
Follow UBC Sustainability on Facebook and Twitter at “SustainUBC”*