

Acknowledgement

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

Course Information

Course Title	Course Code Number	Credit Value	Location
Environmental Impacts on Human Health	381C	3	Life Sciences Centre (LSC), Room 1003
Prerequisites			
None			
Corequisites			
None			

Contacts

Course Instructor(s)	Contact Details	Office Location	Office Hours
Matilda van den Bosch	E-mails: matilda.vandenbosch@ubc.ca or Canvas e-mail (likely to respond within 1-2 working days)	SPPH 366 B	By appointment (send TA Verena Rossa-Roccor an e-mail and we will arrange it)
Course Instructor Biographical Statement			
http://www.spph.ubc.ca/person/matilda-van-den-bosch/ https://profiles.forestry.ubc.ca/person/matilda-van-den-bosch/			

Other Instructional Contributors

Teaching Assistant Verena Rossa-Roccor: verena.rossa-roccor@ubc.ca

Guest lecturers:

- Michael Brauer
- Hugh Davies
- Karen Bartlett
- Larry Frank
- Ingrid Jarvis

- Zoe Davis

Course Structure and Description

Course website: Canvas

The course is structured around in-class lectures, in-class discussions, seminars and group exercises.

The course builds upon the concept of **ecological public health** to cover environmental factors as determinants of health of individuals and populations. It will take an integrative approach to how our surrounding environment influences various domains of health and wellbeing, covering local, regional, and global health contexts. Scientific theories, research, and implications of the environment's impact on human health will be outlined. Biological mechanisms and pathways will be explained together with contextual mediators. The focus is on health protection and promotion as well as disease prevention. Both hazardous environmental conditions and environmental "good" will be discussed. A strong focus will be on **contemporary challenges** related to environmental issues and human health and related policies. These challenges refer to, for example, urbanization, climate change, and future sustainability. The course will elaborate on potential solutions to these challenges through incorporation of ecological principles in public health policy and practice.

Learning Outcomes

By the end of the course, you will be able to:

- Identify environmental determinants of health and describe variations between populations in a global context.
- Summarise and compare different ecological principles of relevance for public health, such as Ecosystem Services, Planetary Health, and One Health
- Outline and explain health threats related to harmful environmental exposures
- Outline and explain environmentally related hazards, such as natural disasters, allergenic pollens, and vector-borne diseases
- Outline and explain health promoting factors related to beneficial environmental exposures, such as green and blue spaces
- Discuss urbanisation, climate change, and environmental degradation and reflect on the impact on the global disease scenario
- Suggest practical solutions for planning and creating healthier, sustainable cities
- Analyze and discuss evidence and policy approaches related to healthy urban environments
- Analyze in depth at least one contemporary issue related to environmental impacts on health, including its potential health significance and the scientific, social and legal/political approaches to its management.

Mandatory Course readings

- Assigned chapters in: *Global Environment Outlook – GEO-6: Healthy Planet Healthy People*. Cambridge University Press. UN Environment (2019). Available free of charge online: <https://www.unenvironment.org/global-environment-outlook>
- Texts, video and online material as outlined in the schedule and on Canvas. Additional material or changes may occur as the term proceeds.

Optional course readings

- Hanna-Attisha et al. (2016). The [Flint Drinking Water Crisis](#). Am J Public Health. 106(2):283-290
- United Nations Environment Programme (2016-12): [Fostering and Communicating Sustainable Lifestyles: Principles and Emerging Practices - Full Report](#)
- The Guardian (2019): [For the sake of our health we need to kick the indoor habit](#).
- The Guardian (2019): [Health effects of eating microplastics](#).
- The Guardian (2019): [The world's rivers awash with dangerous levels of antibiotics](#).
- The Guardian (2019): [Is modern life poisoning us?](#)
- The Guardian (2019): [Living a low carbon life](#).
- WHO (2019): [Strategy on Health, Environment, and Climate Change](#).

Optional videos:

- TED talk: [The global agricultural revolution](#)

Co Newsletters, strongly recommended to sign up for!

- [National Collaborating Centre for Environmental Health](#)
- [Canadian Association of Physicians for the Environment](#)
- [Health and Environment Alliance, HEAL](#)
- [Science for Environment Policy](#)

Course Schedule (all lectures and seminars will take place in LSC 1003, except Field trip to Botanical Garden, Oct 30)

***IMPORTANT: Students should ALWAYS refer to the Canvas site for the most updated reading assignments and information on exercises or potential changes in the schedule**

Week, session, and date	Instructor/TA	Topics	Readings/viewings to do in advance of lecture/seminar
1.1. 4/9	vdB	Course introduction <ul style="list-style-type: none"> Expectations Goals Schedule and readings 	Video: Your health depends on where you live

		<ul style="list-style-type: none"> ○ Overview of course contents ○ Questions 	
2.1. 9/9	vdB/RR	Lecture I Planetary health	<ul style="list-style-type: none"> ○ Horton & Lo (2015). Planetary health: a new science for exceptional action. The Lancet. ○ Whitmee et al. 2015. Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–Lancet Commission on planetary health. The Lancet 386:1973–2028. https://www.thelancet.com/journals/lan/article/PIIS0140-6736(15)60901-1/fulltext
2.2. 11/9	RR	Seminar I: The Global Burden of Disease, GBD	Gapminder video, Hans Rosling: “The seemingly impossible...”
3.1. 16/9	Dr Karen Bartlett	Lecture II A One Health lens on the emergence of <i>Cryptococcus gattii</i> .	<p>FAO. Global Animal Disease Intelligence Report (2017).</p> <p><i>Optional:</i> Are you interested in more? Read the International Journal of One Health</p>
3.2 18/9	RR	Seminar II: How disease scenario depends on place and geography	
4.1. 23/9	Dr Larry Frank	Lecture III Urban health and built environment	Nieuwenhuijsen & Khreis (2019). Urban & Transport planning, environment, and health. (pp. 3-17) (From: “Integrating Human Health into Urban and Transport Planning: A Framework”) [pdf provided on Canvas]
4.2. 25/9	Ingrid Jarvis/ Zoe Davis	Seminar III: A local perspective	
5.1. 30/9	vdB	Lecture IV Natural disasters and human health	Noji et al. (2018). The health impacts of natural disasters. (From: “The Oxford Textbook of Nature and Public Health”) [pdf provided on Canvas]
5.2.	RR	Seminar IV:	

2/10		Environmental disasters and health impacts	
6.1. 7/10	Dr Michael Brauer	Lecture V Harmful environmental exposures I <ul style="list-style-type: none"> Outdoor air pollution Indoor air quality 	GEO-6 Chapter 5: Air (pp. 107-134) + Chapter 12: Air Policy (301-320) Available free of charge online: https://www.unenvironment.org/global-environment-outlook
6.2. 9/10	RR	Seminar V: <ul style="list-style-type: none"> Communication outside academia Preparation for final assignments and Q/A 	
14/10	HOLIDAY: THANKSGIVING		
7.2. 16/10	RR	Seminar VI: Debating environmental health	Video: Malaria and the Silent Spring
8.1. 21/10	Dr Hugh Davies	Lecture VI Harmful environmental exposures II <ul style="list-style-type: none"> Water pollution Noise 	<ul style="list-style-type: none"> GEO-6. Chapter 9: Freshwater. (pp. 235-269) + Chapter 16: Freshwater Policy (pp. 399-420) Available free of charge online: https://www.unenvironment.org/global-environment-outlook Basner et al. 2014. Auditory and non-auditory effects on noise on health. The Lancet. <p><i>Optional:</i> Hanna-Attisha et al. (2016). The Flint Drinking Water Crisis. Am J Public Health. 106(2):283-290</p>
8.2. 23/10	RR & vdB	Midterm exam	
9.1 28/10	vdB	Reading quiz I Lecture VII Biodiversity and human health	<ul style="list-style-type: none"> GEO-6 Chapter 6: Biodiversity (pp. 141-168) + Chapter 13 Biodiversity Policy (pp. 323-344) Available free of charge online: https://www.unenvironment.org/global-environment-outlook Rook (2018). Microbes, the immune system, and the health benefits of exposure to the natural environment. (From: "The Oxford Textbook of Nature and Public Health") [pdf provided on Canvas]
9.2. 30/10	RR	Seminar VII: Botanical garden field trip	

10.1. 4/11	RR & vdB	Reading quiz II Lecture VIII Food systems, health, and the environment	<p>Willett et al. (2019). Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. The Lancet 393:447-92.</p> <p><i>Optional (very useful online resources):</i></p> <ul style="list-style-type: none"> o https://foodplanethealth.org/ o https://eatforum.org/about/ o https://www.thelancet.com/commissions/EA I <p><i>Optimal reading/video:</i></p> <ul style="list-style-type: none"> o The Guardian (2019): Health effects of eating microplastics. o TED talk: The global agricultural revolution
10.2. 6/11	RR	Seminar VIII: <ul style="list-style-type: none"> o Urban food systems o Interdisciplinary partnerships o Policy development 	
12/11	HOLIDAY: REMEMBRANCE DAY		
11.2 13/11	vdB	Reading quiz III Lecture IX Climate change and human health impacts	<ul style="list-style-type: none"> o McMichael. (2018) Population health deficits due to biodiversity loss, climate change, and other environmental degradation. (From: "The Oxford Textbook of Nature and Public Health") [pdf provided on Canvas] o The Guardian (2019): Thousands could die if global heating is not curbed. <p><i>Optional reading:</i></p> <ul style="list-style-type: none"> o The Guardian (2019): Living a low carbon life. o WHO (2019): Strategy on Health, Environment, and Climate Change.
12.1 18/11	vdB	Reading quiz IV Lecture X Natural environments and impacts on health	<p>van den Bosch (2017). Natural Environments, Health, and Well-Being. (From: "The Oxford Research Encyclopedia.")</p> <p><i>Optional reading:</i></p> <p>The Guardian (2019): For the sake of our health we need to kick the indoor habit</p>
12.2. 20/11	RR	Seminar VIII: <ul style="list-style-type: none"> o Urban green space qualities for health o Ecosystem services 	
13.1. 25/11	vdB	Reading quiz V Lecture XI	<ul style="list-style-type: none"> o Brulle & Pellow (2006). ENVIRONMENTAL JUSTICE: Human Health and Environmental

		Environmental justice and health across the globe	Inequalities . Annual Review of Public Health 27:103-124 ○ Wakefield and Baxter (2010). Linking Health Inequality and Environmental Justice: Articulating a Precautionary Framework for Research and Action . Environmental Justice 3(3)
13.2. 27/11	RR & vdB	Summing up the course, video presentations, and course evaluation!	

Learning Activities and Assessments

The percentage in parenthesis indicate the proportion of your final grade that will be attributed to the respective activity/assignment.

Reading quizzes (15%). Five quizzes will be held at the beginning of each lecture during the second part of the term, after the mid-term exam. The quizzes will cover contents from the required readings you are supposed to prepare for the respective lectures (NOT the past lecture!). The goal of the quizzes is to improve your understanding and knowledge of the course topics and to make it easier for you to remember in the future. Questions will be in the format of short answers and multiple-choice and will be conducted on the Canvas platform. Please bring your laptops!

Quizzes will start on time (4.00pm) and last 15 minutes. Late arrival results in shorter time to complete the quiz.

Research shows that active reading and preparing for tests improve memory function and this means that you will have better use of what you have learnt in future studies, jobs, and commitments.

Assessment: Each quiz will include three questions, adding up to 15 points for all three quizzes.

Midterm exam and evaluation (20%). The midterm exam will concern the topics we have covered during the course so far (up to October 23), including material from the readings and contents from lectures and seminars. The format will be mostly multiple-choice and short answer questions. A few example questions will be provided on Canvas ahead of the test. The purpose with the midterm exam is to make sure that you are updated on the course contents, that you have grasped the main concepts of some environmental determinants of human health, and to help you be better prepared for incorporating your knowledge in the writing and video assignments.

Example questions will be provided on Canvas ahead of the exam.

Assessment: maximum score, which will be weighted as 20% of the final grade, will be achieved by correct answers to all of the questions.

In-class seminars (10%). The seminars held on Wednesdays during the course are important parts of your learning. They will provide hands-on examples of current issues in environmental health and give you the opportunity to discuss various topics of importance for anyone with interest in the interactions between the environment and human beings. The seminars will take different formats and will include exercises such as games, assessment of own environmental exposures, communication practice, policy studies, and perhaps most importantly – opportunities for questions, discussions, and debates. Attendance and active participation in the seminars are fundamental for the value of the course and for giving you a deeper understanding of the contents. Your TA and instructor will participate in the seminars and join discussions and provide feed-back on your exercises. You are expected to come prepared to the seminars, so that you are able to engage and develop your knowledge together with your peers. As a university student, you are expected to take responsibility for your own learning, why it is assumed that you will participate actively and make best use of the course.

Assessment: Attendance will be checked and you will receive one point per each attended seminar adding up to nine points for attending all of them. You will also receive one point for attending the wrap-up discussion during the last day of the course. Particularly active, insightful, and engaged participation during the seminars will be rewarded.

Written assignment (30%): Due 29/11

The goal with this assignment is to integrate the knowledge you have achieved in the course and to use it in a real-life scenario where you get the chance to discuss current problems and potential solutions.

Your specific task is to formulate a policy brief regarding an environmental issue/opportunity with impact on human health. Select a topic related to the course contents and that is personally meaningful to you. Don't know where to begin? Start with a Google search and a critical review of material! I also strongly recommend to get in contact with someone at an advocacy organisation to get a better understanding of what policies to actually advocate for.

Purpose. At its core, the purpose of a policy brief is to objectively inform an audience about a problem/opportunity, the underlying causes of the problem/opportunity, and analyze and offer specific policy solutions to the problem or how to use the identified opportunity, all with the aim of improving human health in a sustainable manner.

Format. 1,000 words (~ 2 pages), including references, tables, and figures.
Include the following sections:

Executive summary. 3 sentences. What's the problem? What's the underlying cause of the problem? What's the policy solution? Make sure you define the audience/recipient(s) of your policy brief.

Background. What is the scope and severity of the problem? What are the contributing factors to the problem? What policy solutions currently exist and how have they been working?

Analysis of policy options. At least 2 options.

- *Strengths*
- *Limitations*

Recommendations. Based on your objective analysis of existing policy options, what do you recommend and why? What would be the most important operational steps for the audience/recipient(s) of your brief to take?

Style. APA. Evidence-based. All factual claims must be supported with evidence. Written for a lay audience.

General tips for writing the brief:

- State your key message at the start;
- Avoid using any academic or discipline specific jargon;
- Use headings and sub-headings to break up large blocks of text and ensure clarity;
- Use figures, charts or diagrams to help illustrate main points or key message;
- Presentation needs to be professional. Use appropriate fonts and headings;
- Make sure you proof-read your brief to avoid any spelling or grammar mistakes;
- A good idea is to share your drafts with a peer student and help each other to improve the text!

More good tips on how to write a Policy brief: <https://writingcenter.unc.edu/policy-briefs/>

Assessment:

- Clear problem statement and sound, evidence-based outline of background with proper references to relevant literature (8%).
- An in-depth analysis of policy options, with a critical discussion of current policy being implemented, emphasising strengths and limitations. Demonstrating a clear understanding of the policy and why it may be inadequate (12%).
- A detailed, specific, and evidence-based outline of necessary changes and recommendations for improving the situation for both human and environmental health (8%)
- Well-written in correct and succinct language – professional and accessible for the audience. Proper reference management (4%)

Video projects (25%): Due 20/11

You will work in pairs on this assignment. **The task for each pair of students is to produce a 3-5 minutes narrated slide presentation (e.g. Power Point) or video based on a selected environmental health topic** (a list of topics will be posted on Canvas).

The topics address various aspects of interactions between the environment and human beings and how these interactions may influence health. In your video you will also often have to

consider policy responses, recommendations, current state of evidence and other issues that will link data and facts to real-life situations. The goal is to give you a chance to get a deeper insight into a specific issue that interests you and to improve your understanding of, for example, contemporary management processes and legislations. A few example videos will be shared on Canvas to give you an idea of how it may look. Remember, however, that this is your chance to be creative and explore and present a topic in a unique way and that appeals to you and your peers! Consider your audience to be fellow students with little or no knowledge of the topic before.

To complete this assignment, you and your learning partner will need to identify and complete additional readings (e.g. media reports, and news and review articles where available). Be prepared to use databases such as PubMed, Scopus, Web of Science. The UBC library is a great resource for finding literature! Remember that sometimes you may need to look outside the scientific literature, for example media reports, news articles, government reports, and policy documents.

Depending on the character of your selected topic the approach will vary slightly. In general, however, the presentation should clearly identify key issues, include a discussion of the tools used to address the problem (i.e. exposure assessment techniques, major epidemiological/toxicological evidence related to the problem), the legal, political, and social issues affecting the problem and its management, and identification of the major agencies (government and non-governmental) involved.

Share the work equally between you! One suggestion is that one student is responsible for the knowledge review and the other student oversees the part related to approaches/arguments/solutions. If you have problems with sharing the work load equally between you, please contact your TA and/or instructor!

Assessment. The video will be evaluated based on the following:

- The quality and thoroughness of your literature study (10%). To achieve 10 points, the scientific background shall be correctly and clearly presented. For example, limitations in current scientific understanding shall be addressed and evaluated. The topic shall be clearly outlined and easy to understand even for someone with limited knowledge on beforehand.
- Your analysis of the problem (10%). You will both need to read about the topic from different sources and consider potential difference in information. Analyse the issue critically. Simply reporting summaries of information taken from other sources is not a critical analysis, but it is important that you are able to demonstrate your understanding of the complexity of the issue. We are especially interested in your critical analysis of the available scientific and policy information and on your ability to apply it to the specific topic. We encourage you to assimilate information from different sources and include it in your analysis.
- The quality, organization and creativity of your video (5%). You will need to concisely articulate the key points and convincingly present your critical analysis. Your task is to distill an abundance of often complex information and make it understandable to your audience. Some of the videos will be presented during the last day of the course.

For this kind of assignment, the assessment and grading is mostly based on an overall impression of the product. The videos will be watched iteratively and in case of ambiguity the instructor will consult with another faculty member with expertise in the topic. The experience is that eagerness to learn and genuine enthusiasm for the topic become reflected in the final grade.

Assessments of Learning

General notes on assessment:

- As the course proceeds, there may be adjustments to the assessment scales and weightings. You will be duly notified and provided with a rationale and new syllabus if this would occur.
- Late submission of assignments will result in lower marks
- There are only three quizzes in the course. Make your very best to attend those dates. Only in exceptional cases will a make-up quiz be offered.

University Policies

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available [here](https://senate.ubc.ca/policies-resources-guide-students-success) (<https://senate.ubc.ca/policies-resources-guide-students-success>).

Other Course Policies

Copyright

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