

Western University

## GEO 3432B: Environmental Hazards and Human Health

### Winter 2018 Course Outline

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**Instructor:** Dr. Sarah Mason-Renton

**Email:** smason29@uwo.ca

**Office:** SSC 1424

**Lectures:** Wed 2:30 – 4:30 SSC 3018

**Office Hours:** Wednesday 1:00 – 2:00, or by appointment

**TA:** Alexandra Bozheva

**Email:** TBA

**Office:** TBA

**Tutorials:** Thurs 10:30 – 11:30 SSC 3010

Thurs 11:30 – 12:30 SSC 3010

**Office Hours:** TBA

#### IMPORTANT DATES:

Monday January 8:	First day of classes
Week of February 19:	Reading Week
Friday March 30:	Good Friday
Wednesday April 11:	Last Day of classes
April 14-30:	Exam period

**COURSE DESCRIPTION:** This is a survey course regarding the links between human health and environmental hazard exposure. Issues will include the health impacts of water pollution, air pollution, solid and hazardous waste, toxic substances, pesticides, and radiation. The limitations of models and methods are discussed.

**PREREQUISITES** – None, however both GEO 3250 and GEO 2152 are considered an asset.

#### A BRIEF NOTE...

This syllabus is "dynamic", it may change throughout the term. Though the basic structure of the course (e.g., weighting of evaluation components) will not change, topics and readings may need adjusting along the way.

#### LEARNING OBJECTIVES:

By the end of this course students will...

- Describe the complex relationships between environmental hazards and human health
- Critically analyze, compare, and contrast environment, health, and hazards research
- Recognize temporal and geographical trends of pollutant exposure
- Demonstrate concise writing and science communication skills
- Assess your peers' writing and provide constructive feedback to your colleagues

## COURSE MATERIALS:

- Eyles, J. and Baxter, J. (2017). *Environments, Risks, and Health Social Perspectives*. London; New York: Routledge.
- Frumkin, H. (2016). *Environmental Health from Global to Local Third Edition*. John Wiley and Sons Inc.

## ADDITIONAL RESOURCES

- Becker, H. S. (2007). *Writing for Social Sciences How to Start and Finish your Thesis, Book, or Article*. (2<sup>nd</sup> Ed). Chicago and London: The University of Chicago Press.
- Strunk Jr., W. and White, E. B. (2000). *The Elements of Style* (4<sup>th</sup> Ed). Boston: Pearson.
- Zinsser, W. (2006). *On Writing Well The Classic Guide to Writing Non Fiction*. New York; London; Toronto: Harper Perennial.

## ASSESSMENTS

Evaluation of your performance in the course will be based on the following:

<b>Assignment 1</b> – NPRI Pollutant Fact Sheet (one page)	(10%)	Feb 15, 2017
<b>Midterm</b> – Exams will be about ¼ multiple choice and ¾ short answer and essay questions	(20%)	February 28, 2017
<b>Hazard Reflections (4)</b>	(20%)	*Due Friday 5 pm following respective tutorial
<b>Assignment 2</b> – Critical Appraisal of an Environmental Hazard and Human Health Impact: A Photo Reflection Discussion Essay (3-4 pages)	(20%)	Due April 5, 2017 (Peer Review); Final copy due April 11, 2017
<b>Final Examination</b> – Exams will be about ¼ multiple choice and ¾ short answer and essay questions	(30%)	TBA

Assignments will be explained in greater detail in class. Rubrics will be posted online. There will be a 10% per day late penalty for assignments submitted after the due date. There are no make-up opportunities for peer-review activities.

The midterm exam will cover material from January 10<sup>th</sup> to February 15<sup>th</sup>. The final exam will be primarily weighted toward material covered in the second half of the semester. Both lecture and tutorial material will be included in the exams.

Each student must complete all course requirements to pass the course. No electronic devices will be allowed during tests and examinations.

Students seeking academic accommodation on medical grounds for any missed tests, exams, participation components and/or assignments worth 10% or more of their final grade must apply to the Academic Counselling office of their home Faculty and provide documentation. Academic accommodation cannot be granted by the instructor or department.

Students with special accommodation will write make-up tests and examinations administered

by the department on Fridays during respective periods of fall and winter terms. To prevent prior disclosure, the format and contents of make-ups may differ substantially from the scheduled test or examination.

### HAZARD CASE STUDY REFLECTIONS

Each student will be required to submit **four** 250 word reflections on case studies examined in tutorial. Students will be required to summarize the prudent causes and impacts of each environmental hazard examined and then reflect on how these cases relate to broader themes examined in the course, how we can mitigate the impacts of these hazards, or how we can act to prevent contaminants/exposure instances from increasing. Additional relevant discussion points probing critical thinking will be provided during tutorial. Imagine you are communicating to an educated, but non-specific audience. You may reference tutorial or lecture materials; however, no additional references are required.

Students will be evaluated on four reflections (5% final grade weighting each). However, note that there are seven tutorial case studies. Students may choose which case studies are of most interest to them and therefore which they would like to reflect on. Students must have been present in tutorial to receive credit for a submitted case-study reflection. Reflections are due at 5 pm the Friday after the respective tutorial. Reflections will be submitted online using the OWL course website.

Further, if students are dissatisfied with their grade on one of their four reflections, they may submit a fifth reflection (based on a different case study) to replace one of their grades.

This activity will aid in critical thinking, concise writing, and science communication skills.

### LECTURE SCHEDULE

The following is a tentative schedule for and outline of the topics that will be addressed in this course. The schedule may be altered due to unforeseen circumstances, permitted time, or students' interests. Please refer to the course website for posted announcements regarding schedule alterations.

Week	Date	Topic/Lecture Information	Readings
1	Jan 10	Introduction	
	Jan 11		
2	Jan 17	Risk Assessment, Management, and Key Concepts	Eyles and Baxter Ch. 2 Frumpkin Ch. 27
	Jan 18		
3	Jan 24	Measuring Health: Toxicology, Epidemiology, and Geospatial Data	Eyles and Baxter Ch. 1 & 9 Frumpkin Ch. 4 - 6
	Jan 25		
4	Jan 31	Environmental Equity and Policy	Eyles and Baxter Ch. 8
	Feb 1		
5	Feb 7	Waste	Frumpkin Ch. 17
	Feb 8		

6	Feb 14	Water	Frumpink Ch. 16
	Feb 15	<b>Assignment 1 Due</b>	
	Feb 21	Undergraduate Reading Week – No Classes	
	Feb 22		
7	Feb 28	<b>Mid Term Exam</b>	
	Mar 1		
8	Mar 7	Air	Frumpink Ch. 13
	Mar 8		
9	Mar 14	Agriculture, Food Systems, and Resource Extraction	Frumpink Ch. 18 & 19
	Mar 15		
10	Mar 21	Energy Production	Frumpink Ch. 14
	Mar 22		
11	Mar 28	Built Environment	Frumpink Ch. 15
	Mar 29		
12	April 4	Climate Change, Hazards, and Human Health	Frumpink Ch. 12
	April 5	<b>Assignment 2 Due for In Class Peer-Review</b>	
13	April 11	Case Study: Barriers to climate change adaptation <b>Assignment 2 Final Copy Due</b>	Armah et al. 2015, 2017

## TUTORIAL SCHEDULE

Tutorials will generally involve an overview and discussion of case studies related to lecture themes. Readings are indicated in the right column. Students must come to tutorial having read the assigned readings and thus be ready to contribute to group discussions. Discussion questions related to the readings will be posted in advance to probe your critical thinking while reading and evaluating each reading. Come prepared to discuss articles in a critical manner, comparing and contrasting, as well as relating back to course material. Avoid the pitfall of too much summary, focus on critical commentary!

Further, students will draw on case studies examined in tutorial to complete four Hazard Reflections (outlined in greater detail above). While students are only required to submit formal reflections on four case studies examined below, all tutorial material will be included in the midterm and final exams.

Week	Date	Topic/Lecture Information	Readings
1	Jan 10		
	Jan 11	No tutorial	
2	Jan 17		
	Jan 18	Assignment 1 Explained	
3	Jan 24		
	Jan 25	Assignment 1 Help	
4	Jan 31		
	Feb 1	Case Study: Distributive injustices in the Flint MI water crisis and Procedural injustice in municipal solid waste siting.	Deacon 2013; Butler et al. 2016
5	Feb 7		

	Feb 8	Case Study: Walkerton Water Crisis	Prudham, 2004; Parr 2005
6	Feb 14		
	Feb 15	Case Study: Wastewater Residuals Management <b>Assignment 1 Due</b>	Mason et al. 2015; Morales et al. 2014
	Feb 21	Undergraduate Reading Week – No Classes	
	Feb 22		
7	Feb 28	<b>Mid Term Exam</b>	
	Mar 1	Assignment 2 Explained	
8	Mar 7		
	Mar 8	Case Study: Air pollutants in London, ON and cardiorespiratory effects of air pollution in Ontario	Stieb et al. 2017; Oiamo et al. 2012
9	Mar 14		
	Mar 15	Case Study: Agricultural BMPs, nutrients and water quality	Pearce and Yates, 2017; Holmes et al. 2016
10	Mar 21		
	Mar 22	Case Study: Nuclear Waste Storage	Stefanelli et al. 2017; Bickerstaff, 2012
11	Mar 28		
	Mar 29	Case Study: Built environment, food access, and obesity	Mayne et al. 2016; Sadler et al. 2016
12	April 4		
	April 5	<b>Assignment 2 Due for In-Class Peer Review</b>	
13	April 11	Case Study: Barriers to climate change adaptation <b>Assignment 2 Final Copy Due</b>	Armah et al. 2015, 2017

## READING LIST

\* Tutorial readings will be posted on the course website.

Armah, F. A., Luginaah, I., Hambati, H., Chuenpagdee, R., and Campbell, G. (2015). Assessing barriers to adaptation to climate change in coastal Tanzania: Does where you live matter? *Population and Environment*, 37(2): 231-262.

Armah, F. A., Ung, M., Boamah, S. A., Luginaah, I., and Campbell, G. (2017). Out of the frying pan into the fire? Urban penalty of the poor and multiple barriers to climate change adaptation in Cambodia and Tanzania. *Journal of Environmental Studies and Sciences*, 7(1): 69-86.

Bickerstaff, K. 2012. "Because we've got history here": Nuclear waste, cooperative siting, and the relational geography of a complex issue. *Environment and Planning A* 44: 2611-2628.

Butler Lindsey J., Scammell Madeleine K., and Benson Eugene B. (2016). The Flint, Michigan, water crisis: A case study in regulatory failure and environmental justice. *Environmental Justice*, 9(4): 93-97. <https://doi.org/10.1089/env.2016.0014>

Deacon, L. and Baxter, J. (2013). No opportunity to say no: A case study of procedural environmental injustice in Canada. *Journal of Environmental Planning and Management*, 56(5): 607-623.

- Holmes, R., Armanini, D. G., and Yates, A. (2016). Effects of best management practices on ecological condition: Does location matter? *Environmental Management*, 57(5): 1062-1076.
- Oiamo, T. H., Luginaah, I. N., Buzzelli, M., Tang, K., Xu, X., Brook, J. R., and Johnson, M. (2012). Assessing the spatial distribution of nitrogen dioxide in London, Ontario. *Journal of Air and Waste Management Association*, 62(11): 1335-1345.
- Parr, J. (2005). Local water diversely known: Walkerton, Ontario, 2000 and after. *Environment and Planning D: Society and Space*, 23(2), 251-271.
- Pearce, N. J. T., Yates, A. G. (2017). Intra-annual variation of the association between agricultural best management practices and stream nutrient concentrations. *Science of the Total Environment*, 585: 1124-1134.
- Prudham, S. (2004). Poisoning the well: neo-liberalism and the contamination of municipal water in Walkerton, Ontario. *Geoforum*, 35, 343-359.
- Sadler, R. C., Clark, A. F., Wilk, P., O'Connor, C. and Gilliland, J. A. (2016). Using GPS and activity tracking to reveal the influence of adolescents' food environment exposure on junk food purchasing. *Canadian Journal of Public Health*, 107: 14-20.
- Stefanelli, A., Seidl, R., Siegrist, M. (2017). The discursive politics of nuclear waste: Rethinking participatory approaches and public perceptions over nuclear waste storage repositories in Switzerland. *Energy Research and Social Science*, 34: 72-81.
- Stieb, D. M., Shutt, R., Kauri, L., Mason, S., Chen, L. Szyszkowicz, M. ... Luginaah, I. (2017). Cardiorespiratory effects of air pollution in a panel study of outdoor physical activity and health in rural older adults. *Journal of Occupational and Environmental Medicine*, 59(4), 365-364.
- Mason, S. A., Dixon, J., Mambulu, F., Rishworth, A., Mkandawire, P. and Luginaah, I. (2015). Management challenges of urban biosolids: Narratives around facility siting in rural Ontario. *Environmental Planning and Management*, 58(8), 1363-1383.
- Mayne, S. L., Auchincloss, A. H., Michael, Y. L. (2016). Impact of policy and built environment changes on obesity-related outcomes: A systematic review of naturally-occurring experiments. *Obesity Reviews*, 16(5), 362-275.
- Morales, M. D. C., Harris, L., and Oberg, G. (2014). Citizenshit: the right to flush and the urban sanitation imaginary. *Environment and Planning A*, 46: 2816-2833.

## UNIVERSITY POLICIES AND GUIDELINES

### STATEMENT ON ACADEMIC OFFENCES

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

PLAGIARISM – Students must write their assignments in their own words. When an idea or a passage is used from another author, students must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes and citations. If you do not directly quote an author’s idea but you paraphrase it, quotations are not required, however proper referencing still is. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Academic Calendar).

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com> ).

## MENTAL HEALTH

If you or someone you know is experiencing distress, there are several resources here at Western to assist you. Please visit the site below for more information on mental health resources: <http://www.uwo.ca/uwocom/mentalhealth/>.

## WESTERN'S COMMITMENT TO ACCESSIBILITY

The University of Western Ontario is committed to achieving barrier free accessibility for persons studying, visiting and working at Western.

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

## SUPPORT SERVICES

Registrarial Services: <http://www.registrar.uwo.ca/>

Student Development Services: <http://www.sdc.uwo.ca/>

## ACCOMMODATION FOR MEDICAL ILLNESS

UWO Policy:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

Downloadable Student Medical Certificate (SMC):

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)

## NON-MEDICAL ACCOMMODATION

Students with conflicts during lectures, tutorials or exams should discuss these with the course instructor or TAs in advance of the absence.

**WESTERN GEOGRAPHY UNDERGRADUATE ADVISOR:** Angelica Lucaci, [alucaci@uwo.ca](mailto:alucaci@uwo.ca)