Instructors:

Dr. Sharon L. Deem, deem@stlzoo.org, Office hours by appointment

Dr. Solny Adalsteinsson, solny.adalsteinsson@wustl.edu, Office hours by appointment

Graduate TA:

Tamsen Reed, reed.t@wustl.edu, Office hours Mondays 10 – 11am in Hillman 53, and by appointment

Undergraduate TA:

Maeve Hindenburg, maevehindenburg@wustl.edu

Course Description

This course will be an introductory level exploration of One Health. One Health is a collaborative effort of multiple disciplines (human medicine, veterinary medicine, epidemiology, ecology, sociology, among others) — working locally, nationally, and globally — to attain optimal health for people, animals, and the environment. The students will learn about the challenges threatening environmental, animal, and human health. More importantly, they will learn about the transdisciplinary — holistic — One Health approach necessary if we are to develop the solutions to these challenges. From the loss of biodiversity to climate change and environmental pollutants, the students will participate in project-based learning modules to understand the how and why of these challenges as well as the mechanisms to study the current threats to conservation and public health. Class lessons will consist of lectures, clicker-based questions and study discussions. Assignments will include regular readings, quizzes, 3 exams, creating one infographic to convey a concept to a lay audience, three Triad working groups, and one short final reflection essay. There are no pre-requisites for this course. This course will be limited to first-, second-, and third-year students.

Course Goals

Students who complete this course successfully will be able to:

- Understand important principles about the One Health Triad animal, human, environmental health
- Be able to navigate the interdisciplinary space of One Health through understanding disciplinary specific lexicon/semantics as well as common language across the One Health Triad
- Hear other perspectives and engage with them productively
- Understand your particular specialty area deeply, but also be able to see holistically and recognize the value of all specialties
- Communicate One Health principles to a lay audience
- Understand tools available to One Health practitioners (e.g., disease risk analysis, epidemiological checklists).

Required Texts, Materials, or Equipment

- 1. **Textbook/reading material**: Readings will be drawn from the textbook "Introduction to One Health: An Interdisciplinary Approach to Planetary Health." Deem, S.L., Lane-deGraaf, K., and Rayhel, E.A. Wiley-Blackwell. Hoboken, NJ. In addition to textbook chapters, there will be weekly reading assignments in the form of scientific journal articles and popular media articles. Supplemental reading materials will be made available as pdfs on Canvas.
- 2. **iClicker**: We will use iClickers for class meeting participation. As a member of this class, you can rent an iClicker for free from the Olin Library Help Desk. The deadline to return your iClicker to the library is December 11, 2019. Students who do not return their iClickers at the conclusion of the semester will be charged for replacement of the device. To register your iClicker go to the iClicker Student Registration Tool within the Canvas course site and enter your clicker ID code.

Course website

The course website will be in the online course management system Canvas, which can be accessed using your WUSTL key (https://wustl.instructure.com). You will use Canvas to take short reading quizzes and submit assignments. We will use this course site to share and archive material and as the main way of making announcements.

Assessment

The grade you earn in this course will be based on the following component parts:

5%	Reading quizzes
5%	Clicker class participation
15%	Class One Health Triad working group
15%	One Health Outreach Infographic
40%	Exams (must take all 3 exams, lowest score is dropped)
20%	Final scenario analysis and reflection essay

Reading quizzes (5%): Students will be required to complete assigned readings prior to class. Throughout the semester, there will be regular reading quizzes based on assigned readings. Quizzes will be open-book and should be completed in the online course management system prior to class on the assigned due date.

Clicker class participation (5%): Because learning to communicate across disciplines to solve complex problems is a key learning objective of this course, class participation is critical for success. Students are expected to participate in several ways and answering clicker questions about important concepts is one means that will be used to evaluate participation. Students will receive full credit for answering all questions, regardless of how many are answered correctly.

Class One Health Triad working group (15%): Participating in Triad groups and presenting reports during class time. Triad groups are multiples of 3-person groups that convene to discuss topics and problems posed during class. Everyone within a triad group will be assigned a perspective / area of expertise within the components of the One Health Triad. After a period of research and discussion, each group will report their group's conclusions to the class. Students are expected to conduct themselves in a respectful manner; all group interactions will be civil and supportive of an inclusive learning environment for all students. Contact the course instructors if you have concerns about classroom dynamics.

One Health Outreach Infographic (15%): Working within your One Health Triad groups you will make an infographic on some topic of One Health. (Topics will be pre-approved by one of the course instructors.) Infographics must be engaging and informative for a lay audience to appreciate health issues of today and to take actions that may help with mitigating some part of threats to planetary health.

Exams (40%): There will be three multiple choice exams that cover material from readings, class meetings, and group activities. Each exam is worth 20% and your grade with the lowest exam score dropped and not included in the calculation of your final grade. There will be NO make-up exams. If you qualify for testing accommodations through Disability Resources you must request to take all the exams at Cornerstone and submit your request through their website providing them with at least 7 days' notice. If you know that you will miss an exam because of a University-sponsored event (e.g., varsity sport competition) contact us at least two weeks prior to the exam to make arrangements.

Final reflection essay (20%): At the end of the course you will write a final reflection essay (3-4 pages) that will ask you to analyze a One Health scenario (the Triad group work is practice for this) as well as reflect on what and how you learned in this course.

The following scale will be used to assign final course grades. If you are taking this course Credit/No Credit, you must earn a C+ or better to receive Credit.

A+: 97.0%+ B+: 87.0 - 89% C+: 77.0 - 79% D+: 67.0 - 69% F: 0 - 59%

A: 94.0 - 96% B: 84.0 - 86% C: 74.0 - 76% D: 64.0 - 66% A-: 90.0 - 93% B-: 80.0 - 83% C-: 70.0 - 73% D-: 60.0 - 63%

Course Schedule

Date	Topics/Assigned Readings/Assignments
8/27/19	TOPIC: Introduction to the course and introduction to One Health SPEAKER: Deem and Adalsteinsson and Reed ASSIGNED READINGS:
	 Chapter 1: What is One Health?, One Health Textbook Enserik, M. (2007) Initiative aims to benefit animal and human health science to benefit both. Science, 316: 1553.
	One Health Textbook Glossary
8/29/19	TOPIC: The interconnected world: important linkages in animal, human and ecosystem health and introduction to Triad Working Groups SPEAKER: Deem ASSIGNED READINGS: Chapter 2: Our Interconnected World, One Health Textbook
	Crutzen, P.J. (2002) Geology of mankind. <i>Nature</i> 415: 23.
	 Gore, M. et al. (2019) Transnational environmental crime threatens sustainable development. Nature Sustainability. https://doi.org/10.1038/s41893-019-0363-6
	TEDx Gateway Arch Talk. One Health: The Ties That Bind, https://youtu.be/weXJBFai5Os
9/3/19	TOPIC: The greatest threats to our One World SPEAKER: Adalsteinsson ASSIGNED READINGS: • Chapter 3: The Greatest Threats to Planetary Health, One Health Textbook
9/5/19	TOPIC: The greatest threats to our One World and Triad Working Groups (case study 1) SPEAKER: Dr. Kelly Lane-deGraaf, <i>Guest lecturer</i> (Deem introduce Kelly) ASSIGNED READINGS:
	 Ceballos, G., Ehrlich, P.R., Dirzo, R. (2017) Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines. <i>Proceedings of the National</i> <i>Academy of Sciences</i> doi: 10.1073/pnas.1704949114.
	ASSIGNMENTS: Reading Quiz #1 due – covers all readings for "The greatest threats" (9/3-9/5)
9/10/19	TOPIC: Environmental health as One Health, and how to read and cite scientific literature SPEAKER: Adalsteinsson ASSIGNED READINGS:
	 Chapter 4: Environmental Health as One Health, One Health Textbook Das, P., Horton, R. (2017) Pollution, health, and the planet: time for decisive action. The Lancet, doi: 10.1016/S0140-6736(17)32588-6
9/12/19	TOPIC: Environmental health as One Health and Triad Working Groups (case study 1) SPEAKER: Dr. Kim Medley, Guest Lecturer (Adalsteinsson introduces Medley)

	ASSIGNED READINGS:
	 Ali., S., Gugliemini, O., Harber, S., Harrison, A., Houle, L., Ivory, J., et al. (2017) Environmental and social change drive the explosive emergence of zika virus in the Americas. <i>PLOS Neglected Tropical Diseases</i>, 11(2): e0005135.
	ASSIGNMENTS: Reading Quiz #2 due – covers all readings for "Environmental health" (9/10-9/12)
9/17/19	TOPIC: Triad Working Groups #1 and Exam review SPEAKER: Adalsteinsson and Deem facilitate class ASSIGNED READINGS: • Triad group preparation reading for case study 1
9/19/19	EXAM 1 – covers all materials from 8/27 through 9/12
9/24/19	TOPIC: Animal health as One Health SPEAKER: Deem ASSIGNED READINGS:
	 Chapter 5: Animal Health as One Health, One Health Textbook Godfray, H.C.J., Aveyard, P., Garnett, T., Hall, J.W., Key, T.J., Lorimer, J., Pierrehumbert, R.T., Scarborough, P., Springmann, M., and Jebb, S.A. (2018) Meat consumption, health, and the environment. Science 361: eaam5324.
9/26/19	TOPIC: Triad Working Groups (present case study 1) SPEAKER: Deem and Reed will lead ASSIGNED READINGS: Triad group preparation reading for case study 2
10/1/19	ASSIGNMENTS: Reading Quiz #3 due – covers all readings for "Animal health" (9/24-9/26) TOPIC: Human health as One Health and introduction of Infographic assignment SPEAKER: Adalsteinsson ASSIGNED READINGS: Chapter 6: Human Health as One Health, One Health Textbook Ostfeld, R.S. (2009) Biodiversity loss and the rise of zoonotic pathogens. European Society of Clinical Microbiology and Infectious Diseases, 15(Suppl. 1): 40–43. Richtel, M. and Jacobs, A. (2019) A mysterious infection, spanning the globe in a climate of secrecy. The New York Times, April 6: https://www.nytimes.com/2019/04/06/health/drugresistant-candida-auris.html
10/3/19	TOPIC: Emerging Infectious Diseases SPEAKER: Dr. Dave Wang, Guest lecturer (Adalsteinsson or Deem introduce Dave) ASSIGNED READINGS: • Daszak, P., Cunningham, A.A., Hyatt, A.D. (2000) Emerging infectious disease of wildlife: threats to biodiversity and human health. Science 287: 443-449.
	ASSIGNMENTS: Reading Quiz #4 due – covers all readings for "Human health" (10/1-10/3)
10/8/19	TOPIC: The One Health Practitioner & Essential Tools for the One Health Practitioner SPEAKER: Adalsteinsson & Deem, class activity ASSIGNED READINGS: • Chapter 7: The One Health Practitioner, One Health Textbook • Chapter 8: Essential Tools for One Health Practitioners

	 Davis, M.F., Rankin, S.C., Schurer, J.M., Cole, S., Conti, L., Rabinowitz, P., for the COHERE Expert Review Group. (2017) Checklist for One Health Epidemiological Reporting of Evidence (COHERE). One Health 4: 14-21 Frankson, R., Hueston, W., Christian, K., Olson, D., Lee, M., Valen, L. Hyatt, R., Annelli, J., Rubin, C. (2016) One Health Core Competency Domains. Frontiers in Public Health 4: 192. doi: 10.3389/fpubh.2016.00192.
10/10/19	TOPIC: The One Health Practitioner and Infographic topic due SPEAKER: Dr. Joe Steensma, Guest Lecturer (Adalsteinsson &/or Deem introduce Joe) ASSIGNED READINGS: • Stephen, C., and Stemshorn, B. (2016) Leadership, governance and partnerships are essential One Health competencies. One Health, 2:161-163. ASSIGNMENTS: Reading Quiz #5 due – covers all readings for "One Health Practitioner" & "Essential Tools for the One Health Practitioner" (10/8-10/10)
10/15/19	No class: fall break
10/17/19	TOPIC: Education & Assign TWG case study #2 topics SPEAKER: Adalsteinsson ASSIGNED READINGS: • Chapter 9: Education and Critical Thinking in One Health, One Health Textbook • Kahn, L.H. (2011) The need for one health degree programs. Infection, Ecology and Epidemiology 1: 7919 - DOI: 10.3402/iee.v1i0.7919
	ASSIGNMENTS: Reading Quiz #6 due – covers all readings for "Education" (10/17)
10/22/19	TOPIC: Triad Working Groups #2 and Exam 2 Review SPEAKER: Adalsteinsson ASSIGNED READINGS: Triad group preparation reading for case study 2
10/24/19	EXAM 2 – covers all materials from 9/24 through 10/22
10/29/19	TOPIC: Economics SPEAKER: Adalsteinsson ASSIGNED READINGS: • Chapter 12: Economics and One Health, One Health Textbook • Holzman D.C. (2012) Accounting for nature's benefits: the dollar value of ecosystem services. Environmental Health Perspectives, 120(4): A153-157.
10/31/19	TOPIC: Triad Working Groups (present case study 2) SPEAKER: Adalsteinsson, Deem, and Reed facilitate class. ASSIGNED READINGS: • Triad group preparation reading for case study 2 ASSIGNMENTS: Reading Quiz #7 due – covers all readings for "Economics" (10/29-10/31)
11/5/19	TOPIC: Culture and theology SPEAKER: Deem ASSIGNED READINGS: • Chapter 11: Culture and Theology of One Health
11/7/19	TOPIC: Culture and theology & Introduce Topics and Class time for Triad Case Study 3 SPEAKER: Dr. Elizabeth Rayhel, <i>Guest Lecturer</i> (Deem introduce Libby)

	ASSIGNED READINGS:
	 Hrdy, D. (1987) Cultural practices contributing to the transmission of human immunodeficiency virus in Africa. N Reviews of Infectious Diseases (Chicago), 9 (6): 1109-19.
	ASSIGNMENTS: Reading Quiz #8 due – covers all readings for "Culture and theology" (11/5-11/7)
11/12/19	TOPIC: Communication and advocacy & Politics and policy of One Health SPEAKER: Deem ASSIGNED READINGS: • Chapter 10: Communication and Advocacy in One Health, One Health Textbook • Chapter 13: Politics and Policy of One Health, One Health Textbook • NPR In U.S., Ebola Turns From a Public Health Issue To A Political One. https://www.npr.org/2014/10/09/354890869/in-u-s-ebola-turns-from-a-public-health-issue-to-a-political-one
11/14/19	TOPIC: Communication and advocacy from our students ASSIGNMENTS: Final Infographic Due and presentations
11/19/19	TOPIC: Communication and Advocacy SPEAKER: Lise Saffran, Guest Lecturer (Adalsteinsson &/or Deem introduce Lise) ASSIGNED READINGS: Yong, E. (2017) Do scientists lose credibility when they become political? The Atlantic. url: https://www.theatlantic.com/science/archive/2017/02/when-scientists-become-advocates-do-they-lose-credibility/518157/
11/21/19	TOPIC: Triad Working Groups (present case study 3) SPEAKER: N/A ASSIGNED READINGS: Triad group preparation reading for case study 3
11/26/19	 TOPIC: Working in a global environment SPEAKER: Deem ASSIGNED READINGS: Chapter 14: Working in a Global Environment, One Health Textbook Sawleshwarkar, S. and Negin, J. (2017). A review of global health competencies for postgraduate public health education. Frontiers in Public Health 5: 46.doi: 10.3389/fpubh.2017.00046. Brown, C., Thompson, S., Vroegindewey, G. et al. (2006). The global veterinarian: the why? The what? The how? Journal of Veterinary Medical Education 33 (3): 411-415. ASSIGNMENTS: Reading Quiz #9 due – covers all readings for "Global environment" & "Politics" (11/19-11/21)
11/28/19	No class: Thanksgiving break
12/3/19	TOPIC: The past and future of the One Health field and Exam 3 review SPEAKER: Deem ASSIGNED READINGS: • Chapter 15: The Past and Future of One Health, One Health Textbook • Whitmee, S., Haines, A., Beyrer, C., et al. (2015) Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation –Lancet Commission on planetary health. <i>The Lancet</i> , 386: 1973-2028. doi: 10.1016/S0140-6736(15)60901-1.
12/5/19	EXAM 3 – covers all materials from 10/30 through 12/4

12/12/19	Final scenario analysis and reflection essay due to instructors

Course Policies and Information for Students

INCLUSIVE LEARNING ENVIRONMENT STATEMENT: The best learning environment—whether as an individual or in your One Health Triad groups while in the classroom and outside the class—is one in which all members feel respected while being productively challenged. At Washington University in St. Louis, we are dedicated to fostering an inclusive atmosphere, in which all participants can contribute, explore, and challenge their own ideas as well as those of others. Every participant has an active responsibility to foster a climate of intellectual stimulation, openness, and respect for diverse perspectives, questions, personal backgrounds, abilities, and experiences, although instructors bear primary responsibility for its maintenance.

A range of resources is available to those who perceive a learning environment as lacking inclusivity, as defined in the preceding paragraph. If possible, we encourage students to speak directly with their instructor about any suggestions or concerns they have regarding a particular instructional space or situation. Alternatively, students may bring concerns to another trusted advisor or administrator (such as an academic advisor, mentor, department chair, or dean). All classroom participants—including faculty, staff, and students—who observe a bias incident affecting a student may also file a report (whether personally or anonymously) utilizing the online Bias Report and Support System

ATTENDANCE POLICY: We expect you to attend and actively participate in all class meetings. You are responsible for all material covered in class regardless of attendance. You can earn points for participation by answering clicker questions. You only need to answer 80% of clicker questions for the semester to receive maximum participation credit, which allows you wiggle room for missing occasional classes, illnesses, emergencies, forgetting your clicker, or dead batteries. We will not consider any excused/unexcused absence issues or technology issues with clickers. If you think your clicker is not operating correctly (and you have already replaced the batteries) visit the Olin Library help desk or contact iClicker.

PENALTIES FOR LATE WORK and REQUESTS FOR EXTENSIONS: No late quizzes or examinations will be accepted unless student has a documented reason (e.g., death in family, health issue).

POLICIES ON MISSED EXAMS, MAKE-UP EXAMS OR QUIZZES: Everyone must take all three exams, but your lowest exam score will be dropped. There are no makeup exams; the dropped exam allows for emergencies or absences.

REGRADING POLICY: Regrade requests will only be evaluated at the END of the semester and ONLY IF your course grade is borderline AND the exam score would make a difference. If you request a regrade, your entire exam will be regraded and the new score will be used. Regrade requests are due within 72 hours of receiving your exam back in class or whenever the key is posted, whichever is later. No late regrade requests will be considered.

TECHNOLOGY POLICIES: We want the choice to use a laptop or not to take notes to be up to you: The default will be "no laptop," but you can opt in to a dedicated "laptop" section of class (which we will arrange spatially so that laptop users do not distract those who prefer not to use one). We will ask you to make a careful, thoughtful decision about which choice is right for you and your learning, and once you make the decision, it's final. We will ask you to decide on the first day of class which section you prefer. You should not use the Internet (or social media) during class unless directed to; if we observe you using social media during class we will ask you to put your device away for the remainder of the period. If this occurs more than once, you will lose participation points.

ETHICS/VIOLATIONS OF ACADEMIC INTEGRITY: Ethical behavior is an essential component of learning and scholarship. Students are expected to understand, and adhere to, the University's academic integrity policy: wustl.edu/policies/undergraduate-academic-integrity.html. Students who violate this policy will be referred to the Academic Integrity Policy Committee. Penalties for violating the policy will be determined by the Academic Integrity Policy committee, and can include failure of the assignment, failure of the course, suspension or expulsion from the University. If you have any doubts about what constitutes a violation of the Academic Integrity policy, or any other issue related to academic integrity, please ask your instructor.

Always cite your sources when you present ideas and/or language that you have not developed yourself, including material from class lectures and discussions. Violation of this policy includes collaborating on assignments where collaboration is not allowed and/or utilizing notes, texts, etc. on any assignment where use of such materials is not allowed.

CONTACTING US: We want everyone to have a meaningful learning experience and do well in this course. The only way for us to know if you are struggling is for you to communicate with us. Please feel free to email and/or set up a meeting with us. We work hard to respond to student concerns and emails but we are not available at all hours of the day and night. Allow 48 hours for email responses; do not wait until the last minute (after 5 PM or a weekend) as we will not be able to help you. As a gentle reminder, please strive to use proper email etiquette. For example, use clear subject lines, use a salutation and your professor's name to open your email, and sign off with your full name, rather than starting out with "Hey" or similarly informal openings and using text speak.

Resources for Students

DISABILITY RESOURCES: If you have a disability that requires an accommodation, please speak with instructor and consult the Disability Resource Center at Cornerstone (cornerstone.wustl.edu/). Cornerstone staff will determine appropriate accommodations and will work with your instructor to make sure these are available to you.

WRITING ASSISTANCE: For additional help on your writing, consult the expert staff of The Writing Center (writingcenter.wustl.edu) in Olin Library (first floor). It can be enormously helpful to ask someone outside a course to read your essays and to provide feedback on strength of argument, clarity, organization, etc. < The Engineering Communication Center http://engineering.wustl.edu/current-students/student-services/Pages/default.aspx offers students in the School of Engineering and Applied Sciences help with oral presentations, writing assignments, and other communications projects, as well as job-search documents such as resumes and cover letters.>

THE UNIVERSITY'S PREFERRED NAME POLICY FOR STUDENTS, with additional resources and information, may be found here: registrar.wustl.edu/student-records/ssn-name-changes/preferred-name-policy/preferred-name-policy/student/.

SEXUAL ASSAULT: The University is committed to offering reasonable academic accommodations to students who are victims of sexual assault. Students are eligible for accommodation regardless of whether they seek criminal or disciplinary action. Depending on the specific nature of the allegation, such measures may include but are not limited to: implementation of a no-contact order, course/classroom assignment changes, and other academic support services and accommodations. If you need to request such accommodations, please direct your request to Kim Webb (kim webb@wustl.edu), Director of the Relationship and Sexual Violence Prevention Center. Ms. Webb is a confidential resource; however, requests for accommodations will be shared with the appropriate University administration and faculty. The University will maintain as confidential any accommodations or protective measures provided to an individual student so long as it does not impair the ability to provide such measures.

SEXUAL ASSAULT REPORTING: If a student comes to me to discuss or disclose an instance of sexual assault, sex discrimination, sexual harassment, dating violence, domestic violence or stalking, or if I otherwise observe or become

aware of such an allegation, I will keep the information as private as I can, but as a faculty member of Washington University, I am required to immediately report it to my Department Chair or Dean or directly to Ms. Jessica Kennedy, the University's Title IX Director. If you would like to speak with Ms. Kennedy, she can be reached at (314) 935-3118, jwkennedy@wustl.edu, or by visiting her office in the Women's Building. Additionally, you can report incidents or complaints to Tamara King, Associate Dean for Students and Director of Student Conduct, or by contacting WUPD at (314) 935-5555 or your local law enforcement agency. You can also speak confidentially and learn more about available resources at the Relationship and Sexual Violence Prevention Center by calling (314) 935-8761 or visiting the 4th floor of Seigle Hall.

BIAS REPORTING: The University has a process through which students, faculty, staff and community members who have experienced or witnessed incidents of bias, prejudice or discrimination against a student can report their experiences to the University's Bias Report and Support System (BRSS) team. See: brss.wustl.edu

MENTAL HEALTH: Mental Health Services' professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See: shs.wustl.edu/MentalHealth

Disclaimer

The instructor reserves the right to make modifications to this information throughout the semester.