Department/Program: Community Health
Course Number: CH 99
Title: An Introduction to One Health: Interdisciplinary approaches to improve the health and welfare of humans, animals and the environment
Lectures: Mondays 1:30-4pm
Location: 112 Packard Avenue
Community Health Program conference room

Instructors

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Director, Community Health Program
Tufts University, 112 Packard Ave. Medford, MA 02155
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Course Description
This introductory course will acquaint students with the concept of “One Health”, an approach dedicated to enhancing all aspects of human, animal, and environmental health. One Health acknowledges the interconnectedness among humans, animals and the environment, as well as the need for interdisciplinary solutions that are mutually beneficial and sustainable.

Topics may include: (1) etiology, prevention, transmission, surveillance, and control of cross-species diseases and consequences; (2) climate change and environmental health; (3) food production and safety; (4) human & animal connections; (5) ethical, political & economic dimensions of One Health; and (6) the importance of socio-cultural context and stakeholder involvement in One Health issues and potential solutions.

This survey course covers a large amount of information in a short time and is designed for juniors and seniors. The goals of the course relate to knowledge acquisition, synthesis, communication, and critical thinking. Our aim is to provide a framework for understanding One Health issues and give you access to resources that will allow you to develop a more in-depth understanding of OH issues over time. The class will utilize a variety of formats, including lecture, case studies, interactive in-class activities, a group project, and out-of-class activities.
Activities outside of class may include exploration local habitats, visit(s) to and potential service with organizations that are addressing One Health issues.

Learning Objectives
1. Describe the dynamic interplay between health/illness among humans, animals, and the environment
2. Describe a OH "systems approach" in terms of monitoring, surveillance, diagnosis, prevention and control
3. Understand the unique contributions of various disciplines in identifying and acting upon local & global health challenges that affect human, animal, and environmental health
4. Observe, identify, interpret and translate knowledge from a variety of fields and settings to describe potential interventions, programs or policies that could positively impact human, animal and environmental health
5. Discuss economic, political & socio-cultural dimensions of OH problems & solutions from different disciplinary perspectives, as well as affected communities & stakeholders.

Course Requirements
This is a course designed for upperclassmen who have taken a class in epidemiology (e.g., CEE 54 or equivalent).

Teaching Assistant
Therese McNamee, MS graduated from Tufts Masters in Conservation Medicine Program and will serve as the Teaching Assistant for this class.
Office hours: Monday 4:00-6:00pm in classroom or library
Email address: Therese.McNamee@tufts.edu; Phone: 973-617-0163

Schedule
Class is held on Mondays from 1:30-4:00pm. The first segment of class will involve dialogue with a guest speaker with relevant expertise, as well as discussion of the required reading. During the second segment of class, we will discuss case studies, conduct small group activities or allow for work on group projects. Generally, the class will follow the timing outlined below.

- 1:30-2:15 Lecture with guest expert
- 2:15-2:45 Student led discussion with guest speaker
- 2:45-3:00 Break
- 3:00-4:00 Case Study Activity/Group Work

There will be opportunities to visit to community sites/organizations working on One Health issues. In general, these visits will be scheduled as optional trips on weekends.

Assessment/Grading
- Class attendance & participation 15%
- Blog related to course readings before each session 15%
- Student led discussion 20%
- Field Trip Reflection 15%
- Group Project
  - Written paper 1 10%
  - Written paper 2 10%
  - Group presentation 10%
  - Peer Evaluation 5%
Class Attendance & Participation: Attendance is mandatory, since discussion of assigned readings and case studies are central to learning course content. Students are expected to attend and actively participate in class, unless they have a documented excused absence (see University Policy at http://uss.tufts.edu/undergradEducation/FAQ.asp#59). All anticipated absences must be reported to the Teaching Assistant (Therese McNamee) prior to the day of class with appropriate documentation.

Weekly WordPress Discussion: Students will be required to write a 'blog' about assigned readings by the Friday preceding class. This can be in the form comments, questions, or thoughts or reactions to one or more of the papers assigned for the upcoming class. The comment can also be a new idea or a response to a previous student's post. This is meant to be a discussion among the class on the weekly readings, where students can also link current topics to previous material as well as post relevant current events and media.

Student-Led Discussion: Each week, one student will be assigned to write a brief summary of the class blog, including what they feel are the most important details and questions conveyed by their classmates. This will be presented to the lecturer by the assigned student and followed by a short discussion lead by the student addressing the questions raised. The summary and questions will also be submitted to the Course Instructor and will constitute a portion of the class participation grade.

Field Trip Reflection: Based on the readings, Biomap website and field observations students will prepare a 250 word (approx) blog post on the value of the Fells Reservation as a One Health resource. Students will also post 3-5 photos to accompany their posts from the trip. Further guidance will be provided prior to the trip.

Group Project: Students will work in groups to examine an identified OH problem and to determine the fundamental principles and challenges needed to assess the problem, identify challenges & potential solutions, and understand stakeholder views. They will consider the socio-cultural, economic, ethical and political implications of the problem and potential solutions. Throughout the semester, students groups will work together in an integrative process to re-examine their problem, identify gaps or barriers to understanding, and develop novel ideas that evolve from their deliberations. In addition, they will interview individuals representing local organizations that are addressing their OH issue and will have the opportunity to make site visits. Each group will present their integrated findings, highlighting unique conclusions that were produced by the interdisciplinary process, and identify challenges in the form of a Case Study. On the last day of class, students will present their projects to the class, with input from other students and faculty representing a variety of disciplines.

Submitting Written Assignments: Hard copies of all assignments are to be submitted at the start of class AND electronically via the CH 99 Trunk site.

Late Assignments: Late papers or projects will lose half a grade for every day past the due date. "Late" is defined as being 1 minute past the deadline. Please note that computer or printer problems (e.g., lost work) are not acceptable reasons for having a late paper. Please be sure to save your work regularly on your computer and to back it up elsewhere (e.g., USB drive)

Academic Integrity: Academic dishonesty will not be tolerated. Please familiarize yourself with the university's handbook on Academic Integrity:
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| Wed    | Course Overview & Introduction to One Health | - Describe the concept of OH, its history & origins  
               - Identify the range of disciplines involved in identifying & solving OH problems  
               - Discuss how the values & methods of different disciplines shape the 'definition of the problem' & 'theory of the solution'  
               - Recognize the range of OH topics that influence humans, animals & environments at the local, national, international & global levels  | - Rabinowitz P, Conti L. Links among human health, animal health, and ecosystem health. *Annu Rev Public Health* 2013; 34:189-204.  
               - Zinsstag J, Shelling H, Waltner-Toews D. From "one medicine" to "one health" and systemic approaches to health and well-being. *Preventive Veterinary Medicine* 2011; 101: 148-156.  | - Systems Thinking Activity  
               - CDC One Health From Concept to Action: https://www.youtube.com/watch?v=TG0pduAYESA |
| Mon    | Ecosystems, health and field epidemiology | - Define ecosystem in the context of one health  
               - Discuss definitions of health for humans, animals and the environment  
               - Discuss the relationship between land-use change and human and animal health  
               - Discuss basic elements and importance of field epidemiology for One Health investigations  | - Saéz et al., Investigating the zoonotic origin of the West African Ebola epidemic. *EMBO Molecular Medicine*, 2015; 7(1): 1-123.  
| Mon    | Zoonotic & Emerging Infectious Diseases | - Describe interactions, between humans, animals & environmental changes & how these can lead to transmission, and (re) emergence of infectious diseases  
               - Describe how an infectious disease unfolds within an individual and within a  | - Messenger AM; Barnes AN; Gray GC. Reverse zoonotic disease transmission (zoonanthroponosis): a systematic review of seldom-documented human biological threats to animals. [Review] *PLoS ONE* 2014; 9(2):e89055.  | - West Nile Virus Case Study  
               - Rabies Case Study |
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<td>Mon 2/16</td>
<td>No Class</td>
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<td>Thurs 2/19</td>
<td>Human-Animal Connections</td>
<td>• Discuss mutually beneficial relationships between animals &amp; humans (e.g., companion animals)</td>
<td>• Rabinowitz PM, Scotch ML, Conti LA. Animals as sentinels: using comparative medicine to move beyond the laboratory. <em>ILAR J.</em> 2010; 51(3):262-7.</td>
<td>• Human-Animal Interactions Case Study</td>
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<tr>
<td>Mon 2/23</td>
<td>Climate Change &amp;</td>
<td>• Identify &amp; analyze impact of climate change on biodiversity, human &amp; animal health</td>
<td>• Patz JA, Hahn MB. Climate change and human health: a One Health approach. *Curr</td>
<td>• Cooling Off the Warming Planet: Analyzing the Tradeoffs in Policies</td>
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| Mon 3/2 | **Environmental Health**         | • Describe relationship between climate change & vector-borne/zoonotic diseases (e.g., shortening of incubation periods, disruption & relocation of human populations)  
• Discuss land use & built environment to mitigate risk of wildlife pathogen spillover | Top Microbiol Immunol. 2013; 366:141-71  
| Mon 3/2 | **Food Production & Safety**     | • Discuss changing agricultural practices & influence on animal, human, & environmental health  
• Describe impact of changing animal food sources on human, animal & environmental health  
Wielinga PR, Schlundt J. Food Safety: at the center of a One Health approach for combating zoonoses. Curr Top Microbiol Immunol. 2013; 366:3-17. | • Farmville Future Case Study  
• Overfishing (2012 campaign)  
Video: https://www.youtube.com/watch?v=F6nwZUkBBeas |
| Mon 3/9 | **Water, Sanitation & Health**   | • Discuss a range of health issues related to water, sanitation and hygiene, how diseases are transmitted & how such transmission can be prevented through improvements in facilities, services, and behavior change  
• Discuss the main technologies & processes of water/sanitation infrastructure in low-resourced countries;  
• Describe social & cultural factors, as well as infrastructure needs, that must be considered and incorporated into the planning & implementation of water supply & sanitation | Parkes MW, Morrison KE, Bunch MJ. Towards integrated governance for water, health and social–ecological systems: The watershed governance prism. Global Environmental Change 2010; 20(4): 693-704.  
Morris, The Blue Death Book Chapters Chapters 10 and 11 | • Living Downstream Case Study  
• Let’s Talk Crap Seriously (water sanitation), Rose George  
TedTalk: http://www.ted.com/talks/rose_g eorge_let_s_talk_cra p_seriously# |
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| Mon 3/23 | Ethical        | - Identify ethical principals related to OH issues & decision-making  
- Identify competing values when selecting approaches or recommendations for dealing with a situation  
- Identify ethical dilemmas and conflict of interest situations and take action to avoid & prevent them  
- Discuss strategies by which you can ensure that decisions take into account ethics & values of all the organizations and stakeholders involved | - Walsh and Goodman. Taxol Cancer chemotherapy, biodiversity, public and private property: the case of the anti-cancer drug Taxol. *Social Science & Medicine, 1999; 49: 1215-1225.*  
- US Weekly Article- Is a Tree worth a life?                                                                 | - Taxol and Pacific Yew Tree Case Study                                                                                                                  |
| Mon 3/30 | Middlesex Fells |                                                                                                                                                                                                                   |                                                                                                                                                                                                                         |                                                                                                                   |
| Mon 4/6  | Disaster        | - Discuss the impact of different types of disasters on the human-animal-environmental interface  
- Use a case study to identify political and economic factors that predispose a geographical region to recurring disasters  
- Identify ethical issues that affect the amount and distribution of disaster response resources  
- Pending Publication                                                                                                                                   | - Disaster Response Case Study                                                                                                                         |
<p>| Mon 4/13 | Stakeholder     | - Discuss socio-cultural, spiritual, &amp; traditional influences on perceptions                                                                                                                                      | - Ross H. One health from a social-ecological systems perspective:                                                                                                                                                | - Community Based Management and Conservation in                                                                 |</p>
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<td></td>
<td><strong>Analysis:</strong></td>
<td>of health, disease, &amp; conservation of humans, animals &amp; the environment and how these can influence decision-making at local, national and international levels. • Give examples of how OH strategies can be adapted for varied cultures, beliefs, and practices</td>
<td>Enriching social and cultural dimensions. <em>Curr Top Microbiol Immunol.</em> 2013; 366:217-29 • Schwind JS, Goldstein T, Thomas K, Mazet JA, Smith WA; PREDICT Consortium. Capacity building efforts and perceptions for wildlife surveillance to detect zoonotic pathogens: comparing stakeholder perspectives. <em>BMC Public Health</em> 2014; 14:684.</td>
<td>Africa Case Study</td>
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<td>Mon 4/20</td>
<td>No Class</td>
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<td>Mon 4/27</td>
<td><strong>Student Presentations</strong></td>
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**Possible Snow Day Make up Times/Days**

4/20 after 6pm
4/28
4/29