One Health Intellectual Exchange Group Course:
Philosophy to Practical Integration of Human, Animal, and Environmental Health
Spring Semester 2013
Cross-listed at Duke (ENV 774/GLHLTH 771),
NCSU (CBS 595, Section 1/ CBS 886)), and UNC (PUBH 705 SECTION 001)
Tuesdays, 5:30-7:30 pm
North Carolina Biotechnology Center

COURSE INSTRUCTORS:

DUKE
Dr. Christopher Woods, MD, MPH
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NCSU
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Dr. Suzanne Kennedy-Stoskopf, DVM, PhD, Diplomate ACZM
Research Professor of Wildlife Infectious Disease, Department of Clinical Sciences at NCSU CVM
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Dr. Cheryl Stroud, DVM, PhD
Chair, North Carolina One Health Collaborative Steering Committee & One Health Intellectual Exchange Group
AVMA Representative, One Health Commission
Adjunct Assistant Professor, Department of Clinical Sciences at NCSU
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UNC
Dr. Larry Glickman, VMD, PhD
Professor of Epidemiology and Public Health in the Department of Emergency Medicine at UNC
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Ms. Mamie Sackey Harris, MS, MPH
Africa Programs Director, UNC Institute for Global Health and Infectious Diseases
Adjunct Assistant Professor, Public Health Leadership Program, UNC Gillings School of Global Public Health
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COURSE TA: Anne Stine
anne.stine@duke.edu
Office hours: by e-mail appointment

Course URLs: http://sakai.duke.edu, twitter coming soon!
http://onehealtheducation.blogspot.com/
http://nconehealthcollaborative.weebly.com/
http://triangleglobalhealth.ning.com/group/tghconehealth

COURSE OVERVIEW & OBJECTIVES: This interdisciplinary course will introduce the concept of One Health as an increasingly important approach to a holistic understanding of the prevention of disease and the maintenance of both human and animal health. The list of topics will include a discussion of bidirectional impact of animal health on human health, the impact of earth’s changing ecology on health, issues of food and water security and preparedness, and the benefits of comparative medicine. Learning objectives include 1) to describe how different disciplines contribute to the practice of One Health, 2) to discuss how interdisciplinary interventions can improve Global Health using a One Health model, and 3) to interact with One Health-relevant professionals in the Triangle and beyond. This graduate-level course will include a weekly multi-campus discussion-based seminar off-site at NC Biotechnology Center. The course aims to include students from Duke, UNC and NCSU from diverse disciplines relevant to One Health, including: human medicine, veterinary medicine, environmental science, public health, global health, public policy, and others.

COURSE REQUIREMENTS: No pre-requisites. Senior level undergraduates may take the course with the permission of a course coordinator from their university.

ATTENDANCE & PARTICIPATION: Attendance is mandatory for students taking the course for credit. Students are expected to attend and actively participate in class unless they have previously arranged with the course TA for an excused absence (e.g. working out-of-state, at a meeting, etc.) or have a personal or family emergency that can be verified. For UNC and NCSU students, all absences after the first must be cleared by Mamie Harris for UNC students and Dr. Stoskopf for NCSU students. Examples of excused absences can be found at http://policies.ncsu.edu/regulation/reg-02-20-03. Roll will be taken by a sign-up sheet at the start of class.

REQUIRED READING: Reading assignments will be posted on the course websites. Students are expected to familiarize themselves with the readings before class.

BLOG POST: All students will be assigned one or more sessions and will be responsible for writing a summary of the presentation/discussion for that week that will be posted to the course blog. The summary should include information about the presenter(s), topic, and any interesting questions/discussion that arose. The summary is to be submitted to the course Sakai website by no later than 5pm on the Monday following your assigned session(s). Examples from 2011/12 can be viewed on the course blog site (see above).

RESEARCH/TOPIC PAPER:
- Final paper topic to be submitted to course Sakai website by no later than 11:59pm on Monday 11 February 2013.
- Outline of final paper to be submitted to the course Sakai website by no later than 11:59pm on Monday 18 February 2013.
- Final paper to be submitted to the course Sakai website by no later than 11:59pm on Monday 15 April 2013.
REFLECTION ESSAY:
- Submitted to the course Sakai website by no later than 11:59pm on Wednesday 17 April 2013

COURSE EVALUATION

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<thead>
<tr>
<th>TWO CREDITS</th>
<th>THREE CREDITS (avail Duke &amp; NCSU)</th>
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<tr>
<td>Total Points Possible</td>
<td>100 points</td>
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<td>Class Attendance</td>
<td>20 points</td>
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<td>Blog Post</td>
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<td>Research Topic Outline</td>
<td>5 points</td>
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<td>Research Topic Final Paper</td>
<td>30 points</td>
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<td>Reflection Paper</td>
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<td>One Health in the News</td>
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GRADING: Course instructors from each of the universities will be responsible for grading, with some assistance from the TA.

Duke and UNC undergraduate students will be graded on the A, B, C, D, F scale.

NCSU undergraduate and graduate students will be graded on the A, B, C, D (+ or -), F scale.

Duke graduate students will be graded on the A, B, C (+ or -), F scale.

UNC graduate students will be graded on the High Pass (H), Pass (P), Low Pass (L) scale.

A+ = 97 – 100; A = 93-96.9; A- = 90-92.9
B+ = 87 – 89.9; B = 83-86.9; B- = 80-82.9
C+ = 77 – 79.9; C = 73-76.9; C- = 70-72.9
D+ = 67 – 69.9; D = 63-66.9; D- = 60-62.9
F = < 60

H, P, L Scale:
H = 90 – 100
P = 80 – 89.9
L = 70 – 79.9

STUDENTS WITH DISABILITIES: Reasonable accommodations will be made for students with verifiable disabilities. Please contact the course TA for additional information.
DESCRIPTION & GUIDELINES FOR ASSIGNMENTS

Final Research Paper:

Choose a One Health topic of current importance or relevance. Research on the topic and write a paper clearly describing the one health relevance of the topic and current progress on the topic. Include in your discussion the socio-economic, cultural, and ethical relevance of the topic and the importance to having a One Health approach in solving the issue. Conclude with lessons learned and recommendations for the way forward in addressing this issue and achieving a One Health solution.

Suggested topics. Students can select other topics with prior approval by a course instructor.

- **Environmental Health/Ecology**
  - Heavy metal contamination of freshwater in North Carolina
  - Environmental drivers of tick populations
  - Harmful algal blooms associated with either brevetoxin or domoic acid exposures
  - Palm oil plantations in Indonesia

- **The Human and Companion Animal Bond: The Tie that Binds**
  - Pets as sentinels of domestic violence
  - Use of animals for therapy
  - Animals in retirement/rest homes

- **Zoonoses and Emerging Infectious Diseases**
  - Toxoplasmosis
  - Multidrug resistant tuberculosis
  - Zoonotic intestinal parasites
  - *Morganella morganii* infection
  - *Candidatus neoehrlichia mikurensis*
  - Lyme diagnostics in pets and people

- **Food/Water Safety**
  - Cryptosporidiosis
  - Norovirus and shellfish safety
  - *E. coli* O157:H7
  - Use of GMOs in food crops vs. other crops (e.g. BT potato/cotton)

- **Disease Surveillance, Informatics, Disaster Preparedness**
  - Global zoonotic disease surveillance
  - Wildlife/environmental radiation exposure in a disaster (e.g. Chernobyl vs. Japan)

- **Benefits of Comparative Medicine**
  - Regenerative Medicine: stem cell transplant applications
  - Armadillos and the search for a cure for leprosy

Guidelines for Research Paper Outline

- Format as a topic outline (i.e. short phrases) NOT a sentence outline (i.e. full sentences).
- Include all sections of the final paper - Use appropriate indentation and alternating levels of numbers/letters to reflect all sections of the final paper.
- The outline should be a close approximation of the structure of your final paper. Small
changes/adjustments are permitted.

• Include a title page with the title, student’s name, degree, current university or program, and student ID number double-spaced and centered on the page.

Final Paper - Format and Grading Criteria

➢ Maximum of 8 pages (12pt Times New Roman, 1 inch margins, double-spaced) excluding reference list and appendices.
➢ Must be written in APA style (http://www.apastyle.org/learn/index.aspx).

• Cover page - clearly worded title plus student name, degree and current university or program.
• Introduction with clear summary of significance and extent of the issue (5 points)
  o This should include a brief description of why the selected research topic is important, what key issues need to be addressed and why it is a good One Health research topic.
• Background & Problems (5 points)
  o Describe the prevalence of the issue and the local and global dimensions of the problem. Include the socio-political, economic and cultural relevance of the issue. Discuss the animal-human-environmental dynamics involved.
• Discussion (12 points)
  o Discuss how implementing the One Health approach is helping this area of research and/or how this area of research would benefit from the One Health approach.
  o Discuss the human, animal and environmental ramifications of the One Health approach and where possible use a figure (Venn diagram/flow chart/conceptual model) to illustrate the human/animal/environmental relationships.
  o Discuss some of the social, ethical and economic implications of the topic and how these dimensions may add complexity to the health issue.
• Conclusion and Recommendations (5 points)
  o What lessons or best practices can be learnt from your current research?
  o What next steps need to be taken to help address the issue locally and/or globally?
  o Include recommendations for improved solutions with a One Health approach
  o Recommendations for improved solutions must be backed with well cited academic literature
• Literature Cited (3 points)
  o Include at least 10 primary references from academic peer-reviewed journals
  o Reference list not included in page count.

Reflection Essay

➢ Maximum of 3 pages (12pt Times New Roman, 1 inch margins, double-spaced).
➢ Include name and student ID number in the upper left corner of each page

• Discuss what insights, inspirations, new knowledge, etc. you will be taking away from this course.
Questions you may wish to consider:
  o What does One Health mean to you?
  o What is your perspective on the importance of One Health?
  o What potential impact will your knowledge of One Health have on your career path?
  o What did you learn about One Health from this class that you were not expecting?
LECTURE SCHEDULE:

Introduction to One Health

Jan 8  What is One Health all about?  
Dr. Marguerite Pappaionou, Senior One Health Technical Advisor to the USAID funded Respond Project, Emerging Pandemic Threats Program at Development Alternatives, Inc. (DAI)

How do One Health and Global Health fit together?  
Panel Discussion on the interconnectedness of One Health and Global Health

Environmental Health / Ecology

Jan 15  Water as an important environmental resource--  
Mark Sobsey, MS, PhD, UNC Professor, Department of Environmental Sciences and Engineering, Director, Environmental Microbiology Laboratory  
Jamie Bartram, PhD, UNC Professor, Department of Environmental Sciences and Engineering, Director of the Water Institute

Jan 22  Environmental Impacts of Flame Retardants on Humans and Animals  
Heather Stapleton, PhD, Duke Nicholas School of the Environment  
Janice Dye, DVM, PhD, Environmental Protection Agency

Jan 29  Health Impacts of Natural Resource Extractions - Gold mining in Peru: ecosystem and health impacts of uncontrolled mercury use; Ecological and Human Health Impacts of Mountaintop Mining  
Jennifer Swenson, PhD, Assistant Prof. of the Practice, Duke  
Rich Di Giulio, PhD, Professor of Environmental Toxicology, Duke

Zoonoses and Emerging Infectious Diseases

Feb 5  Wildlife tuberculosis on the move in Southern Africa: Issues from a One Health perspective?  
Anita Michel, DVM, PhD, University of Pretoria

Feb 12  Conservation through Public Health – Promoting wildlife conservation through a One Health approach  
Title TBD  
Gladys Kalema, DVM, PhD, founder of Conservation Through Public Health (an organization in Uganda dedicated to the coexistence of endangered mountain gorillas, other wildlife, humans, and livestock in Africa).

Food / Water Safety

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Ben Chapman and Andrea Anater—What do individuals do when they are worried about feeding their families?
Andrea S. Anater, PhD, MPH, MA; Public Health Nutrition Researcher, RTI
Ben Chapman, PhD, Asst. Professor & Food Safety Specialist, NCSU

The Human and Companion Animal Bond: The Tie that Binds, part 1

Feb 26 Animals in Hospital Settings
Dr. Helen Hoenic, Duke University, MD, MPH
Kendra Monden, Chief, Recreation Therapist at Veterans Health Administration, DURVAC.

One Health in the News
Mar 5 One Health in the News – Topics brought forward by participants: Open Discussion Session
March 12 One Health in the News – Topics brought forward by participants: Open Discussion Session

Disease Surveillance, Informatics, and Disaster Preparedness

March 19 A Global Prospective on Infectious Animal Diseases - Surveillance and Monitoring what can lead to?; One Health, Food Security, and Climate Changes: What are the connections?
Mo Salman, BVMS, MPVM, PhD, DACVP, F.A.C.E., Colorado State University College of Veterinary Medicine

March 26 Dr. Peter Cowen, NCSU College of Veterinary Medicine, DVM, MPVM, PhD, AVES (Hon.)

The Human and Companion Animal Bond: The Tie that Binds, part 2

April 2 A Feminist Perspective of the Human/Animal Bond and Training Dogs to Monitor Diabetics
Kathy Rudy, Duke University and Sue McKinney

Benefits of Comparative Medicine

April 9 Alternative Models for Comparative Vertebrate Research
Dr. Michael Stoskopf, NCSU College of Veterinary Medicine
Rear Admiral Dr. William Stokes, NIEHS

April 16 Brian Hare and Vanessa Woods – Authors of ‘Bonobo Handshake’
One Health in the Bigger Picture: Policy, Education, Conclusions

April 23  Cap-note speaker – Dr Wang, Lin-Fah