

**One Health Intellectual Exchange Group Course:
Philosophy to Practical Integration of Human, Animal, and Environmental Health
Fall Semester 2020
Cross-listed at Duke (ENV 774/GLHLTH 771),
NCSU (CBS 595, Section 5/VMP 986), and UNC- Chapel Hill (PUBH 705 / ENVR 705)
Mondays, 5:00-7:00 pm.**

COURSE INSTRUCTORS:

DUKE

Dr. Christopher Woods, MD, MPH
Trent Hall, Room 108, 919-451-9795
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UNC

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NCSU

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Dr. Megan Jacob, MS, PhD
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COURSE TA:

Brandon Adams
Additional TA - TBC

**Office hours: By Email, appointment with
TA or any course instructor.**

Course URLs: <https://sakai.unc.edu/welcome/> , Twitter: @NC_OneHealth
<http://nconehealthcollaborative.weebly.com>

COURSE OVERVIEW: This interdisciplinary course will introduce the concept of One Health as an increasingly important approach to a holistic understanding of the promotion and maintenance of human, animal, and environmental health. Among the topics covered are bidirectional impacts of human health and animal health, the impact of earth's changing ecology on health, issues of food and water security, emergency preparedness, and the benefits of comparative medicine.

COURSE FORMAT: Weekly multi-campus discussion-based seminars **held online via Zoom.** Guest lectures by experts in One Health and Global Health including, panel discussions, case studies, group discussions and presentations. Student responsibilities include timely completion of assigned readings and coursework plus active participation in small group discussions and activities. We encourage asking questions during class and in the breakout sessions.

LEARNING OBJECTIVES:

At the end of the course, students should be able to:

- Demonstrate knowledge in and an understanding of the practice of One Health.

- Critically analyze and interpret contemporary issues, problems and controversies in One Health.
- Strategically evaluate and recommend interdisciplinary interventions to improve global health using a One Health model.
- Gain collaborative problem solving and develop written and oral communication skills in One Health through course discussions and networking with One Health Professionals.

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 must attend and actively participate in class unless they have previously arranged with their institutional instructor for an excused absence (e.g. working out-of-state, at a meeting, etc.) or have a verifiable personal or family emergency. All absences must be cleared by Dr. William Pan for Duke students, Mamie Sackey Harris or Dr. Jill Stewart for UNC students and Drs. Kara Walker or Megan Jacob for NC State students. Examples of excused absences can be found at <http://policies.ncsu.edu/regulation/reg-02-20-03>. **Attendance will be checked online by the Course TA.**

COURSE READINGS: Unless otherwise indicated, course readings are posted in the course Sakai site under the “Resources” folder. Students should review readings before class.

COURSE EVALUATION: This class is offered for variable credit depending on course work assignments and individual university expectations. NC State veterinary students are graded under VMP 986 criteria on a separate syllabus.

Monday Zoom - Meeting ID: 939 0018 3141 and Passcode: 083120

Thursday Zoom - Meeting ID: 967 8332 7289 and Passcode: 205360

	ONE CREDIT	TWO CREDITS	THREE CREDITS
Class Attendance	20 points	15 points	10 points
One Health Critical Issues discussion	15 points	15 points	15 points
Research Topic Outline & Final Paper	n/a	40 points	35 points
*Thursday – One Health discussion	n/a	n/a	15 points
**Critical issue in One Health Essay	35 points	n/a	n/a
Reflection Paper	20 points	20 points	15 points
One Health Film Festival Presentations	10 points	10 points	10 points
TOTAL POINTS POSSIBLE	100	100	100

All Duke students, graduate (3 credit) and undergraduate (1 credit), follow the 3-credit requirements

** 3-credit students only (see notes on page 3).*

***1-credit students only (see notes on page 3).*

All students will attend the weekly Monday evening lecture **online via Zoom**. The lecture series is composed of invited subject matter experts from carefully chosen fields of One Health practice namely: environmental health and ecology, zoonosis and emerging infectious diseases, food and

water safety, the human and animal bond, comparative medicine, One Health policy, and disease surveillance and informatics. Students will be required to participate in One Health critical issues discussions led by small 2-3 student inter-disciplinary student teams. Each week, students will be randomly assigned to one of three Zoom breakout rooms – Human, Animal or Environmental Health for a 30 - minute discussion. The Zoom breakout sessions are structured as an informal time for students to share their thoughts and ideas while getting feedback from faculty, peers and guest experts. Finally, all students will submit a 2-3 page (double-spaced) essay reflecting on their observations on how their experience and new knowledge about the One Health framework influences their career choices.

Students taking the class for two and three credits will submit a final research paper on a self-selected topic in One Health. (See the final paper description on page 4 of the syllabus).

***Three (3) credits - includes all Duke students:**

Students taking the class for 3-credits attend a one-hour discussion on Thursdays 8:00 – 9:00am, online via Zoom. Each student is assigned to lead a morning discussion session - this involves, briefly summarizing the current week's lecture, demonstrate connections to previous lectures, briefly highlight the human, animal and environmental issues, the global and local health impacts and the benefits of multi-disciplinary collaboration. The student lead will share with the group, one additional academic reading relevant to the week's topic. The student will also present a current “One Health in the News” update, which will consist of a 10-15 minute informal description of any current and noteworthy One Health event. This may consist of a One Health item in the news, general media, journal article, or a One Health event such as a conference. *See the course Sakai site for assigned dates for student leads.*

Notes: NC State students taking this course for three credits must also enroll in CBS 610, otherwise, NC State students in CBS 595 are graded under the Two Credit rubric.

**** UNC one (1)-credit students only:**

UNC Students taking the course for one credit must attend a minimum of 10 lectures including all required lectures. Instead of the final research paper, UNC one-(1) credit students write a 4-page, essay on a current global or domestic health issue of their choice, highlighting the human, animal and environmental issues, the global and local health impacts and the benefits of multi-disciplinary collaboration.

GRADING: Course instructors from the three universities will be responsible for grading.

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

NC State 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), and Low Pass (L) scale.

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

REASONABLE ACCOMMODATIONS POLICY: Reasonable accommodations will be made for students with disabilities (long/short-term), resulting in difficulty with accessing learning opportunities. Please contact the course TA for additional information. For UNC students, accommodations are coordinated through the Accessibility Resources and Services Office. See the ARS Website <https://ars.unc.edu> or email ars@unc.edu

Title IX Resources. Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Please contact the Director of Title IX Compliance (Adrienne Allison – Adrienne.allison@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gvsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at safe.unc.edu.”

ASSIGNMENTS - (DESCRIPTION & GUIDELINES)

One Health Critical Issues Discussion (All students):

Thirty (30) minutes of most Monday lectures are reserved for student-led round table discussions with their peers, teaching faculty and occasionally the guest presenter. These round table discussions are an opportunity for students to have extended dialogue on the day’s topic and are not open to the public. Interdisciplinary student teams lead the discussions. The team will research and lead a Zoom breakout room discussion on a One Health case study directly related to the lecture topic. *In addition*, student leads have the opportunity to briefly (~5 minutes) share any **related** One Health information from the popular press, social media (e.g. tabloids, news media, twitter etc.) or academic journal articles. *The One Health information **must be related to the topic of the day** and is intended as a fun / interactive way to bring the class up to speed with current local or global events.* The critical issues discussion sessions are an informal time for students to share their thoughts and ideas whilst getting helpful feedback from faculty, peers and guest experts. Student leads can structure the discussions how they like. The objective of the discussion is to stimulate transdisciplinary thinking and analysis. All students must come prepared to participate in these discussions. *See the course Sakai site for specific dates assigned to each team and general discussion guidelines.*

One Health Critical Issues Essay – UNC one-credit students only:

Students taking the class for one credit are exempt from writing the final paper. One-credit students will instead write a four (4) page double -spaced essay, on a current global or domestic health issue of their choice. The essay should explain the human, animal and environmental health perspectives of the issue and the benefits of multidisciplinary and collaborative One Health systems approach. The essay should include a brief introductory paragraph with a well-crafted one-sentence thesis statement. *See the course Sakai site for the essay format and grade rubric.*

Final Research Paper - two & three credit students only:

Choose a One Health topic of current importance or relevance - the topic must be approved by a course instructor. Research the topic and write a paper (9 -10 pages double-spaced) 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 of 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 - see topic examples on page 5 of the

syllabus. See the course Sakai site for the final paper grade rubric.

Final Paper topic justification and outline - two & three credit students only:

Briefly state the importance and rationale for the topic chosen and the One Health relevance of the topic (i.e. the human, animal and environmental dynamics). Include a 1-2 page outline that captures all sections of the final paper. The outline should be a close approximation of the structure of your final paper. See the course Sakai site for a detailed description.

Final Paper - Topic examples:

These examples reflect the breadth of potential topics. Students should select their topic with prior approval by a course instructor.

- Environmental Health/Ecology
 - 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
- Zoonosis and Emerging Infectious Diseases
 - Toxoplasmosis
 - Multidrug resistant tuberculosis
- Food/Water Safety
 - Cryptosporidiosis
 - Norovirus and shellfish safety
- 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

Reflection Essay- All students:

Students write a 2-3 page (double-spaced) essay reflecting on their observations on how their experience and new knowledge about the One Health framework influences their career choices.

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

One Health Film Festival and Competition:

We will have the First Annual One Health Film Festival where students work in small teams (no more than 5) over the semester to present a 3-8 minute video clip meant to educate, inspire and/or raise awareness of the film's chosen topic. We have modeled this assignment based on the One Earth Film Festival (<https://www.oneearthfilmfest.org/contest-details>) for which student teams are eligible to submit their films by January 5, 2021 (and be eligible to win \$2000). Your team may prepare the film on any of the following topics:

- COVID-19
- Climate change
- Energy
- Food
- Transportation
- Waste
- Water
- Wildlife and Ecosystems

Films should provide information on the above topics from a One Health Perspective. If you do NOT intend to submit to the One Earth competition, we recommend one of the top two listed topics (COVID-19 or Climate Change). All video presentations will be shown on the last day of class and will be judged by an expert panel with the top two (2) videos given a class award. *See the course Sakai site for the moderate grading criteria.*

ASSIGNMENT DUE DATES:

Submit assignments before the deadline in the **drop box** on Sakai.

September 4 **Final Paper Topic Justification & Outline (2 and 3 credits)**: Topic justification and paper outline posted on Sakai by 11:50 pm.

October 29 **Final Paper (2 and 3 credits)**: Final paper posted on Sakai by 11:50pm.

Critical Issue in One Health Essay (UNC 1 credit students only): One Health Essay posted on Sakai by 11:50pm.

November 6 **Reflection Essay (all students)**: Reflection essay posted on Sakai by 11:50pm.

November 15 **Film Festival - One Health Videos**: Videos posted on Sakai by 11:50pm.

----- ONE HEALTH COURSE - LECTURE SCHEDULE Fall Semester 2020 -----
(Monday 5:00pm – 7:00pm)
All classes are online via Zoom. See the Sakai course site for the Zoom connection.

MODULE 1: INTRODUCTION TO ONE HEALTH

Aug 10 One Health course review and class format – UNC-CH and NCSU students only.

Aug 17 **What is One Health?**
Course Faculty: Brief welcome and Introduction to the concept of One Health.
Short faculty presentations on One Health and class discussion.

Course /Syllabus Review with Students 6:15pm - 7:00pm

MODULE 2: DISEASE SURVEILLANCE, INFORMATICS, AND DISASTER PREPAREDNESS (ONE HEALTH IN THE BIGGER PICTURE).

Aug 24 **Jonathan Quick, MD, MPH.** Management Sciences for Health, Senior Fellow Emeritus, former President and CEO Harvard Medical School, Instructor in Medicine Brigham and Women’s Hospital, Division of Global Health Equity. Author, *The End of Epidemics: The Looming Threat to Humanity and How to Stop It.*

Class Discussion

MODULE 3: THE HUMAN AND ANIMAL BOND: THE TIE THAT BINDS

Aug 31 **Humans and Animals: An uneasy past, present and future.**
Kara Walker, PhD. Research Assistant Professor of Behavioral Ecology, NC State University. College of Veterinary Medicine.

Class Discussion

First ASSIGNMENT DUE - September 4 @ 11:50pm. -- Final Topic Justification and Outline.

MODULE 4: IMPORTANCE OF A BUSINESS APPROACH & POLICY MAKING IN ONE HEALTH

Sept 7 **Diversity and inclusion in one Health**
Carlos Mena, PhD. Co-Director Galapagos Science Center, Director Galapagos Research - Universidad San Francisco de Quito, Ecuador (USFQ); Director, Institute of Geography USFQ, Adjunct Professor Geography UNC Chapel Hill.

Labor Day: Duke and NCSU not on break, UNC break.

Class Discussion

MODULE 5: ENVIRONMENTAL HEALTH / ECOLOGY (PART 1)

Sept 14 **Jonathan Patz, MPH, MD.** Director Global Health Institute University of Wisconsin – Madison. John P. Holton Chair in Health and the Environment.

Class Discussion

MODULE 6: ZONOSSES AND EMERGING INFECTIOUS DISEASES

Sept 21 **Chris Woods, MPH, MD.** Professor, Departments of Medicine and Pathology at Duke University, Co-Director of the Hubert-Yeargan Center for Global Health and Chief, Infectious Diseases Division , Durham VA Medical Center.

Class Discussion

MODULE 7A: FOOD AND WATER SAFETY/SECURITY (Food Safety & Security).

Sept 28 **Food Security and COVID-19.**
Mamie Sackey Harris, MS, MPH. Adjunct Assistant Professor, UNC Gillings, Public Health Leadership Program. Food Security Supervisor, COVID-19 Contact Tracer, Office of Policy and Prevention, Mecklenburg County Public Health Department NC.

Class Discussion

MODULE 8: ONE HEALTH IN THE BIGGER PICTURE: SCIENCE, POLICY, PARTNERSHIPS AND EVIDENCE BASED HEALTH ACTION.

Oct 5 **COVID-19 and One Health: Science, Policy, Partnerships and Evidence based Health Action.**
Mandy Cohen, MD, MPH. Secretary NC Department of Health and Human Services. Adjunct Professor, UNC Gillings, Department of Health Policy and Management.

Class Discussion

MODULE 9: BENEFITS OF COMPARATIVE MEDICINE

Oct 12 **Lauren Schnabel DVM, PhD, Dip. ACVS, Dip. ACVSMR**
Associate Professor of Equine Orthopedic Surgery in the Department of Clinical Sciences at NC State College of Veterinary Medicine.

Class discussion.

Oct 19 **One Health Case Study**
***Brucella suis*: A re-emerging pathogen at the human, livestock, and wildlife interface.** An interactive case study exploring responses to feral swine crop damage and *B. suis* spillover. Active audience participation led by One Health Faculty from NC State,

UNC-CH, and Duke. Bill Pan (and **Suzanne Kennedy-Stoskopf, DVM, PhD, Diplomate ACZM**, Research Professor of Wildlife Infectious Diseases, Department of Clinical Sciences at NCSU CVM).

MODULE 7B: FOOD AND WATER SAFETY/SECURITY (Water Safety & Security).

Oct 26 **Jan Willem Rosenboom,**
Snr Program Officer Water, Sanitation and Hygiene. Bill and Melinda Gates Foundation.

Class discussion.

Second ASSIGNMENT DUE - Oct 29 @ 11:50pm -- Final Paper (2 & 3 credit students) and One Health Essay (1-credit students)

Nov 2 **Young Professionals Panel Discussion: One Health - Benefits and Challenges of One Health in the work place.**
Moderator: **Lt.Caitlin Cossaboom DVM, PhD, MPH (CDC, DDID/NCEZID/DHCPP)**
Veterinary Epidemiologist, CDC Epidemic Intelligence Service (EIS) Program.

Panelists:

- **Chris Lara, MIDP**, Political scientist and international relations specialist. Coordination of Humanitarian & Political Affairs; Science Diplomacy Practitioner & Trainer.
- **Maya Nadimpalli MS, PhD** – Research Assistant Professor , Tufts Clinical & Translational Science Institute ([CTSI](#)) KL2 Scholar, Department of Civil & Environmental Engineering, Center for Integrated Management of Antimicrobial Resistance ([CIMAR](#)) Tufts University.
- **Helena Chapman, MD, MPH, PhD.** American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow at the National Aeronautics and Space Administration (NASA).

Third ASSIGNMENT DUE - November 6 @ 11:50pm -- Reflection Paper

MODULE 9: ENVIRONMENTAL HEALTH / ECOLOGY (PART 2)

Nov 9 **Speaker TBC**

Class discussion.

Fourth ASSIGNMENT DUE – November 15 @ 11:50pm – One Health Film.

Nov 16 **One Health Film Festival – class presentations**

Course wrap up.