

**INTRODUCTION TO ONE HEALTH**  
**GCH 305/ EVPP 490 / BIOL 417 – DL1**  
**Syllabus**  
3 Credit Hours  
Spring Semester 2022  
Online Hybrid Synchronous/Asynchronous  
Online Synchronous: Wednesdays 1:30-2:45

**Instructor Information**

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Chair, Professor

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**Office Hours:** BY APPOINTMENT

**Prerequisite(s):** EVPP 210 *OR* BIOL213 *OR* GCH 205 and 60 credit hours; or Instructor's permission.

Sign up for Mason Alert (e.g., weather closings, emergencies) at <https://alert.gmu.edu>

## **Course Description**

One Health (OH) is an evolving, transdisciplinary approach to tackle complex health issues by recognizing the interconnectedness of human health, animal health and the environment. It encourages moving out of our professional/educational silos toward a more holistic view of health. While OH emphasizes infectious disease ecology and prevention, the revival of this concept is expanding to embrace ecosystem health, social sciences, ecology, non-infectious and chronic diseases, biodiversity, land use, and antimicrobial resistance. In the last decade, 75% of all emerging human pathogens were zoonotic (animal to human transmission) in origin, many of which have emerged due to drastic changes in the intersection between humans, animals, and ecosystems. Solving these complex emerging health problems requires a novel understanding of these relationships, and is a major focus of OH. The OH model aims to protect all species through collaboration between physicians, veterinarians, public health professionals, environmental scientists, conservation biologists and other members of the natural, social and physical scientific community. With increased global travel and large-scale agricultural operations, new and complex environmental and health safety issues are developing at an accelerated rate, as demonstrated by the 2003 SARS pandemic, recent devastation of poultry markets by H7N9 influenza, and the disruption of disease ecology due to massive deforestation.

## **Co-teaching structure (Important)**

In order to best educate students on “One Health”, this course is being taught by three instructors across two academic units, focusing on human health (Dr. von Fricken), animal/plant health (Dr. Aguirre), and environmental health (Dr. Pollack), and This will allow you to be exposed to diverse perspectives and area expertise that they otherwise would not have to experience under the traditional teaching model.

## **Course Objectives and Student Learning Outcomes**

Upon completion of the course, students will be able to:

1. Define One Health (OH) and key terms relevant to the interface of human, animal, and environmental/ecosystem health.
2. Describe the need and potential applications for transdisciplinary education regarding the ecological connections among human, animal, and environmental/ecosystem health.
3. Explain OH concepts that cover the transdisciplinary relationship among humans, animals and their environment
4. Interpret key findings of select OH research articles and identify the intersections of the OH triad.

## **The Learning Environment**

Learning Modules - This course is organized into Course Content Modules. Included in these modules are: 1) learning objectives, 2) an overview of the topic and elaboration on concepts when appropriate, 3) lecture materials, 4) reading materials, 5) and descriptions of any activity or assignment that you need to complete. All course materials are available on Blackboard. Classes will be split up into 3 modules based on topic area. Materials will be drawn directly from WHO, CDC, USAID, USDA, USDI, USGS, EPA, FAO, FDA, and other relevant agencies, universities and organizations, to provide a more detailed description of OH.

### ***Hybrid Synchronous/Asynchronous Structure***

To best adapt to COVID-19, while maintaining engagement with faculty, we have opted to use an online hybrid synchronous asynchronous structure. This means we will meet **Online** once a week for 1 hour and 15 minutes for synchronous learning, with the remainder of the time spent completing pre-recorded asynchronous lectures, readings, discussion posts, and other activities. This strategy creates additional flexibility for distance learning, while allowing students to still interact directly with classmates and faculty once a week.

### ***Class Preparation***

Any concerns about keeping up with assignments should be discussed with the professor. More students are juggling work, research, internships, shadowing, and families. Please note “*Although many students must work to meet living expenses, employment must not take priority over academic responsibilities. Students employed more than 20 hours a week are strongly urged not to attempt a full-time academic load. Students employed more than 40 hours a week should attempt no more than 6 credits per semester. Students who fail to observe these guidelines may expect no special consideration for academic problems arising from the pressures of employment.*” (University catalog, section AP.1.2. Academic Load, see: <http://catalog.gmu.edu/content.php?catoid=27&navoid=5365#attendance>).

Please consider your responsibilities and interests and plan accordingly to protect your health and GPA!

Students should come to class ready to participate in all activities (assignments completed prior to class). They should behave in a mature and professional manner and abide by the George Mason University honor code. **Please turn off cell phones or pagers before class begins. Absenteeism should be limited to illness or emergencies,** and discuss any concerns with the instructor. Students should notify the instructor before class if they must miss a class. **Multiple missed classes will affect student grades.** Students should contact classmates to obtain lecture notes and assignments, if necessary as quizzes and exams will be based also from readings from the books and other materials. If using electronic devices (such as laptops, notebooks, tablets, cell phones), please be respectful of your peers and your instructor and do not engage in activities that are unrelated to class. Such disruptions show a lack of professionalism and can affect your grade.

**If you are a student with a disability and you need academic accommodations, please notify the instructor and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS.**

### **Instructor Student Communication**

**Email Communication.** Per university policy, we are only allowed to communicate with students using Mason email accounts. The point of contact instructor for this course is Prof. Aguirre ([aaguirr3@gmu.edu](mailto:aaguirr3@gmu.edu)) and copy Molly Corder ([mcorder4@gmu.edu](mailto:mcorder4@gmu.edu))

**Blackboard.** All course-related announcements and emails for this course will be available on Blackboard.

**Personal Questions or Concerns.** If you have personal concerns or an emergency, please contact directly Prof. Aguirre ([aaguirr3@gmu.edu](mailto:aaguirr3@gmu.edu)) and copy Molly Corder ([mcorder4@gmu.edu](mailto:mcorder4@gmu.edu)). We are available for online meetings by appointment only.

**Ask the Professor.** Ask the Professor is a discussion forum for asking me questions about the course that may be of interest to the entire class. If you have questions about a lecture or the project please use “Ask the Professor”, so that your classmates can benefit from my response. There is a tab linking to the forum on the left side of the course Blackboard page. You can also access this from the discussion tab. Please allow up to 48 hours for a response to an email.

### Course Content

All course materials will be available through Blackboard e.g., syllabus, video lectures, lecture outlines, selected readings, references, and guidelines for activities, assignments, and exercises.

### Textbook –Required:

*Natterson-Horowitz B. and K. Bowers. 2012. Zoobiquity: The Astonishing Connection Between Human and Animal Health. Alfred A. Knopf, New York, 308 pp.*

### Assignments and Grading

Assignment	Percent of final grade
Discussion Board Posts on Zoobiquity (5% each dropping the lowest grade)	25%
One Health Problem Discussion – in class (10% one per section)	30%
Test 1 (Human Health)	15%
Test 2 (Animal Health)	15%
Test 3 (Environmental/Ecosystem Health)	15%
<b>Total</b>	<b>100%</b>

### Grading Scale

The final grade will be based on this scale: A = 100–93%, A- = 92-90%, B+ = 89-86%, B=85-83, B- = 82-80%, C = 79–70%, D = 69–60%, F < 59%.

***A CURVE WILL NOT BE APPLIED.***

### **Zoobiquity discussion board posts (6 x 5% - lowest score)**

Discussion board posts responding to specific prompts on chapters of Zoobiquity. There will be 2 discussion posts due for each module (human, animal, environment) and the lowest score will be dropped.

### **One Health Activities (10% x3 = 30%)**

One in class problem discussion will occur for each module (human, animal, environment). If you are absent from the class, an alternative written assignment may be arranged at the discretion of that unit's instructor.

### **Test (15% x 3)**

Tests will be taken online and are not cumulative. Format will be made up of multiple choice, short answers, fill in the blanks, matching columns, definitions, and true/false. General questions from lectures and assigned readings will be fair game.

**Posting of Grades** – Students' assignments will be evaluated within a week, and posted to Blackboard within two weeks, after the assignment due date.

### **Late Assignments, Make-up Policy**

If an emergency occurs before an exam, you must contact me within 24 hours of the exam and must have the proper documentation for the absence. If you know that you will be missing an exam ahead of time, you must speak with me at least one week before the exam date. There will be no make-up exams for students who fail to follow this policy. Missed exams will result in a "0". Leniency will be granted given current pandemic situation.

### **Expectations for Instructors**

You can expect us to be available to help you with course assignments, readings, or any other aspect of the course. You can expect us to respond to your emails during normal working hours. Please allow 24 hours for a response. Although we often check email, you should not rely on a response in the evenings and weekends.

You can expect timely and detailed feedback on your course assignments. You can expect us to create an inclusive classroom environment that respects the diverse perspectives offered by each of you.

### **Expectations for Students**

**Minimum Technology Requirements** - Students are required to have access to a computer to be able to use all functions on Blackboard, including videos, a compatible web browser, a reliable high-speed Internet connection, and word processing and presentation software. Visit [Mason](#)

Online to view Minimum Hardware/Software requirements and to view a list of supported browsers and operating systems.

***Minimum Student Technical Skills*** - Students should (1) be familiar and regularly use a computer network, (2) be able to access the Universities Learning Management System LMS - Blackboard, (3) be able to send and receive messages via GMU e-mail, and (4) be able to upload and download computer files.

***Activities, Assignments, and Exercises*** - Students are expected to do their own work. It is a good idea to make multiple back-up copies of your work. Major assignments will not be returned. All assignments must be completed in accordance with their respective guidelines.

### **Academic Integrity**

George Mason University requires all members of its community to be honest in all their endeavors. As a member of the Mason community, students pledge on their honor to neither give nor receive unauthorized aid while working or completing assignments and examinations. Any individual who becomes aware of a violation of the Mason Honor Code is bound by honor to take corrective action. For more information, visit the **Mason Honor Code** website.

***Netiquette*** - Please use professional language in all course communications, including emails and discussion board posts. Use correct punctuation, avoid abbreviations, and follow all other rules of formal writing. Be respectful of others in your posts and responses.

***Commercial Sale of Course Lectures*** - The content presented in the class is the property of the instructors and George Mason University and may not be duplicated in any format without permission from the instructors, and may not be used for any commercial purposes. Students violating this policy may be subject to discipline under the Mason Conduct Code.

### **Student Support**

***Special Accommodations*** - If you anticipate barriers related to the format or requirements of this course; please let the instructor know as soon as possible. If disability related accommodations are necessary (for example, extended time on exams, captioning), please register with the Office of Disability Services, (703) 993-2474), and then notify me of your eligibility for reasonable accommodations.

***Distance Education Library Services*** –Students enrolled in online courses at Mason have 24/7 access to licensed full text databases that allow you to search for articles from thousands of scholarly journals, newspapers, reference materials, e-books, and popular magazines. Visit the Distance Education Library Services website for details.

**Online Writing Lab (OWL)** - In addition to face-to-face tutoring, the Writing Center offers the Online Writing Lab (OWL). With this resource, you can email your paper to a tutor and get feedback almost immediately. Visit [Mason Online](#) for details.

**Software Tutorials** – An online subscription library, [lynda.gmu.edu](http://lynda.gmu.edu) offers more than 2,000 tutorial videos on a range of topics such video production, developing effective presentations, excel training, and resume writing. For more information go to [GMU's Lynda.com](#) website. Links are provided through Blackboard for additional tutorials. Sign up for Mason Alert (e.g., weather closings, emergencies) at <https://alert.gmu.edu>

**Additional Publications on One Health (not required for the course):**

**Books:**

1. Atlas R. and Maloy S. 2014. *One Health: People, Animals, and the Environment*. ISBN – 13: 978-1555818425
2. Cork S., D. Hall and K. Liliobjelke. 2016. *One Health Case Studies: Addressing Complex Problems in a Changing World*. 5M Publishing Ltd ISBN – 978-1-910455-55-5
3. Hermann J.A. and Y.J. Johnson-Walker. 2018. *Beyond Health: From Recognition to Results*. Wiley Blackwell ISBN-13: 978-1119194491
4. Kahn L.H. 2016. *One Health and the Politics of Antimicrobial Resistance* Johns Hopkins University Press ISBN – 978-1-4214-2004-2
5. Mackenzie J.S., M. Jeggo, P. Daszak, and J.A. Richt (eds.). 2013. *One Health: The Human-Animal-Environment Interfaces in Emerging Infectious Diseases*, Springer, New York. ISBN 978-3-642-36889-9
6. Zinsstag J., E. Schelling, D. Waltner-Toews, M. Whittaker, and M. Tanner (eds.). 2015. *One Health: the theory and practice of integrated health approaches.*, CABI, London, UK – ISBN 9781780643410

**Journals:**

Animals, Conservation Biology, EcoHealth, Emerging Infectious Diseases, Environmental Health Perspectives, International Journal of One Health, Journal of Wildlife Diseases, Journal of Preventative Veterinary Medicine, Journal of Zoo and Wildlife Medicine, One Health Journal, PLoS One

**Course Schedule 2022\***

Week	Date	Module	Topic	Readings	Assignments
1	1/26	Human Health	Introduction to the Course. General concepts definitions: A history and overview of One Health		
2	2/2		Epidemiology, study design, & perception of infectious disease.  A One Health approach to investigating vector-borne diseases	Zinsstag, 2011	Zoobiquity Chapters 1&2 Discussion Post (due 2/9)
3	2/9		The role humans play in the emergence of infectious disease.	Billiot, S., & F. M. Mitchell. 2018.	Zoobiquity chapters 3&4 Discussion Post (due 2/16)
4	2/16		In class—human health activity		
5	2/23		Globalization, high threat pathogens, and the next "big epidemic"  Zoom conversation with One Health expert	Gaffey & Viboud 2018	Take home exam 1 (due 3/2)
6	3/2	Animal/Plant Health	Zoonoses and anthropozoonoses	Messenger et al. 2014	Zoobiquity chapters 5&6 (due 3/9)
7	3/9		Diseases of economic importance	Aguirre 2010	Zoobiquity Chapters 7&8 (due 3/16)
8	3/16		Spring Break		
9	3/23		In class—animal health activity	Aguirre et al. 2019	
10	3/30		Zoom conversation with One Health expert		Take home exam 2 (due 3/30)
11	4/6	Environmental Health	Introduction: Changing environments, globalization, and environmental exposures		Zoobiquity Chapters 9&10 (due 4/6)
12	4/13		Climate change and land use: unhealthy landscapes	Zinsstag et al. 2018	



13	4/20		Zoom conversation with One Health expert		Zoobiquity Chapters 11&12 (due 4/13)
14	4/27		In class—environmental health activity		
15	5/4		Agriculture/CAFOs and antibiotic resistance	Casey et al. 2015	Take Home Exam 3 (due 5/5)

**\*Schedule is subject to change**

## Readings

### Module 1: Human Health

- Zinsstag, J., E. Schelling, D. Waltner-Toews, and M. Tanner. 2011. From “one medicine” to “one health” and systemic approaches to health and well-being. *Preventive Veterinary Medicine* 101:148–156.
- Billiot, S., and F. M. Mitchell. 2018. Conceptual interdisciplinary model of exposure to environmental changes to address indigenous health and well-being. *Public Health*.
- Gaffey, R. H., and C. Viboud. 2018. Application of the CDC Ebola Response Modeling tool to disease predictions. *Epidemics* 22:22–28.

### Module 2: Animal/Plant Health

- Messenger AM, Barnes AN, and Gray GC. 2014. Reverse zoonotic disease transmission (zooanthroponosis): A systematic review of seldom-documented human biological threats to animals. *PLoS ONE* 9(2): e89055. doi:10.1371/journal.pone.008905
- Aguirre, A. A., N. Basu, L. Kahn, X. Morin, P. Echaubard, B. Wilcox, V. Beasley. 2019. Transdisciplinary and social-ecological health frameworks – novel approaches to emerging parasitic and vector-borne diseases. *Parasite Epidemiology and Control* 3.
- Aguirre, A.A., 2010. Chapter 7. Parasitic diseases of wildlife and domestic animals: new trends of disease emergence. In: P-C Lefèvre, J Blancou, R Chermette, G Uilenberg (editors). *Infectious and Parasitic Diseases of Livestock*, Lavoisier, Paris, France, pp. 73-77.

### Module 3: Environmental/Ecosystem Health

- Ma MJ, Wang GL, Anderson BD, Bi ZQ, Lu B, Wang XJ, Wang CX, Chen SH, Qian YH, Song, Li M, Lednicky JA, Zhao T, Wu MN, Cao WC, Gray GC. Evidence for Cross-species Influenza A Virus Transmission Within Swine Farms, China: A One Health, Prospective Cohort Study. *Clin Infect Dis*. 2018 Feb 1;66(4):533-540. doi: 10.1093/cid/cix823.
- Zinsstag J., L. Crump, E. Schelling, J. Hattendorf, Y.O. Maidane, et.al. 2018. Climate change and One Health *FEMS Microbiol Lett*. 365(11): fny085.
- Casey JA, Kim BF, Larsen J, Price LB, Nachman KE. Industrial Food Animal Production and Community Health. [Curr Environ Health Rep](#). 2015 Sep;2(3):259-71. doi: 10.1007/s40572-015-0061-0.