



UNIVERSITY OF
Global Health
EQUITY



One Health: An Innovative Approach to Equitably Address Complex Health Problems

University of Global Health Equity & Western University
Certificate Short Course

COURSE DESCRIPTION

This course provides an introduction to One Health, which is **a collaborative and interdisciplinary approach with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, and their shared environment.** The ways in which One Health principles can be applied to tackle inequities and to empower marginalized communities will also be highlighted.

Offered jointly by the University of Global Health Equity, Western University and the University of Rwanda, this course presents a novel framework through which health professionals, educators, leaders, policymakers and professionals from diverse disciplines can equitably and ethically address complex health challenges. Scientific evidence has shown that the links between human, animal and environmental health are becoming more pronounced and this widening responsibility for health across disciplines brings with it the recognition that an important transformation for the upcoming workforce is required in attitudes and practices. In light of the on-going COVID-19 pandemic, it is becoming clearer that the one-dimensionality of global governance of infectious diseases has created a weak response infrastructure that has failed to fight against the current, and future pandemics. As such, the global community has realized that in order for solutions to current and future health threats to be successful and sustainable, it is essential for professionals from various disciplines, the communities most impacted, and stakeholders in different sectors of society to join forces and expertise.

COURSE OBJECTIVES

At the end of this course, participants will be able to:

- Identify the interconnectedness and interdependence between human, animal, and environmental health
- Describe principles of the One Health approach and apply it to their respective profession or training
- Demonstrate the importance of training all professionals in One Health
- Recognize the critical importance of interdisciplinary collaboration
- Assess, critique and improve the existing tools and resources for effective implementation of One Health
- Analyze strategies to integrate One Health as a central approach to the success in overcoming global health threats

COURSE OUTLINE

This course is split into four different sessions as follows:

Sessions	Faculty & expert panelists
An Introduction to One Health	<ul style="list-style-type: none">• Dr. Phaedra Henley (UGHE)• Dr. Francisco Olea-Popelka (Western University)• Dr. Getnet Yimer (the Ohio State University and the Global One Health Initiative)• Prof. Mabel Nangami (Moi University)
One Health in Education and Research	<ul style="list-style-type: none">• Dr. Janna Schurer (UGHE)• Prof. Martin Ntawubizi (University of Rwanda)• Dr. Marie Fausta Dutuze (Rwanda Institute for Conservation Agriculture)
Empowering the Marginalized and the Impoverished: One	<ul style="list-style-type: none">• Dr. Anselme Shyaka (UGHE)• Dr. Renzo Guinto (St Luke's Medical Center College of Medicine & Sunway Centre for Planetary Health)
Operationalizing One Health: Best Practices and Success Stories	<ul style="list-style-type: none">• Gloria Igihozo (UGHE)• Dr. Charles Karangwa (Forensic Laboratory Rwanda)

SESSION 1: AN INTRODUCTION TO ONE HEALTH

Instructors:

Many of the global health challenges we face (pandemics such as COVID-19, climate change, among others) cross disciplines and borders, and require collaborative efforts to effectively address them. In this session, you will be introduced to core concepts and competencies of One Health and how this community-placed, evidence-based approach ensures optimal health for humans, other animals, and their shared environment. Using case studies and real-life examples, this session will allow participants to explore the practical application of One Health towards developing sustainable and equitable solutions for global health problems.

Learning Objectives:

- Identify the interconnectedness and interdependence between human, animal, and environmental health
- Understand and identify wicked problems
- Identify and describe opportunities for interdisciplinary collaborations among human, animal, environmental health professionals
- Demonstrate the importance of training professionals from various disciplines in One Health
- Apply One Health principles and tools in responding to global health challenges

Required pre-readings:

- Ruckert, A., Zinszer, K., Zarowsky, C., Labonté, R., & Carabin, H. (2020). What role for One Health in the COVID-19 pandemic? *Canadian Journal of Public Health*, 111(5), 641–644. <https://doi.org/10.17269/s41997-020-00409-z>
- [A new way to fight infectious diseases and predict outbreaks](#), A ted talk by Dr. Katendi Changula
- [The ties that bind: One Health](#), A ted talk by Dr. Sharon Deem
- Henley, P. (February 23, 2020). [Rwanda is Training Health Workers for an Interconnected World](#). The Conversation.

Recommended resources:

- Zinsstag, J., Crump, L., Schelling, E., Hattendorf, J., Maidane, Y. O., Ali, K. O., Muhammed, A., Umer, A. A., Aliyi, F., Nooh, F., Abdikadir, M. I., Ali, S. M., Hartinger, S., Mäusezahl, D., de White, M. B. G., Cordon-Rosales, C., Castillo, D. A., McCracken, J., Abakar, F., & Cercamondi, C. (2018). Climate change and One Health. *FEMS Microbiology Letters*, 365(11). <https://doi.org/10.1093/femsle/fny085>
- Murphy, S. C., Negron, M. E., Pieracci, E. G., Deressa, A., Bekele, W., Regassa, F., Wassie, B. A., Afera, B., Hajito, K. W., Walelign, E., Abebe, G., Newman, S., Rwego, I. B., Mutonga, D., Gulima, D., Kebede, N., Smith, W. A., Kramer, L. M., Kibria, A., & Bonnenfant, Y. T. (2019). One Health collaborations for zoonotic disease control in Ethiopia. *Revue Scientifique et Technique (International Office of Epizootics)*, 38(1), 51–60. <https://doi.org/10.20506/rst.38.1.294>

SESSION 2: ONE HEALTH IN EDUCATION AND RESEARCH

Instructors:

Global Health challenges that are often found at the animal-environment-human interface are understudied, underestimated and are ones where researchers and professionals are undertrained. This widening responsibility for health across disciplines brings with it the recognition that an important transformation for the upcoming workforce is required in attitudes and practices.

Educators, researchers and professionals in human, animal, and environmental health are too often trained and work in silos, which often leads to ad hoc interventions that fail to get to the root of global health challenges such as pandemics. In light of these gaps, there is an urgent need to institutionalize One Health in education and research in order to train a competent One Health workforce who can work in interdisciplinary and collaborative teams in order to equitably and effectively address global health challenges.

Learning Objectives:

- Describe the need for a One Health workforce
- Understand the importance of integrating One Health into curricula across programs
- Understand the importance of using a One Health approach in scientific research
- Understand the responsibilities of governments and institutions in fostering and promoting One Health-centered education and research
- Describe the role of interdisciplinary collaborations in teaching One Health and conducting One Health research

Required pre-readings:

- Lebov, J., Grieger, K., Womack, D., Zaccaro, D., Whitehead, N., Kowalcyk, B., & MacDonald, P. D. M. (2017). A framework for One Health research. *One Health*, 3, 44–50. <https://doi.org/10.1016/j.onehlt.2017.03.004>
- Linder, D., Cardamone, C., Cash, S. B., Castellot, J., Kochevar, D., Dhadwal, S., & Patterson, E. (2020). Development, implementation, and evaluation of a novel multidisciplinary One Health course for university undergraduates. *One Health*, 9, 100121. <https://doi.org/10.1016/j.onehlt.2019.100121>

Recommended resources:

- Lucey, D. R., Sholts, S., Donaldson, H., White, J., & Mitchell, S. R. (2017). One health education for future physicians in the pan-epidemic “Age of Humans.” *International Journal of Infectious Diseases*, 64, 1–3. <https://doi.org/10.1016/j.ijid.2017.08.007>
- Rabinowitz, P. M., Natterson-Horowitz, B. J., Kahn, L. H., Kock, R., & Pappaioanou, M. (2017). Incorporating one health into medical education. *BMC Medical Education*, 17(1). <https://doi.org/10.1186/s12909-017-0883-6>

SESSION 3: EMPOWERING THE MARGINALIZED AND THE POOR: ONE HEALTH AND EQUITY

Instructors:

One Health presents a framework that prioritizes equity and community innovations to create long-lasting solutions to health challenges. For example, one of the biggest challenges humanity is facing today is climate change and there are massive direct and indirect impacts of climate change on human health and these disproportionately impact marginalized and vulnerable communities. Further, recent scientific evidence suggests that zoonotic diseases have become endemic in poorer regions of the world which is inflicting greater harm on disadvantaged populations. Unless we move towards equity-centered approaches that favor and include the historically marginalized and the impoverished, efforts to address current and future wicked health problems will continue to exclude those most-affected by these issues. In this session, participants will review and discuss equity dimensions of One Health and how this framework can be leveraged for effective public health responses to wicked problems such as endemic zoonoses and climate change.

Learning Objectives:

- Understand the impact of climate change on impoverished communities as well as low- and middle-income countries
- Describe the impact of endemic zoonoses on low-income and low-resource settings
- Illustrate how One Health interventions in animals and the environment can lead to equitable health outcomes among disadvantaged communities
- Describe equity dimensions of One Health
- Understand the role of poor and marginalized communities in developing effective and sustainable solutions to One Health challenges

Required pre-readings:

- Cleaveland, S., Sharp, J., Abela-Ridder, B., Allan, K. J., Buza, J., Crump, J. A., Davis, A., Del Rio Vilas, V. J., de Glanville, W. A., Kazwala, R. R., Kibona, T., Lankester, F. J., Lugelo, A., Mmbaga, B. T., Rubach, M. P., Swai, E. S., Waldman, L., Haydon, D. T., Hampson, K., & Halliday, J. E. B. (2017). One Health contributions towards more effective and equitable approaches to health in low- and middle-income countries. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 372(1725). <https://doi.org/10.1098/rstb.2016.0168>
- Douglas, I., Alam, K., Maghenda, M., McDonnell, Y., Mclean, L., & Campbell, J. (2008). Unjust waters: climate change, flooding and the urban poor in Africa. *Environment and Urbanization*, 20(1), 187–205. <https://doi.org/10.1177/0956247808089156>
- Kakkar, M., Chauhan, A. S., Bahl, T., & Rahi, M. (2019). Opportunities for One Health policies to reduce poverty. *Revue Scientifique et Technique (International Office of Epizootics)*, 38(1), 135–144. <https://doi.org/10.20506/rst.38.1.2948>

Recommended resources:

- Islam, S. N., & Winkel, J. (2017). Climate Change and Social Inequality *. In *The United Nations*. Department of Economic and Social Affairs.
https://www.un.org/esa/desa/papers/2017/wp152_2017.pdf
- Engels, D., & Zhou, X.-N. (2020). Neglected tropical diseases: an effective global response to local poverty-related disease priorities. *Infectious Diseases of Poverty*, 9(1).
<https://doi.org/10.1186/s40249-020-0630-9>

SESSION 4: OPERATIONALIZING ONE HEALTH: SUCCESS STORIES AND BEST PRACTICES

Instructors:

In Session 4, participants will be guided through the response to COVID-19 in Rwanda, and how institutionalizing One Health enabled the country to set up response systems able to respond to the pandemic. Realizing the importance of One Health in addressing complex health challenges threatening sub-Saharan Africa, Rwanda sought ways to include One Health in its governance systems. By gathering human, animal, and environmental health stakeholders into a One Health platform called the One Health Steering Committee, the country developed One Health strategic plans and One Health policies that prioritized multi-sectoral collaborations and interventions to realize equitable health outcomes. This enabled Rwanda to set up early warning and surveillance systems, strengthen existing response systems to infectious diseases, and create a One Health workforce.

In this session, participants will explore the role of One Health policies in operationalizing One Health. Using a case study of Rwanda's response to COVID-19, participants will have the opportunity to explore how developing One Health policies can strengthen existing infectious disease governance and surveillance systems and prepare countries to better address pandemics.

Learning Objectives

- Illustrate the critical importance of interdisciplinary collaboration and coordination to address problems in global health delivery
- Discuss how Rwanda used principles of One Health to control and contain COVID-19
- Evaluate the Government of Rwanda's response to emerging infectious diseases
- Discuss how One Health can help low-and-middle-income countries leverage existing resources for better governance of infectious diseases
- Understand barriers and enablers of One Health in Rwanda
- Critically evaluate the challenges facing low-resource settings in operationalizing One Health
- Assess how lessons learned and best practices from other countries can inform One Health governance and policies

Required pre-readings:

- Nyatanyi, T., Wilkes, M., McDermott, H., Nzietchueng, S., Gafarasi, I., Mudakikwa, A., Kinani, J. F., Rukelibuga, J., Omolo, J., Mupfasoni, D., Kabeja, A., Nyamusore, J., Nziza, J., Hakizimana, J. L., Kamugisha, J., Nkunda, R., Kibuuka, R., Rugigana, E., Farmer, P., ... Binagwaho, A. (2017). Implementing One Health as an integrated approach to health in Rwanda. *BMJ Global Health*, 2(1), e000121. <https://doi.org/10.1136/bmigh-2016-000121>
- One Health and COVID-19 Rwanda case study.
- Hitziger, M., Esposito, R., Canali, M., Aragrande, M., Häsler, B., & Rüegg, S. R. (2018). Knowledge integration in One Health policy formulation, implementation and evaluation. *Bulletin of the World Health Organization*, 96(3), 211–218. <https://doi.org/10.2471/blt.17.202705>

Recommended Resources:

- Munyua, P. M., Njenga, M. K., Osoro, E. M., Onyango, C. O., Bitek, A. O., Mwatondo, A., Muturi, M. K., Musee, N., Bigogo, G., Otiang, E., Ade, F., Lowther, S. A., Breiman, R. F., Neatherlin, J., Montgomery, J., & Widdowson, M.-A. (2019). Successes and challenges of the One Health approach in Kenya over the last decade. *BMC Public Health*, 19(S3). <https://doi.org/10.1186/s12889-019-6772-7>
- Chatterjee, P., Kakkar, M., & Chaturvedi, S. (2016). Integrating one health in national health policies of developing countries: India's lost opportunities. *Infectious Diseases of Poverty*, 5(1). <https://doi.org/10.1186/s40249-016-0181-2>