

Are we ready for the next emerging pandemic? Opportunities and challenges in the Digital Age



Kevin Jaako, Macau, Flickr

Course facilitators:

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Brief course description

The increasing number of emerging and re-emerging infectious diseases such as Ebola, Zika and more recently plague in Madagascar, together with the fact that pathogens are getting more and more resistant to the use of drugs, has put the world on guard for a next potential pandemic. The Ebola crisis in 2014-2015 highlighted major scientific and organisational deficiencies in our capacity to respond to such Global Health crisis and pointed again at anthropogenic activities as the major driving force of emerging infectious diseases. Although major lessons have been learnt and actions are currently underway in different sectors and at different levels (e.g. prepare, react and recover), *Are we ready for the next emerging pandemic?*

Teaching and learning approach

Besides lectures by experts, this course mainly uses a project-based and active learning approach, where students will address this exciting question working collaboratively in interdisciplinary and international teams, and interacting with experts and participants at the *Geneva Health Forum 2018* (<http://ghf2018.g2hp.net/>), which will focus on digital innovation in Global

Health. The course will partly be given in parallel to this global conference and at the same location, which will open a unique opportunity for students to do *field work* and present their research in this high level Global Health environment.

Course objectives

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

- Recognise and describe the impact of most recent emerging infectious diseases outbreaks (e.g. Ebola, MERS, Zika, plague) and the major limitations of Global Health players to prevent, react and recover from them
- Recognise and describe the increasing risk of new emerging infectious diseases driven by anthropogenic change and the need for cross-sectoral and interdisciplinary approaches such as One Health and Planetary Health
- Demonstrate research and analytical capacity (collect, analyse and synthesize information) working collaboratively in interdisciplinary and international teams
- Discuss the opportunities and limitations of digital innovation to better predict and detect infectious diseases outbreaks.

Monday 9th April 2018 – Campus Biotech

9h00 – 9h45

- Welcome - Spring School in Global Health

10h00 – 12h30

- Welcome & presentations
- Lecture/discussion on “Global Anthropogenic Change and Emerging Infectious Diseases: The need for a One Health approach”
- Lecture/discussion on “Emerging Infectious Diseases and Opportunities in the Digital Age: From modelling to crowdsourcing and digital epidemiology”
- Presentation of projects and team building

Tuesday 10th April 2018 – Geneva Health Forum 2018

8h00 – 18h00 Full Day at the Geneva Health Forum

- Presentation of research strategy and milestones
- Research: Field work and “meet the experts” at GHF2018
- Intermediary milestone Day 2: Presentation and feedback by facilitators
- Final milestone Day 2: Presentation and feedback by facilitators

Wednesday 11th April 2018 – Geneva Health Forum 2018

11h00 – 12h30

- Presentation of final research results

Students participating in this course will have the opportunity to present their results during a Workshop at the Geneva Health Forum:

WS12: "[*Are we ready for the next emerging pandemic?: Opportunity and challenges in the digital age*](#)"

Here are some readings to get started:

[Flahault A, Geissbuhler A, Guessous I, Guerin P, Bolon I, Salathé M, Escher, G. Precision global health in the digital age. Swiss medical weekly. 2017; 147:w14423.](#)

[Jones, K & Patel, G, Levy, N, Storeygard, M, Balk, A, Gittleman, JL, Daszak P. Global Trends in Emerging Infectious Diseases. Nature. 2008; 451:990-3.](#)

[Allen, T, Murray, KA, Zambrana-Torrel, C, Morse, SS, Rondinini, C, Di Marco, M, Breit, N, Olival, KJ and Daszak, P. Global hotspots and correlates of emerging zoonotic diseases. Nature Communications. 2017; 8:1124.](#)

[Davis JK, Vincent G, Hildreth MB, Kightlinger L, Carlson C, Wimberly MC. Integrating Environmental Monitoring and Mosquito Surveillance to Predict Vector-borne Disease: Prospective Forecasts of a West Nile Virus Outbreak. PLOS Currents Outbreaks. 2017; \(1\)](#)

[O'Donovan J, Bersin A. Controlling Ebola through mHealth strategies. The Lancet Global health. 2015; 3\(1\): e22.](#)

[Gardy JL, Loman NJ. Towards a genomics-informed, real-time, global pathogen surveillance system. Nature reviews Genetics. 2018; 19\(1\):9-20.](#)



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