

Announcement: Courses “Pandemics 1 and 2”

Dear students,

We kindly wish to extend you an invitation to participate in our Collaborative Online International Learning (COIL) seminars on communicable diseases and their epidemiology. The seminars are offered by the *University of Freiburg* (University College and Centre for Planetary Health) in partnership with the School of Public Health and Community Medicine of the *University of Gothenburg* and is sponsored by the International Office of the University of Freiburg through the program “Seed Grants COIL & Sustainability 2026”. “Pandemics 1” covers major pandemics such as HIV/AIDS, Malaria, Tuberculosis, Dengue, Covid-19, and Ebola and “Pandemics 2” takes an in-depth look at the spread dynamics of various infectious diseases, and particularly addresses models used to predict disease outbreaks, such as the Early Warning, Alert and Response System (EWARS) developed by the World Health Organization (WHO). Both classes can be taken together.

Location for both classes: Online, the University of Freiburg’s e-learning platform ILIAS.

Pandemics 1 – Determinants and Management

Instructor: Txema Calleja **Facilitators:** Dr. Simon J. Büchner, Prof. Axel Kroeger.

Dates and Times: April 10 to June 12. **Fridays 14-16h.** Note: extra date on April 30, 14-16h and a meeting during the Pentecost break plus self-organized meetings with your presentation group!

April 10	Kick-off meeting	14-16h
April 17	HIV-AIDS	14-16h
April 24	Malaria	14-16h
Th, April 30	Tuberculosis	14-16h
May 8	Dengue and other vector-borne viruses	14-16h
May 15	<i>No class</i>	
May 22	<i>No class</i>	
May 29	Ebola	14-16h



June 5	Covid-19	14-16h
June 12	Student presentations	14-17h
June 30	Submission of final report	

Course Description: As humans have spread across the world, so have infectious diseases. Even in this modern era, outbreaks are nearly constant, but not every outbreak reaches pandemic levels. There are some major pandemics that have afflicted humankind throughout history such as plague, cholera, influenza and coronavirus diseases, thus it is important to know the way they were controlled in the past and how these diseases are managed today. Infectious diseases still represent threats for human health as pathogens can spread rapidly through global trade and travels. Global surveillance programs are thus needed to detect and identify pathogens spillover from animals to humans as well as to control water-borne pathogens and vector-borne diseases. We have selected 6 infectious diseases that are still relevant: HIV/AIDS, malaria, tuberculosis, dengue fever, Ebola, and Covid-19, but will also discuss other examples.

Learning objectives: students will be able to understand and describe:

- Pandemics in history and in modern times
- How to measure the transmission dynamics and expansion of epidemics/pandemics
- Pathogens causing epidemics/pandemics and their routes of transmission
- Epidemiological indicators to measure the extent and burden of a pandemic
- Social and cultural determinants driving a pandemic
- Response options to different pandemics
- Coping strategies in Health Services with the fast surge of cases
- Transmission prevention according to the route of transmission.

Course format: The course involves a substantial amount of self-study. Students will have to prepare for the Friday sessions by studying the self-learning modules provided in ILIAS ahead of time. In the Friday sessions students and the mentor actively deepen the material related to the disease of the week, following a flipped-classroom approach.

Assessment: The final assessment consists of two parts, a presentation and a report. Each student will prepare a presentation together with peers from the partner institutions about a selected topic and present in the session on June 12. The final report of 1500 words (max) must be submitted by June 30, 2026. Students who complete all course work will receive 6 credits (ECTS), pass/fail, but can also request a grade, if this is required for their study program.

Pandemics 2 – Detection, Containment, Control

Instructors: Dr. Laith Hussain, Prof. Axel Kroeger **Facilitator:** Dr. Simon J. Büchner

Dates and Times: April 1 (start of self-study phase), Friday, April 10 (kick-off meeting) and then on **Mondays 14-16h** until May 18.

April 1-17	Self-study of e-learning material	
Fr April 10	Kick-off meeting	14-16h
April 13	Introductory lectures	14-16h
April 20	Understanding and managing EWARS spatial prediction (risk mapping)	14-16h
April 27	Understanding and managing EWARS temporal prediction (dashboard 1, national level)	14-16h
May 4	Managing EWARS temporal prediction and response (dashboard 2)	14-16h
May 11	Establishing surveillance for outbreak prediction with emphasis on vector surveillance	14-16h
May 18	Student presentations	14-17h

Course Description: The spread dynamics of infectious diseases is influenced by a number of factors, including the transmission path of airborne, vector-borne and waterborne pathogens. All three disease groups tend to appear in epidemic waves overstressing the health services and causing social and economic harm to societies. Forecasting outbreaks and their magnitude as well as forecasting resource requirements when an outbreak has already started will drastically enhance the preparedness for outbreak prevention and a rational resource allocation mitigating its disastrous effects. This class covers surveillance and response methods, epidemiological models and their application in Early Warning and Response Systems (EWARS)

The following topics will be covered in this class

- Comprehensive surveillance
- Outbreak response
- Early Warning and Response Systems (EWARS) for outbreaks



Learning objectives: After successful completion of the class, students...

- ... can identify indicators that point to the development of an epidemic
- ... can analyze epidemiological factors that are relevant for predicting the spread of disease
- ... can explain how both spatial and temporal predictions of disease spread can be made using early warning and response systems (EWARS)

Course format: The course involves a substantial amount of self-study. During the first two weeks of April, students will have to study the basics of communicable diseases and spread dynamics with the provided digital material. After the kick-off meeting, they will have to prepare for the Monday sessions by studying the self-learning modules provided in ILIAS ahead of time. In the Monday sessions students and the mentors actively deepen the material related to the topic of the week, following a flipped-classroom approach.

Assessment: The final assessment consists of a presentation. Each student will prepare a presentation together with peers from the partner institutions about a selected topic and present in the session on May 18. Students who complete all course work will receive 6 credits (ECTS), pass/fail.

Registration and Attendance

If you are interested in participating in either of the classes, please send your request for participation to J. Pollock jenelle.pollock@ucf.uni-freiburg.de by March 23, 2026 and include the following:

- which class you want to register for
- name, e-mail, institution, and program you are currently enrolled in
- if you are a University of Freiburg student your myAccount ID (xy1234)
- a short statement of motivation why you want to participate
- a short CV

Attendance: For both classes, attendance in all online meetings is necessary. You will need to schedule additional meetings with your presentation group to prepare the final presentation.