

Syllabus Module 206

N°	Core module in Environmental and occupational Health Science
Coordinator	Aurore Gely-Pernot
Dates	26 th of August , 8 nd , 15 th , 22 th , 29 rd of September, 6 th of October 2022
Credits/ECTS	3 ECTS
Duration	5 days of online courses, and personal or group work (estimation 30h)
Location	EHESP Paris
Description	<p>In general, the EOHS program aims to train practitioners to identify risks run by the general population, consumers or workers exposed to nuisances and hazardous agents, and to propose measures designed to abate exposures and health impacts. It comprises a broad range of disciplines and viewpoints (from individual vulnerability factors to public policies) in order to stimulate the students' capacity to develop a consistent and cross-cutting problem-solving approach.</p> <p>In this context, this introductory module to the second year of the Master aims to introduce the notion of risk assessment (module to go further: "Impact Assessment in Environmental Health"), global health (modules to go further: "Planetary Health module"). It aims also to consolidate notion of human health impact of toxic agents (module to go further: Critical windows of exposures and vulnerability). Finally, this module introduces the notion of biomonitoring and presents epidemiological methods developed for the investigation of health problems.</p> <p>A group assignment whereby students will prepare and expose critical analyses of a set of papers from the scientific literature in a variety of domains will force them to draw from these different disciplinary areas in an integrative way. Each of these parts is presented in syllabus appendices.</p>
Prerequisites	M1 level in the same area
Course learning objectives	<ul style="list-style-type: none"> -Analyze sources, pathways, and routes of exposure to these environmental and occupational hazards and safety, and determine the populations with a high risk of exposure -Apply analysis skills and techniques to assess and understand an environmental or occupational health problem -Discuss the basic biological concepts that allow to evaluate the exposure-response relationships -Describe the principles of exposure and risk assessment for nuisances and hazards related to the environment or to occupational settings
Structure (details of sessions title/speaker/date /duration)	<ul style="list-style-type: none"> - Main human health impact of toxic agents, Aurore Gely-Pernot - Introduction to human biomonitoring, Arthur David - The infectious diseases nowadays, Michèle Legeas - Environmental epidemiology, Bénédicte Jacquemin - Risk assessment : principles, strategies and methods, Christophe Rousselle et Nathalie Bonvallot
Resources	<p>Books</p> <p>All readings and materials will be posted on REAL. Readings are available below for each session.</p> <p>Website, online library</p>
Course requirement	<p><u>Assignments</u>: A group assignment whereby students will prepare and expose critical analyses of a set of papers from the scientific literature in a variety of domains. It will force them to draw from these different disciplinary areas in an integrative way. We will evaluate the capacity of student to be synthetic, take a step back and made a point on a done subject.</p> <p>Students have to come to class prepared to discuss issues after reading the course material on the REAL facility.</p> <p>Group work (about 5-6 students) on paper analysis, with oral presentation.</p> <p>Students are expected to read and analyse selected papers for the group work before the courses.</p>

<p>Grading and assessment</p>	<p>Group works on the sessions 2 and 4: paper will be read, written report made by groups. Students will be evaluate on two group works.</p> <p>Note also that students will complete a questionnaire that assesses their own and their teammates' contributions to group work. All team members will receive the same grade except if it is clear that a student has not participated effectively (attended and contributed to meetings; made timely, helpful contributions; been constructive, etc.). In that case, the student's grade will be lowered accordingly.</p>
<p>Course policy</p>	<p>Attendance & punctuality Regular and punctual class attendance is a prerequisite for receiving credit in a course. Students are expected to attend each class. Attendance will be taken at each class. The obligations of attendance and punctuality cover every aspect of the course: - lectures, conferences, group projects, assessments, examinations, as described in EHESP Academic Regulations http://mph.ehesp.fr EHESP Academic Regulation Article. 3). If students are not able to make it to class, they are required to send an email to the instructor and to the MPH program coordinating team explaining their absence prior to the scheduled class date. All supporting documents are provided to the end-of-year panel.</p> <p>Students who miss class are responsible for content. Any student who misses a class has the responsibility for obtaining copies of notes, handouts and assignments. If additional assistance is still necessary, an appointment should be scheduled with the instructor. Class time is not to be used to go over material with students who have missed class.</p> <p>Lateness: Students who are more than 10 minutes late may be denied access to a class. Repeated late arrivals may be counted as absences (See http://mph.ehesp.fr EHESP Academic Regulation Article. 3 Attendance & Punctuality)</p> <p>Maximum absences authorized & penalty otherwise Above 20% of absences will be designated a fail for a given class. The students will be entitled to be reassessed in any failed component(s). If they undertake a reassessment or they retake a module this means that they cannot normally obtain more than the minimum pass mark (i.e. 10 out of 20)</p> <p>Exceptional circumstances Absence from any examination or test, or late submission of assignments due to illness, psychological problems, or exceptional personal reasons must be justified; otherwise, students will be penalized, as above mentioned. Students must directly notify their professor or the MPH academic secretariat before the exam or before the assignment deadline. Before accepting the student's justification, the professor or the MPH academic secretariat has the right to request either a certificate from the attending physician or from a psychologist, or from any other relevant person (See http://mph.ehesp.fr EHESP Academic Regulation Article 4 Examinations).</p> <p>Courtesy: <u>All cell phones/pages MUST be turned off during class time.</u> Students are required to conduct themselves according to professional standards, eating during class time is not permitted during class time, such as course or group work.</p>
<p>Valuing diversity</p>	<p>Diversity enriches learning. It requires an atmosphere of inclusion and tolerance, which oftentimes challenges our own closely-held ideas, as well as our personal comfort zones. The results, however, create a sense of community and promote excellence in the learning environment. This class will follow principles of inclusion, respect, tolerance, and acceptance that support the values of diversity. Diversity includes consideration of: (1) life experiences, including type, variety, uniqueness, duration, personal values, political viewpoints, and intensity; and (2) factors related to "diversity of presence," including, among others, age, economic circumstances, ethnic identification, family educational attainment, disability, gender, geographic origin, maturity, race, religion, sexual orientation and social position.</p>
<p>Course evaluation</p>	<p>EHESP requests that you complete a course evaluation at the end of the school year. Your responses will be anonymous, with feedback provided in the aggregate. Open-ended comments will be shared with instructors, but not identified with individual students. Your participation in course evaluation is an</p>

	expectation, since providing constructive feedback is a professional obligation. Feedback is critical, moreover, to improving the quality of our courses, as well as for instructor assessment.
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Session 1	Main human health impact of toxic agents and infectious diseases
Speakers	Aurore Gely-Pernot & Michele Legeas
Session Outline	The aims of this course will be to show how toxic agents can affect human health. We will focus on irritation, neurotoxic, genotoxic and reprotoxic effects induced by xenobiotics. We will also address the effects of the low doses and the combined exposure (cocktail effect). In this session, Michel Legeas will also give a course to show how communicable infectious disease (and mainly those with epidemic potential) can weigh on health, even in richest countries, and are greatly related to socio-economical contexts, in relation with a One Health approach.
Learning Objectives	-Identify some chemical and biological determinants impacting health -Identify the major health impacts of toxic agents and infectious diseases
Duration	6 hours
Training methods	Lecture
Reading	Online courses: Basic concepts of toxicology as they apply to environmental health http://real.ehesp.fr/course/view.php?id=997

Session 2	Introduction to human biomonitoring (HBM)
Speakers	Arthur David
Session Outline	As estimated one hundred thousand xenobiotics are currently in use in the human population. Some xenobiotics (e.g. plasticizers, pesticides) can enter the human body as complex mixtures and can affect critical biological targets inside the body. However, the contribution of chemical pollution by xenobiotics to the global burden of disease is still unknown due to the lack of data regarding human exposure. Human Biomonitoring (HBM) aims to assess to what extent these environmental substances have entered our bodies and how exposure may be changing over time. This session will start with a group work aiming to understand the methodologies involved and some of the challenges related to HBM. The results of this work will be shared by one group and then a lecture will address these points (methodologies used and associated) and introduce examples of HBM studies performed at the national and European levels.
Learning Objectives	<ul style="list-style-type: none"> - Why HBM and what is HBM: context and aims - How to do human biomonitoring: methodologies and challenges - Interpretation of results - National and European human biomonitoring studies - Futures of HBM
Duration	introduction to the documents provided for the groups : 1h independent work group presentation by one group: 1/2h discussion and synthetic lecture : 1h
Training methods	Working group and lecture

Reading	<ul style="list-style-type: none"> - P.J. Landrigan, R. Fuller, N.J.R. Acosta, O. Adeyi, R. Arnold, N.N. Basu, A.B. Balde, R. Bertollini, et al., The Lancet Commission on pollution and health, Lancet (2017) - Angerer, J., Ewers, U. & Wilhelm, M. 2007 Human biomonitoring: state of the art. Int. J. Hyg. Environ. Health 210 , 201–228. (doi:10.1016/j.ijheh.2007.01.024) - Human biomonitoring: facts and figures. WHO/Europe - World Health Organisation. European Environment and Health Process.
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Session : 3	Environmental epidemiology
Speakers	Bénédicte Jaquemin
Session Outline	<p>This session is dedicated to the specific aspects of epidemiology in the field of environmental health.</p> <p>Environmental epidemiology is one of the most useful tools available for environmental management decision to assess and monitor environmental hazards as well as to quantify their health impact on the population.</p> <p>During the session, the lecturer will present environmental epidemiology, what is it and its specific challenges. Indeed, environmental epidemiological studies have to face and often overpass several limitations of most of the classical epidemiologic methods but also some that are specific to them; these need to be known and understood to design properly the study in different settings of environmental health.</p>
Learning Objectives	<p>After this lecture, the student should be able:</p> <ul style="list-style-type: none"> - to understand the goal of an environmental epidemiological study - to identify the specific issues of epidemiological methods in environmental
Duration	<p>Introduction : 90 minutes</p> <p>Independent work group</p> <p>Presentation by three groups: 90 minutes (15 minutes presentation and 15 minutes discussion for each group)</p>
Training methods	Lectures and working group
Readings	Materials available on real Platform

Session 4	Introduction to Risk assessment
Speakers	Christophe Rousselle & Nathalie Bonvallot
Session Outline	An introduction to risk assessment: rationale, methods and applications: in this course students will identify the interest of risk assessment for prevention of chemical hazards, discover the main practical applications of this approach and current methodologies. Limitations will also be discussed regarding the different uses for risk assessment.
Learning Objectives	Describe the principles of risk assessment for nuisances and hazards related to the environment or to occupational settings
Duration	6 Hours

Training methods	Lesson in Virtual classroom, videos,lecture and practical exercise with a debrief in virtual classroom.
Reading	(1) National Research Council of the National Academies. Science and decisions. Advancing risk assessment. Washington DC, USA: The National Academies Press; 2009. (2) OEHHA A guide to health risk assessment http://www.oehha.ca.gov/pdf/HRSguide2001.pdf

Session	Occupational health
Speakers	John Ballard
Session Outline	
Learning Objectives	
Duration	
Training methods	
Reading	