

## Syllabus Module 217 Minor B. Impact Assessment in Environmental Health

<b>Module # 217</b>	Minor B: Impact assessment in environmental health
<b>UE coordinator</b>	Séverine Deguen, PhD Professor of biostatistics – severine.deguen@ehesp.fr
<b>Dates</b>	19 <sup>th</sup> -23 <sup>th</sup> October 2020
<b>Credits/ECTS 3</b>	3 (1 ECTS = 30 hours student's work)
<b>Duration</b>	Number of days: 5
<b>UE description</b>	<p>This course is designed to introduce students to the major 234 “Critical windows of exposures and vulnerability”.</p> <p>This course deals with impact assessment approaches and methods in the domain of environmental health. This course focuses on the application of quantitative techniques for impact evaluation. It is recommended for students who have an interest in better understanding certain biostatistics and epidemiological notions in an environmental health issue.</p> <p>The main goal of the module is to give an overview of the different approaches and methods aiming to assess the health impact of exposure to environmental stressors. These include epidemiological, economical and deliberative territorial methods that provide different metrics to give an appreciation of the health impact of a given environmental situation for use by decision makers and different stakeholders to inform their choices for action.</p>
<b>Prerequisites</b>	Core curriculum in Environmental and occupational health sciences, in biostatistics and epidemiology
<b>Course learning objectives</b>	<p>At the end of the module, the students should be able to:</p> <ol style="list-style-type: none"> <li>1- To be familiar with the most common methods aiming to assess the health impact of exposure to environmental stressors.</li> <li>2- To interpret the results obtained from a health impact assessment study</li> <li>3- To select and list appropriate information in order to realize a health impact assessment, to answer to the study objective, to design the outlines of an intervention to improve the situation.</li> </ol>
<b>UE Structure (details of sessions title/speaker/date/duration)</b>	<p><b>Session 1:</b> Introduction to Health Impact Assessment: origins and concepts, Anne Guilhem Dardier, Oct 21<sup>th</sup>, 2.5 hours</p> <p><b>Session 2:</b> Introduction to the concepts and the quantitative methods for Burden of Disease measurement (BoD), Papers reading –Conferences and practice with AirQ+ are part of the sessions. Michèle Legeas, Séverine Deguen and Wahida Kihal, October 19<sup>th</sup>: 3 hours, October 22<sup>th</sup>: 3 hours, October 23<sup>th</sup>: 2.5 hours.</p> <p><b>Session 3:</b> Epidemiological information, risk estimates for different health consequences of environmental nuisances and Geographical information- reading- Database analysis/case studies, practice with STATA are part of the sessions. Séverine Deguen and Wahida Kihal, October 20<sup>th</sup>, 2.5 hours, October 21<sup>th</sup>: 6 hours.</p> <p><b>Session 4:</b> Economic valuation of the consequences of exposure to environmental contaminants and nuisances - Conference, (to be announced) October 22<sup>th</sup>, 3 hours.</p> <p><b>Session 5:</b> Assessment of public policies to reduce the health burden of environmental exposures- Wahida Kihal – October 23<sup>th</sup> – 2.5 hours.</p>

	<b>Session 6:</b> Article reading, analysis and oral presentation (October 20 <sup>th</sup> : 1 hour, October 21 <sup>th</sup> : 1 hour , October 22 <sup>th</sup> : 1 hour, October 23 <sup>th</sup> :3 hours)
<b>Course requirement</b>	Students are expected to attend all lectures and make individual & by pair group works. Students will be expected to prepare class by reading articles before the class.
<b>Grading and assessment</b>	Oral presentation by group: 30% of the final grade & Final test 70%
<b>Location</b>	EHESP Building 20 Avenue George Sand, 93210 La PLaine Saint Denis (Greater Paris)
<b>Course policy</b>	<p><b>Attendance &amp; punctuality</b>  <b>Regular and punctual class attendance is a prerequisite for receiving credit in a course.</b> 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 <a href="http://mph.ehesp.fr">http://mph.ehesp.fr</a> 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><b>Lateness:</b> Students who are more than 10 minutes late may be denied access to a class. Repeated late arrivals may be counted as absences (See <a href="http://mph.ehesp.fr">http://mph.ehesp.fr</a> EHESP Academic Regulation Article. 3 Attendance &amp; Punctuality)</p> <p><b>Maximum absences authorized &amp; penalty otherwise</b>  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><b>Exceptional circumstances</b>  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 <a href="http://mph.ehesp.fr">http://mph.ehesp.fr</a> EHESP Academic Regulation Article 4 Examinations).</p> <p><b>Courtesy:</b> <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>

Sessions 1	<b>Health Impact Assessment: origins and concepts</b>
<b>Speakers</b>	Guilhem Dardier EHESP
<b>Session Outline</b>	<p>The Health Impact Assessment (HIA) is a structured process that aims to identify and to assess positive &amp; negative, direct &amp; indirect potential health impacts resulting from any plan, project and policy before its implementation.</p> <p>We focus on the elaboration of a conceptual causal pathway model between the plan/project/policy and health &amp; wellbeing. A range of environmental nuisances will be considered.</p>
<b>Learning Objectives</b>	<p>At the end of the sessions, students will be able to:</p> <ul style="list-style-type: none"> <li>- Discuss the core steps of HIA development over the last two decades</li> <li>- Identify how HIA fits Health in All Policies approach.</li> <li>- Appreciate the development of HIA from Environmental Impact Assessments (EIA)</li> <li>- Analyze the use of HIA in national policy/program</li> <li>- Identify the methodological approaches used to conduct HIA</li> </ul>
<b>Duration</b>	1 session of 2.5 hours
<b>Dates</b>	Monday 19 <sup>th</sup> October 9:30 -12:00 am
<b>Training methods</b>	Conference
<b>Reading</b>	

Sessions 2	<b>Concepts and quantitative methods for Burden of Disease (BoD) measurement</b>
<b>Speakers</b>	S�verine Deguen, Mich�le Legeas – EHESP Wahida Kihal - CNRS
<b>Session Outline</b>	<p><u>The session comprises 3 sub-sessions.</u></p> <ul style="list-style-type: none"> <li>• The first is used for introducing students to the construction of aggregate measures such as: years of life lost (YLL) years lived with disability (YLD), and disability-adjusted life years (DALYs).</li> <li>• The second sub-session is dedicated to introduce the general method of environmental burden of disease which consists in estimate of the disease burden of environmental risk factors (chemical pollutants, air pollution mixtures, ...).</li> <li>• Finally, the session will finish with two conferences on published studies: <ul style="list-style-type: none"> <li>✓ (1) Premature Adult Death and Equity Impact of a Reduction of NO2, PM10, and PM2.5 Levels in Paris and</li> <li>✓ (2) Measuring the Air pollution Burden of Disease Due to Preterm Birth Complications and infant death in Paris Using Disability-Adjusted Life Years</li> </ul> </li> </ul>
<b>Learning Objectives</b>	<p>At the end of the session, students will be able :</p> <ul style="list-style-type: none"> <li>• To define YLL, LD and DALYs</li> <li>• To analyze and interpret a BoD study</li> <li>• To understand advantages, limits and complementarities of each indicator</li> </ul>
<b>Duration</b>	9.5 hours
<b>Dates</b>	October 19 <sup>th</sup> : 1:00-4:00 pm, October 22 <sup>th</sup> : 1:00-4:00 pm, October 23 <sup>th</sup> : 9:30-12:00 am
<b>Training methods</b>	Lectures alternate with in class discussions

Reading	Articles reading
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Sessions 3	<b>Epidemiological information &amp; risk estimates for different health consequences of environmental nuisances</b>
Speakers	S��verine Deguen – EHESP Wahida Kihal, CNRS
Session Outline	Health Impact Assessment is based on epidemiological information. This approach use risk estimated (relative risk or odds-ratio, for instance) for different health consequences of environmental nuisances. The risk estimated defines the dose – response function of a HIA. It may result from one specific epidemiological study or from a combination of epidemiological studies (a meta-analysis is then required to produce pooled risk estimated). In this session, we will describe both short- and long-term exposure which affect health. We will also consider different vulnerable groups/different critical windows of exposure.
Learning Objectives	At the end of the sessions, students will be able : <ul style="list-style-type: none"> <li>• To define, explain and interpret what is a dose-response function</li> <li>• To recapitulate the main outlines of a meta-analysis and to implement it in STATA</li> <li>• To use statistical models: fixed versus random models and to interpret the results</li> <li>• To identify the most vulnerable group of population (modifier effect)</li> <li>• To discussion the used of Geographical information system</li> </ul>
Duration	8.5 hours
Dates	October 20 <sup>th</sup> : 1:30-4:00 pm, October 21 <sup>th</sup> :9:30-12:00 am and 1:00-4:00 pm
Training methods	Lectures alternate with in class discussions and computer lab sessions (Stata)
Reading	Articles Reading

Sessions 4	<b>Economic valuation of the consequences of exposure to environmental contaminants and nuisances</b>
Speakers	To be announced
Session Outline	Damage function approach, Willingness to pay, Cost components of health impacts, valuation methods
Learning Objectives	At the end of the sessions, students will be able : <ul style="list-style-type: none"> <li>• Identify the types of values associated with environmental goods and services</li> <li>• Use the damage function or impact pathway analysis (IPA)</li> <li>• Define and use valuation methodologies associated with environmental exposures</li> <li>• Compare the advantages and limitations of economic valuation methods studied</li> </ul>
Duration	2.5 hours
Dates	22 <sup>th</sup> October 9:00-12:00 pm
Training methods	Lectures alternate with in class discussions

Reading	
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Sessions 5	<b>Assessment of public policies to reduce the health burden of environmental exposures</b>
Speakers	Wahida Kihal Talantikite
Session Outline	<p><u>The session is structured in two main parts:</u></p> <ul style="list-style-type: none"> <li>• Principles of public policy evaluation for environmental health programs and actions: a multi-dimensional approach (political sciences, sociology, economics, epidemiology, exposure sciences ...)</li> <li>• We will use the evaluation of the second French NEHAP as an illustration which covers several environmental nuisances. Two applications: <ul style="list-style-type: none"> <li>✓ state objectives and select indicators; the case of the 3rd French NEHAP (PNSE3) and</li> <li>✓ assess outcome objectives achievement; the case of the 2nd French NEHAP (PNSE2)</li> </ul> </li> </ul>
Learning Objectives	<p>At the end of the sessions, students will be able :</p> <ul style="list-style-type: none"> <li>- Identify principles of public policy evaluation</li> <li>- Illustrate the different components of evaluation with domestic environmental programs or policies (PNSE3)</li> <li>- Define the expected outcomes of the program/policy under consideration (PNSE2)</li> <li>- Identify the main challenges environmental policies face to reduce burden of exposures</li> </ul>
Duration	2.5 hours
Dates	20 <sup>th</sup> October 9:30-12:00 pm
Training methods	Lectures alternate with in class discussions
Reading	