

4.0 credits	20.0 h + 20.0 h	2q
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Teacher(s) :	Speybroeck Niko ;
Language :	Français
Place of the course	Bruxelles Woluwe
Main themes :	
Aims :	<p>General Objective: Take part in the development and analysis of epidemiological studies and to use the results of these studies to support decision makings in public health. To choose and apply the adequate epidemiologic analysis.</p> <p>Specific Objective: To concretely illustrate the knowledge acquired within the course by using an epidemiological analysis. At the end of the course, the student will have acquired basic and advanced epidemiological techniques. The student will be able:</p> <ul style="list-style-type: none"> <li>- to compute and interpret epidemiological indicators.</li> <li>- to compute and interpret indicators of association between a risk factor and a health outcome, according to the type of investigation</li> <li>- to define the occurrence of "confounding" and to account for it in a multivariate analysis</li> <li>- to analyze health outcomes through simulation models.</li> <li>- to develop and interpret the analyses mentioned above with the software R.</li> <li>- and to use the acquired concepts in order to understand, analyze and comment on a scientific article in the field of health sciences.</li> </ul> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Content :	<p>Content</p> <p>The course consists of 6 modules formulated in teaching objectives. Each module tackles one or several key competences in professional situations. The teaching objectives for each module are:</p> <p>Module 1: The use of routine data for the generation of epidemiological information: the objective is to study</p> <ul style="list-style-type: none"> <li>o Routine data collection strategies (and possible improvements)</li> <li>o The information chain and</li> <li>o The correct interpretation of the epidemiological information generated on the basis of these data.</li> <li>o Practical Examples, e.g. the Cancer Registry in Belgium and the follow-up of maternal death in low income countries, will be used as illustrations.</li> </ul> <p>Module2: Review of the basic concepts in epidemiology</p> <ul style="list-style-type: none"> <li>o Epidemiological studies (cohort studies, case control studies, cross-sectional study, ecological study)</li> <li>o Measures of association and impact</li> <li>o Survey characteristics (probability weighting, clustering effect, stratification effect)</li> <li>o Sample size calculation: sampling, sample size calculation and selecting a tool for collecting data in accordance with the epidemiological study</li> <li>o To conduct and interpret the analyses with the software R.</li> <li>o To estimate the prevalence: in the absence of a "gold standard" diagnostic test in the absence of individual samples ("pooled samples")</li> </ul> <p>Module 3: Bias Control</p> <ul style="list-style-type: none"> <li>o Bias: revision</li> <li>o Control of confounding (random sampling, pairing, standardization, )</li> <li>o Adjustment by a regression model: example: logistic regression</li> </ul> <p>Module 4: Analysing and understanding incidence rates and censored data</p> <ul style="list-style-type: none"> <li>o Analyzing incidences and causes of mortalities: Poisson regression Example: studies on AIDS and TB</li> <li>o Survival analysis Example: studies on cancer</li> </ul> <p>Module 5: Modeling in epidemiology</p> <ul style="list-style-type: none"> <li>o Simulation models in epidemiology I: Rule based Epidemiologic models. Examples: influenza, vector -borne diseases.</li> <li>o Simulation models in epidemiology II: - Understanding the evolution of an infectious disease within a population -- Why vaccinate?</li> </ul>

	<p>-- The " S.I.R." (Susceptible, Infectious, Recovered) model                  - Risk Analysis of                  o Epidemiological modeling in practice: exercises in computer room, group work.</p> <p>Module 6: Study of some advanced epidemiological approaches and illustrations                  o Space-time models.                  o The epidemiology of disasters.                  o Classification and regression Trees                  o Decomposing the inequalities of health.                  Example: determinants of the socio-economic inequalities of health.</p> <p>Method:</p> <p>The lectures will be illustrated by concrete cases extracted from literature. Sessions of exercises will go along with the lectures. The exercises will be conducted in small groups, worked out by the students and discussed together in class. The exercises are simple applications (related to the knowledge acquired in the theoretical part), or exercises combining several principles (related to the teaching objectives) which will allow the use of a diversity of skills and which will be the object of group works at specific times (the methodology will be explained during the course).</p>
<p>Other infos :</p>	<p>Prerequisite.                  Introductory course of epidemiology (Example: "Démarche en santé publique et méthodes épidémiologiques").                  Introductory course of statistics (Example: " Statistique en sciences de la santé ")</p> <p>The evaluation consist of a written examination (closed books) and practical exercises (open book). The evaluation will be based partly on exercises conducted as group work.</p> <p>Support and/or references.                  "Statistique/épidémiologie" Ancelle; collection " Sciences fondamentales "; éditions Maloine, Paris (2002).                  "The Oxford Handbook of public Health Practice" Pencheon, Guest, Melzer, Gray; Oxford University Press; Oxford (2006)</p> <p>Software : R                  R is an interactive programming language containing a very large collection of statistical methods and important graphic facilities. It is a free clone of the S-Plus software marketed by MathSoft and developed by Statistical Sciences around the language S. The internet site of the "R core-development TEAM", <a href="http://www.r-project.org">http://www.r-project.org</a>, is the best source of information on the software R.</p>
<p>Cycle and year of study :</p>	<p><a href="#">&gt; Master [120] in Environmental Science and Management</a>  <a href="#">&gt; Bachelor in Biomedicine</a>  <a href="#">&gt; Certificat universitaire en statistique</a>  <a href="#">&gt; Master [120] in Public Health</a>  <a href="#">&gt; Bachelor in Information and Communication</a>  <a href="#">&gt; Bachelor in Philosophy</a>  <a href="#">&gt; Bachelor in Pharmacy</a>  <a href="#">&gt; Bachelor in Economics and Management</a>  <a href="#">&gt; Bachelor in Human and Social Sciences</a>  <a href="#">&gt; Bachelor in Sociology and Anthropology</a>  <a href="#">&gt; Bachelor in Political Sciences: General</a>  <a href="#">&gt; Bachelor in Biology</a>  <a href="#">&gt; Bachelor in Religious Studies</a>  <a href="#">&gt; Certificat universitaire en dentisterie conservatrice et endodontie</a>  <a href="#">&gt; Certificat universitaire en dentisterie pédiatrique</a>  <a href="#">&gt; Certificat universitaire en prothèse dentaire</a>  <a href="#">&gt; Advanced Master in Clinical Biology</a>  <a href="#">&gt; Master [120] in Statistics: Biostatistics</a></p>
<p>Faculty or entity in charge:</p>	<p>FSP</p>