






5.00 credits

20.0 h + 20.0 h

Q2

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|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Teacher(s)                  | Speybroeck Niko ;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Language :                  | English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Place of the course         | Bruxelles Woluwe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Prerequisites               | <i>The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Learning outcomes           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Evaluation methods          | Closed book (theory) & open book exam (practical exercise) and excercises during the teaching sessions<br>Note : 60% exam + 40% data analysis project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Teaching methods            | In English<br>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).<br>Software : R<br>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. |
| Content                     | Module 1: The use of routine data for the generation of epidemiological information<br>Module2: Review of the basic concepts in epidemiology<br>Module 3: Bias Control (Bias: revision; Control of confounding (random sampling, pairing, standardization,...); Adjustment by a regression model: example: logistic regression<br>Module 4: Analyzing and understanding incidence rates (Logistic and Poisson regression)<br>Module 5: Simulation Modeling in epidemiology<br>Module 6: Study of some advanced epidemiological approaches and illustrations (Space-time models, Classification and regression Trees; Decomposing the inequalities of health.)                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Inline resources            | Documents available on Moodle<br>"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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Bibliography                | "Statistique/épidémiologie" Ancelle; collection " Sciences fondamentales "; éditions Maloine, Paris (2002). "The Oxford Handboractice" Pencheon, Guest, Melzer, Gray; Oxford University Press; Oxford (2006)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Faculty or entity in charge | FSP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Programmes containing this learning unit (UE)                                |                         |         |                                                       |                                                                                     |
|------------------------------------------------------------------------------|-------------------------|---------|-------------------------------------------------------|-------------------------------------------------------------------------------------|
| Program title                                                                | Acronym                 | Credits | Prerequisite                                          | Learning outcomes                                                                   |
| Master [120] in Environmental Science and Management                         | <a href="#">ENVI2M</a>  | 5       |                                                       |  |
| Minor in Biomedicine (openness)                                              | <a href="#">MINSBIM</a> | 3       |                                                       |  |
| Master [120] in Statistics: Biostatistics                                    | <a href="#">BSTA2M</a>  | 5       |                                                       |  |
| Master [120] in Public Health                                                | <a href="#">ESP2M</a>   | 5       | <a href="#">WFSP2104</a> AND <a href="#">WFSP2105</a> |  |
| Certificat d'université : Statistique et science des données (15/30 crédits) | <a href="#">STAT2FC</a> | 5       |                                                       |  |