

3.0 credits	15.0 h + 15.0 h	2q
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Teacher(s) :	Defourny Pierre ; Radoux Julien (compensates Defourny Pierre) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	Icampus
Prerequisites :	Prerequisite: Applied Geomatics, Basics in statistics. Complementary courses: LBIRE2106 Topométrie et photogrammétrie
Main themes :	<p>The course introduces with a critical perspective a representative set of methods of spatial analysis and land use/land cover modelling, addressing both conceptual and numerical aspects. The course primarily aims to train to the conceptualization of a spatial modelling approach on the one hand, and the development of a critical analysis of existing models and simulations on the other hand. Advanced geomatics methods and dynamic modelling tools supporting a multidisciplinary approach to territorial dynamics are privileged, including functional network modelling using geographic information system, dynamic simulation by cellular automata and spatiotemporal modelling using a multi-agent system. Learning at least one macro language opens the student to the development of special tools.</p> <p>Finally, the contribution of simulations and modelling expertise to decision-making process in spatial planning is discussed.</p>
Aims :	<p>a. Contribution of this activity to the AA reference (program AA) M1.2., M1.4., M2.2., M2.3., M4.4., M4.5</p> <p>b. Specific formulation for this training activity of program</p> <p>At the end of the course LBRAT2102, students are able to:</p> <ul style="list-style-type: none"> - to mobilize the concepts and methods of spatial modelling and simulation of land dynamics; - to thoroughly analyse a complex territorial dynamic, to conceptualize a modelling approach and justify the proposed methodological choices; - develop a critical analysis of operational models and spatial simulation methods in order to clearly determine their relevance and limitations. <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>
Evaluation methods :	The evaluation criteria are: knowledge and in-depth understanding of the concepts and methods, capability of conceptual analysis of a complex problem. The acquisition of skills is assessed in the form of a written examination.
Teaching methods :	The course alternates theoretical module in the form of an interactive lecture and practical work module in the computer room (GIS software and modelling tools).
Content :	<p>1. Contents</p> <p>The different modelling and numerical simulation approaches for land use/land cover change and other territorial dynamics are presented according to an increasing level of complexity through concrete examples. The concepts and underlying assumptions are presented and put into perspective in relation to potential applications. During the lectures as well as in the computer lab, the student is invited to conceptualize rigorously his modelling approach and to discuss its implementation.</p>
Bibliography :	Slides of lectures including the course material as well as practical work documents are available online for students. Additional resources are also recommended (reference books, documents, and links).
Other infos :	This course is part of the University Certificate in Applied Geomatics accessible to professionals as part of continuing training.
Faculty or entity in charge:	AGRO

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Geography : General	GEOG2M	3	-	
Master [120] in Chemistry and Bioindustries	BIRC2M	3	-	
Master [120] in Environmental Bioengineering	BIRE2M	3	-	
Master [120] in Agricultural Bioengineering	BIRA2M	3	-	
Advanced Master in Urban and Regional Planning	URBA2MC	3	-	