lbrat2102
2021

Spatial modelling of land dynamics

3.00 credits	15.0 h + 15.0 h	Q2

Teacher(s)	Defourny Pierre ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	Prerequisite: Applied Geomatics, Basics in statistics. Complementary courses: LBIRE2106 Topométrie et photogrammétrie
Main themes	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. Finally, the contribution of simulations and modelling expertise to decision-making process in spatial planning is discussed.
Learning outcomes	**At the end of this learning unit, the student is able to :** 1 a. Contribution of this activity to the AA reference (program AA) M1.2., M1.4., M2.2., M2.3., M4.4., M4.5 b. Specific formulation for this training activity of program At the end of the course LBRAT2102, students are able to: - 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.
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	1. Contents 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.
Inline resources	Icampus
Bibliography	Les diapositives du cours magistral constituant le support de cours comme les documents de travaux pratiques sont disponibles en ligne pour les étudiants. Des ressources complémentaires sont également recommandées (ouvrages de référence, documents, liens internet).
Other infos	This course is part of the University Certificate in Applied Geomatics accessible to professionals as part of continuing training. This course can be given in English.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Geography : General	GEOG2M	3		🔍
Master [120] in Environmental Bioengineering	BIRE2M	3		🔍
Certificat d'université : Géomatique appliquée	GEOM2FC	3		🔍
Master [120] in Forests and Natural Areas Engineering	BIRF2M	3		🔍
Master [120] in Chemistry and Bioindustries	BIRC2M	3		🔍
Advanced Master in Town and Country Planning	URBA2MC	3		🔍