Applied geomatics - Partim B

lbire2102b

2022

3.00 credits	22.5 h + 7.5 h	Q1

Teacher(s)	Defourny Pierre ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	Prerequisite: Basics in statistics. Complementary courses: LBIRE2106 Topométrie et photogrammétrie, LBRAT2102 Modélisation spatiale des dynamiques territoriales.
Main themes	The Applied Geomatics course includes a professional introduction to geographical information systems, cartography and satellite remote sensing both in terms of concepts and methods as well as practical use for operational applications in the field of bio-engineering specializations, urban planning and environmental specialists. The concepts, methods and tools are explained by ex-cathedra teaching and applied in the labs activities. They cover: - geographical information systems and fundamental methods of spatial analysis, - basics in mapping and digital cartography, - remote sensing of terrestrial surfaces based on their electromagnetic properties and the radiative transfer, with a particular focus on discrimination and the monitoring of vegetation, - Earth observation by airborne systems and different types of satellites, including radar. - principles and methods in digital image processing of images and time series analysis
Learning outcomes	
Evaluation methods	The evaluation criteria are: knowledge and in-depth understanding of the concepts and methods, capability of conceptual analysis of a real-life problem and computer skills using several professional software.
Teaching methods	The teaching is based on an inductive approach which starts from the geomatics services which have invaded our daily life (geolocation, web services, online mapping, etc.) in different sectors of activity (monitoring system, forecasting system, reporting, etc.) to then deepen the basic concepts, assumptions and methods of analysis. The objective is to make the learner autonomous and critical in the use of geomatics data and tools as well as in the design and implementation of operational applications. Through the learning of professional software in satellite image processing and geographic information system, the student mobilizes concrete concepts and methods covered in class to exploit geographical databases (GIS), conduct all steps of satellite images interpretation and produce a cartographic output.
Content	1. Contents The course consists of four complementary modules: - Concepts and methods in geographical information systems (GIS) - Basics in digital cartography - Concepts and methods of airborne and satellite remote sensing - Practical work mobilizing professional software for both GIS and image processing in remote sensing. 2. Additional explanation This course also belongs to the Certificate in Applied Geomatics organized in the framework of the UCLouvain continuing education program for people already involved in professional life. The part A of the Applied Geomatics course is designed for students in urban planning and includes only the modules in geographical information systems and basics in digital cartography as well as the corresponding labs. The part B of the Applied Geomatics course corresponds to the whole course except the satellite image processing labs. Students registered in the Agricultural Geomatics module of the LBRAI2221 course follow part of the lecture (10h) and part of the practical work (6h).
Inline resources	Moodle
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 Certificate in Applied Geomatics accessible to professionals as part of continuing training.
	The theoretical knowledge and practical of this course are mobilized in many other courses in different programs and different faculties.
	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 Agriculture and Bio-industries	SAIV2M	3		🔍