UCLouvain

# lbire2102

*2019*

# Applied Geomatic

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

| 4 credits | 30.0 h + 22.5 h | Q1 |
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| Teacher(s) | Defourny Pierre ; |
| Language : | French |
| Place of the course | Louvain-la-Neuve |
| 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.<br>The concepts, methods and tools are explained by ex-cathedra teaching and applied in the labs activities. They cover:<br>- geographical information systems and fundamental methods of spatial analysis,<br>- basics in mapping and digital cartography,<br>- 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,<br>- Earth observation by airborne systems and different types of satellites, including radar.<br>- principles and methods in digital image processing of images and time series analysis |
| Aims | a. Contribution of this activity to the AA reference (program AA)<br>M1.1., M2.1., M4.4., M4.5<br>b. Specific formulation for this training activity of program<br>At the end of the course LBIRE2102, students are able to:<br>1 - thoroughly understand concepts and methods in geomatics applied to agricultural systems, study and management of natural resources, land use planning and the environment in general;<br>- mobilize methods of collection, analysis and representation of spatial data and satellite remote sensing images;<br>- master professional software for geographical information system (GIS) and for image processing in satellite remote Sensing;<br>- carry out the conceptual analysis of a problem, design and implement a solution including the collection, organization and processing of georeferenced data;<br>- understand the technological developments in the field of geomatics applied to the fields of bioengineers.<br>- - - -<br>*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".* |
| Evaluation methods | **Due to the COVID-19 crisis, the information in this section is particularly likely to change.**<br>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 | **Due to the COVID-19 crisis, the information in this section is particularly likely to change.**<br>The lecture deepens the concepts and develop methods through practical examples. 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<br>The course consists of four complementary modules:<br>- Concepts and methods in geographical information systems (GIS)<br>- Basics in digital cartography<br>- Concepts and methods of airborne and satellite remote sensing<br>- Practical work mobilizing professional software for both GIS and image processing in remote sensing.<br>2. Additional explanation |

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| | 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.<br>The part B of the Applied Geomatics course corresponds to the whole course except the satellite image processing labs. |
| 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 University Certificate in Applied Geomatics accessible to professionals as part of continuing training.<br>The theoretical knowledge and practical of this course are mobilized in many other courses in different programs and different faculties.<br>This course can be given in English. |
| Faculty or entity in charge | AGRO |

## Programmes containing this learning unit (UE)

| Program title | Acronym | Credits | Prerequisite | Aims |
|---|---|---|---|---|
| Master [120] in Forests and Natural Areas Engineering | BIRF2M | 4 | | |
| Master [120] in Agricultural Bioengineering | BIRA2M | 4 | | |
| Certificat d'université : Géomatique appliquée | GEOM2FC | 4 | | |
| Master [120] in Biology of Organisms and Ecology | BOE2M | 4 | | |
| Interdisciplinary Advanced Master in Science and Management of the Environment and Sustainable Development | ENVI2MC | 4 | | |
| Master [120] in Environmental Science and Management | ENVI2M | 4 | | |
| Master [120] in Geography : General | GEOG2M | 4 | | |
| Master [120] in Environmental Bioengineering | BIRE2M | 4 | | |
| Master [120] in Agriculture and Bio-industries | SAIV2M | 4 | | |