LBIRE2106

2015-2016

Topometry and photogrammetry

4.0 credits	22.5 h + 22.5 h	2q

Teacher(s) :	Jonard François (compensates Defourny Pierre) ; Defourny Pierre (coordinator) ; Radoux Julien (compensates Defourny Pierre) ; Lambot Sébastien (compensates Defourny Pierre) ; Lambot Sébastien (coordinator) ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	Icampus
Prerequisites :	Prerequisite: LBIRE2102 Applied Geomatics
Main themes :	This course introduces the student to all metric aspects of the land measurement and the positioning in a coordinate system in three dimensions. Through a thorough introduction of the essential concepts of geodesy, topography, photogrammetry and mathematical cartography (reference systems, projections), the student is familiar with the entire measurement chain a piece of territory. Concepts of precision, accuracy, referential and error are particularly addressed. The course also deals with surveying methods and advanced use of global positioning systems GPS. The various measuring instruments (theodolite, laser, various GPS and dGPS receivers), associated software tools and photogrammetry software are taught to allow their autonomous use by the student.
Aims :	a. Contribution of this activity to the AA reference (program AA) M1.1., M2.1., M2.3., M4.5 b. Specific formulation for this training activity of program At the end of the course LBIRE2106, students are able to: - To mobilize the basic concepts and methods of geodesy, topography, photogrammetry and mathematical cartography (reference systems, map projections); - To conduct an error assessment and achieve the quality control of a land measurement campaign; - To adapt to technological advances thanks to the acquired theoretical bases; - Technically master some instruments and software in the field of surveying, of map publishing and advanced use of GPS positioning systems. This knowledge will enable the student to use these methods and techniques operationally in the context of other courses. *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 :	The evaluation criteria are: knowledge and in-depth understanding of the concepts and methods, capability of conceptual analysis of a real-life problem and practical use of instruments and software. The first two criteria are evaluated in the form of a written examination, while the report on specific field measurements completed by pair of students are assessed in details to control their effective use of methods and techniques.
Teaching methods :	The lecture introduces the concepts and methods of the different approaches in the field and practical work ensures the learning of different measurement instruments and associated professional software (GPS, GIS). As part of an integrated exercise, the students practically mobilize concepts, methods and instruments to achieve a land measurement campaign in the field and report the results through a written report.
Content :	1. Contents The whole course consists of six modules: - Global Positioning Systems - Geodetic Elements - Topometry - Photogrammetry - Lab introducing measurement instruments and associated software, including a photogrammetry software; - Integrated exercise in field surveying Teaching aims developing a practical knowledge of basic instruments and computer tools in order to enable the processing and editing of measurements. This allows the student to link all the needed concepts and instruments to design a complete measurement chain in order to tackle in an autonomous way different problems of positioning in a 3-D space. 2. Additional explanations

	The part A of the course BIRE2106A Topometry and Photogrammetry includes theoretical courses on surveying and positioning systems (GPS), the practical work and the integrated exercise but does not include the photogrammetry module and the corresponding aspects in the integrated exercise.
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. The theoretical knowledge and practical of this course are mobilized in other courses in different programs.
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	4	-	
Master [120] in Environmental Bioengineering	BIRE2M	4	-	