UCL Université catholique de Louvain

LGEO2185

2015-2016

Advanced geo-processing

5.0 credits	30.0 h + 30.0 h	2q

Teacher(s) :	Van Oost Kristof ;
Language :	Anglais
Place of the course	Louvain-la-Neuve
Inline resources:	A range of support materials will be made available: Cours notes (slides) Textbooks/online resources Using Pyhton in ArcGIS Desktop virtual course: > http://training.esri.com/acb2000/showdetl.cfm?DID=6&Product_ID=971 Python Scripting for ArcGIS by Paul A. Zandbergen. 2012. Tbs.. For the hands-on exercises, the required data and modeling tools and guidance notes will be made available on iCampus
Prerequisites :	GEO1342 - Geographical Information Systems or similar.
Main themes :	The main objectives of this course are: To develop a coherent strategy to asses and solve spatial problems To provide a solid foundation for programmatically interacting with GIS platforms To provide the most up-to-date tools and information necessary for building and implementing customized geo-processing tools To introduce and apply the basic concepts of web mapping services. Practical/Knowledge skills: An ability to perform object-oriented programming tasks An ability to program GIS-based models in Python An understanding of software engineering concepts and good programming methods An awareness of the diversity of approaches in the field of web-based mapping. Personal skills: An aptitude for analytical assessment of spatial problems An ability to conceptualize, plan, implement and communicate the results of a GIS-based model.
Aims :	At the end of this course, the student should be able: To perform object-oriented programming tasks To program GIS-based models To develop and implement a web-based map service *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 student should expect this class to be both academically robust and intellectually challenging. The main theoretical concepts will be provided through course notes and presentations. Learning will arise from active engagement with this knowledge during the hands-on practical exercises. A final project aims at integrating the course material in a personalized way. In the Final Projects the student will: 1. Frame a spatial question or application scenario that can be solved using a customized GIS application or geo-processing function. 2. Collect appropriate spatial and non-spatial data to be used as input. 3. Determine the technologies/tools to be used. 4. Establish the important intermediate steps in programming and implementation, including testing/debugging. 5. Produce a working application that implements your approach
Teaching methods :	The course is organized around three modules: i) Lectures: During the lectures, the basic and theoretical concepts and background of GIS programming will be introduced. ii) Hands-on practical exercises: Assignments will give students an opportunity to internalize and apply the concepts and theory learned. iii) Final project. This project presents an opportunity to integrate the course content and consists of a proposal, a final report and presentation.
Content :	1. Introduction to GIS modeling and Python language. a. The need for GIS automation b. Python introduction c. Objects and object-oriented programming

	d. Examples & mp; Exercise 2. Python and programming basics a. Program structures b. Troubleshooting c. Examples & mp; Exercise 3. Spatial data access and manipulation 4. Programming languages for GIS development 5. Customized GIS application development 6. Web map Services
Faculty or entity in charge:	GEOG

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Geography : General	GEOG2M	5	-	
Master [120] in Geography : Climatology	CLIM2M	5	-	