

Academic Year: 2019/2020		
Course: Geocomputation		
Coordinator: José Luís Zêzere		
Teaching Staff: César Capinha; António Monteiro		
ECTS: 6	Weekly Hours: 3.0 h	Typology: Theoretical-Practical
Contents		
<ol style="list-style-type: none"> 1. Geocomputation 2. Models 3. Iterators 4. Modeling Tools 5. Python and ArcPy 6. Modeling and scripting in Python 7. Modeling in R 8. Integration ArcGIS and R 		
Objectives and skills		
<p>Goals:</p> <ul style="list-style-type: none"> • Understand the theoretical foundations of Geocomputation methods; • Know the basic characteristics of various geocomputation techniques for analyzing and modeling spatial phenomena; • Learn computer applications used in geocomputation in combination with Geographic Information Systems; • Apply automation techniques of geographical analysis processes; • Enabling the creation of computing routines adapted to the analysis of complex data with using scripting techniques. <p>Skills:</p> <ul style="list-style-type: none"> • Use correctly the concepts and technical terms associated with geocomputation; • Integrate properly the necessary data for analysis of complex systems; • Select the tools best suited to geocomputation data analysis; • Use autonomously, automated geographical analysis process techniques, adjusted to the type of research required and to the characteristics of the available data; • Apply modeling tools in python and arcpy in combination with Geographic Information Systems; • Apply methods of spatial analysis and modeling using R. 		
References		
<p>Allerhand, M., 2011. <i>A Tiny Handbook of R</i>. Springer, Verlag Berlin Heidelberg.</p> <p>Cotton, R., 2013. <i>Learning R. A Step-by-Step Function Guide to Data Analysis</i>. O'Reilly Media.</p> <p>Lutz, M., 2013. <i>Learning Python</i>, 5th ed. O'Reilly Media.</p> <p>Pimpler, E., 2013. <i>Programming ArcGIS 10.1 with Python Cookbook</i>. Packt Publ., Birmingham.</p> <p>Toms, S., 2015. <i>ArcPy and ArcGIS - Geospatial Analysis with Python</i>, 1st ed. Packt Publ., Birmingham.</p>		
Knowledge evaluation methods and their partial grades		
<p>Two individual works, with a weight in the final assessment of 45% each (total 90%);</p> <p>Assessment of progress in learning of each student (10%), based on work in practical classes and student participation (portfolio).</p>		