

Academic Year: 2017/2018				
Course: Geographic Information Systems				
Coordinator: Nuno Marques da Costa				
Teaching Staff: Nuno Marques da Costa; Raquel Melo; Ângela Santos; Sandra Oliveira; Rita Jacinto				
ECTS:	6	Weekly Hours:	4h	Typology: Theoretical/Practical
Contents				
<p>1. Key concepts in GIS.</p> <p>1.1. Definitions.</p> <p>1.2. Components and functionalities.</p> <p>1.3. GIS and Geography.</p> <p>2. Geographic space in GIS.</p> <p>2.1. Coordinate systems in GIS.</p> <p>2.2. Geographic reference systems in SIG.</p> <p>3. Geographical data.</p> <p>3.1. Types and general characteristics of geographic information.</p> <p>3.2. Models of geographic data (vector and raster models).</p> <p>3.3. Geographic data sources.</p> <p>4. Data collection and organization in GIS.</p> <p>4.1. Cartographic and alpha numeric data.</p> <p>4.2. Topology in spatial data.</p> <p>4.3. Spatial elements and attributes relation.</p> <p>4.4. Spatial data acquisition methods and digital information generation.</p> <p>4.5. Digital data errors: checking and editing.</p> <p>4.6. Georeference and geometric correction.</p> <p>4.7. No cartographic databases: relational model and SQL.</p> <p>5. Data query and vector data analysis.</p> <p>5.1. Arithmetic, logical and conditional operators.</p> <p>5.2. Spatial operators.</p> <p>5.3. Database query.</p> <p>5.4. Spatial analysis: overlay, proximity and connectivity operations.</p> <p>6. Introduction to thematic mapping with GIS.</p>				
Objectives and skills				
<p>Objectives:</p> <p>Introduction to GIS concepts and terminology</p> <p>Understand the organization and structure of geographic information in a GIS environment.</p> <p>Know the graphic objects properties and their relation with the alphanumeric attributes.</p> <p>Understand the geographic information acquisition and management processes in GIS.</p> <p>Understand the data analysis processes in GIS.</p> <p>Skills:</p> <p>Use the correct terminology and concepts of GIS.</p> <p>Know how the geographic information is structured and organized in a GIS.</p> <p>Ability to collect information to a vector GIS.</p> <p>Ability to use the GIS functions.</p> <p>Ability to develop simple analysis.</p>				

References

- CHANG, K. (2007) – Introduction to Geographical Information Systems. McGraw-Hill, Nova Iorque
- Harvey F (2008) *A primer of GIS: fundamental geographic and cartographic concepts*. The Guilford Press.
- LO, C.; YEUNG, A. (2002) – Concepts and Techniques of Geographic Information Systems. Prentice-Hall, Nova Jérσία
- LONGLEY, P.; GOODCHILD, M.; MGUIRE, D.; RHIND, D. (2001) – Geographical Information Systems and Science. John Wiley & Sons, Chicester
- Maguire D, Goodchild M, Rhind D (eds.) (1991) *Geographical Information Systems: Principles and Applications* (2 vols.). Longman Scientific & Technical, Essex. 649+447 p.
- MATOS, João (2008) – Fundamentos de Informação Geográfica. Lidel, Lisboa
- REIS, Machado (2000) – A Emergência dos Sistemas de Informação Geográfica na Análise e Organização do Espaço. Fundação Calouste Gulbenkian, Lisboa.
- ZEILER, M. (1999) – Modeling our World. ESRI Press, Redlands

Knowledge evaluation methods and their partial grades

Normal regime:

- 1 Written Test (55%)
- 4 individual practical works (40%)
- Individual appreciation (5%).

The approval depends on final assessment equal to, or greater than, 9.5, and written test equal to or greater than 8.5. Students who have final mark equal to or greater than 9.5 but evaluation in written Test less than 8.5, will have to make a second written test. In these cases, the final evaluation will be the average of the evaluation of this second written test (50%) with the average obtained in regular evaluation (50%).

Special regime:

- 1 Written Test (60%)
- 4 individual practical works (40%)

The approval conditions are the same as the students on normal regime.