

Course Unit	Geographic Information Systems and Applied Remote Sensing		Field of study	Earth Sciences	
Master in	Management of Forest Resources		School	School of Agriculture	
Academic Year	2022/2023	Year of study	1	Level	2-1
Type	Semestral	Semester	2	ECTS credits	6.0
Code	6363-352-1205-00-22				
Workload (hours)	162	Contact hours	T -	TP 60	PL -
			TC -	S -	E -
			OT 20	O -	

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) José Manuel Correia Santos Ferreira Castro

#### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:  
Remote Sensing and Geographical Information Systems applied in ecology and land management. The students should get skills in specific software and hardware

#### Prerequisites

Before the course unit the learner is expected to be able to:  
1. Computing  
2. Ecology

#### Course contents

GIS applications: spatial manipulations of geographical and geophysical data for spatial interpolation and geostatistics. Support Decision Making applied to ecology and spatial planning. DR Applications: Thematic Cartography, Evaluation and Monitoring Silvopastoral, Erosion, Nature Conservation, Physiography, drainage, and relief.

#### Course contents (extended version)

1. Applied Geographic Information Systems (GIS)
  - Spatial analysis of geographic data;
  - Geophysical spatial interpolation and Geostatistics;
  - Support for Decision Making: multi-criterion and multi-objective evaluation;
  - Geographic information through the WWW
2. Applied Remote Sensing
  - Supervised and no-supervised classification of satellite imagery
  - Vegetation indexes
  - Analysis of Change and Time Series Data

#### Recommended reading

1. Avery, T. E. e Berlin, G. L. , 1992. Fundamentals of Remote Sensing and Airphoto Interpretation. V Ed. Macmillam Publishing Company. New York.
2. Burrough, P. , y McDonnell, R. , 1998. Principles of Geographical Information Systems, 98-161, Oxford University Press, Oxford.
3. Congalton, R. G. , Green, K. , 1999. Assessing the Accuracy of Remotely Sensed Data: Principles and Practices. Lewis Publishers. CRC Press, Inc. New York.
4. Eastman, J. R. , 2003 (a). IDRISI Kilimanjaro. Guide to GIS and Image Processing. Manual Version 14. 00. Clark Labs. Clark University. 950 Main Street. Worcester, MA. 01610-1477 USA.
5. Lillesand, T. M. , Kiefer, R. W. 2000. Remote Sensing and Image Interpretation, Fourth edition, John Wiley and sons. New York.

#### Teaching and learning methods

Four-hour lectures with labs integrated in a computer laboratory. Theoretical introduction during 20 minutes followed by practical applicatons using tutorial models and supervision from the instructor.

#### Assessment methods

- Final Evaluation - (Regular, Student Worker) (Final, Supplementary, Special)
- Practical Work - 100%

#### Language of instruction

1. Portuguese
2. English

#### Electronic validation

José Manuel Correia Santos Ferreira Castro	João Paulo Miranda Castro	Felícia Maria Silva Fonseca	Maria Sameiro Ferreira Patrício
19-12-2022	20-12-2022	21-12-2022	21-12-2022