

**Code: 1668 Cartography and Elements of Topography****Degree:** 1<sup>st</sup> cycle - Forestry and Natural Resources**Curricular Year:** 2<sup>nd</sup>**Semester Course:** 1<sup>st</sup>**Credits:** 6 ECTS**Compulsory****Language:** Portuguese/English**Responsible:** Rui Marçal Campos Fernando**Lecturer(s):** -**Web Site:** <http://www.isa.utl.pt/home/node/3999>**1. Contact hours:****Lecture/Practicals 70 Others 14 Total 84****2. Objectives:**

To explain the concepts and methods of topography, photogrammetry and cartography; Students must be able to apply surveying techniques using optical instruments (to measure distances, heights and angles) and GPS and to realize measurements on aerial photographs.

**3. Programme:**

Introduction to cartography: shape of the earth and reference systems. Cartographic projections. Coordinates conversion.  
Operations on topographic maps.  
Classic techniques of surveying.  
GPS surveying.  
Aerial Photogrammetry: distance and height measurements. Orthophotomaps

**4. Bibliography:****Main Bibliography**

Cartas e Projeções Cartográficas, Alves Gaspar, J, 2000. Ed. Lidel  
Topografia Geral, Casaca, João; Matos, João; Baio, Miguel, 2005, Ed. Lidel  
Elementos de fotogrametria aplicada à aquisição de informação geográfica, Berberan, A, 2003  
Europam Lda

**Other Bibliography**

Manual do Engenheiro Topógrafo, Volume I e II, Cruz, J. S. e Redweik, P., 2003, Editor Pedro Ferreira  
Aerial Mapping: methods and applications, Falkner, E, 1995, Lewis Publishers

**5. Assessment:**

Three assignments:  
1<sup>st</sup>: Operations on maps  
2<sup>nd</sup>: Classic surveying  
3<sup>rd</sup>: GPS surveying  
Final exam.

**6. Estimated Workload:**

168	Hours
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**7. Last Update:**

13/7/2010
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