

<b>POLI</b> ESCOLA SUPERIOR TECNOLOGIA GESTÃO <b>TÉCNICO</b> <b>GUARDA</b>	<b>SUBJECT DESCRIPTION</b>	<b>MODELO</b> PED.013.03
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Course	Topographic Engineering					
Subject	Photogrammetry II					
Academic year	2023/2024	Curricular year	2nd	Study period	2nd semester	
Type of subject	Compulsory	Student workload (H)	Total: 140	Contact: 82,5	ECTS	5
Professor(s)	PhD André Garcia Vieira de Sá					
<input checked="" type="checkbox"/> Area/Group Coordinator <input type="checkbox"/> Head of Department	(select)	PhD Maria Elisabete Santos Soares				

## PLANNED SUBJECT DESCRIPTION

### 1. LEARNING OBJECTIVES

*To enable students to plan and execute the different phases of photogrammetric projects, analysis of photogrammetric solutions from the perspective of accuracy and quality with a view to their integration into various application areas.*

### 2. PROGRAMME

*Types of Photography (Vertical, Almost Vertical and Panoramic);*

*Obtaining information from different types of photography;*

*Coordinate Systems;*

*Two-Dimensional and Three-dimensional transformations;*

*Transformation and Conversion between Coordinate Systems;*

*Stereo plotter;*

*Digital Photogrammetric Station (ZI-Imaging Software):*

*Creating a new project;*

*Orientation: Interior, Relative, Absolute and External;*

*Aerial Triangulation;*

*Orthorectification;*

*Automatic acquisition of information;*

*Acquisition of data;*

*Digital image processing;*

*Planning, creating and analyzing a photogrammetric project;*

*Integration of CAD technologies, GPS and Inertial;*

*Airborne Laser scanning;*

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*LiDAR technology,*

*Unmanned Aerial Vehicles (UAVs) in the acquisition of geographic information;*

*Types of UAVs;*

*Flight Laws;*

*Types of sensors;*

*Photogrammetry using UAVs*

*Development of flight plans in UAV software;*

*Acquisition of information and outputs (Point Cloud, Orthophoto, DTM, DSM and 3D Models).*

### **3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES**

*The curricular unit (CU) of Photogrammetry I transmits the necessary knowledge to understand the contents taught in Photogrammetry II. In Photogrammetry II CU, a digital photogrammetric station and software are introduced to manage photogrammetric projects carried out by UAVs. All processes are taught in order to enable students to plan, create and analyze photogrammetric projects.*

### **4. MAIN BIBLIOGRAPHY**

*Software e-foto, <http://www.efoto.eng.uerj.br/>.*

*Redweik, P. (2007). Fotogrametria Aérea, AEFCL.*

*Berberan, A. (2003). Elementos de Fotogrametria – Aplicada à aquisição de informação geográfica. Cambridge University press.*

*Falkner, E. (2002), Aerial Mapping – Methods and Applications. CRC Press Company.*

*Gosh, S. (1979), Analytical Photogrammetry. Pergamon Press.*

*Press Release from ASPRS (American Society of Photogrammetry and Remote Sensing).*

*Several scientific articles provided by the professor.*

### **5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)**

*The final grade assigned to the student will result in the realization of two practical assignments with individual defense classification, which is 6 values (30% of the final mark) and the result obtained at the time of evaluation (frequency, exam and resource) whose rank is 14 values (the remaining 70%).*

*Students who do not realize the work and defense of the same individual may perform any of the evidence at the time of evaluation whose value will be 20.*

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## 6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

*In this curricular unit despite also being taught new concepts and others are more in-depth, it has a very strong practical component. Students work with software in order to be able to prepare all the necessary processes in the production of Photogrammetry and cartographic products supplied by this science.*

## 7. ATTENDANCE

*There are no attendance rules.*

## 8. CONTACTS AND OFFICE HOURS

*Curricular Unit professor email: andre\_sa@ipg.pt*

*Curricular Unit professor office number: 78*

*Attendance hours: Thursday (5:00 pm – 8:00 pm)*

## 9. OTHERS

*Students must bring the necessary material to classes, when requested by the UC professor. They should contribute to the creation of an environment of mutual respect between students and teachers. They must follow the teacher's guidelines regarding the work to be carried out, within the scope of the teaching-learning process.*

## DATE

**18 de março de 2024**

## SIGNATURES

*Professor(s), Area/Group Coordinator or Head of Department signatures*

Professor

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(signature)

Area/Group Coordinator

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(signature)