Universidad Zaragoza

Academic Year/course: 2023/24

30749 - Graphical Representation of Heritage

Syllabus Information

Academic year: 2023/24
Subject: 30749 - Graphical Representation of Heritage
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 470 - Bachelor's Degree in Architecture Studies
ECTS: 6.0
Year: 5
Semester: Second semester
Subject type: Optional
Module:

1. General information

To acquire the necessary knowledge and skills to approach the process of architectural heritage documentation, in a rigorous and effective way, using photogrammetry as the main basis.

To achieve this, the course is developed on the knowledge and understanding of photogrammetric techniques and their resources applied to architectural surveying, applying these processes to obtain documentation of a proposed model.

These approaches and objectives are aligned with some of the Sustainable Development Goals, SDGs, of the Agenda 2030 (https://www.un.org/sustainabledevelopment/es/) and certain specific targets. In particular, Objective 11 and target 11.4.

2. Learning results

The student, in order to pass this subject, must demonstrate the following learning results:

- Be able to perform geometric calibration of a standard digital camera.
- To be able to plan an image acquisition for photogrammetric reconstruction.
- To be able to make a geometric and photorealistic model from digital images using photogrammetric software.
- To be able to build a virtual model of a building with complex geometries.
- Intervene three-dimensionally in the geometry generated through photogrammetry

3. Syllabus

Image acquisition

Photogrammetric reconstruction. Scaling, referencing and measurement

Basic reconstruction

Camera calibration model.

Epipolar geometry

Advanced reconstruction

Photogrammetric reconstruction

Precision analysis

Handling of point tables and accuracy

Geometric constraints

Reconstruction with one view

Automatic image matching

Targets. Calibration

Photogrammetry and laser scanner

Photo shooting and photo processing

Creation of point clouds and meshes from photographs

Dimensioning and editing of photogrammetric models

3D model management and 2D document generation

Integration of photogrammetric models in 3D environments

4. Academic activities

The following learning activities will be followed in the classroom:

- A01 Theory in the classroom.
- A02 Seminar.
- A09 Group or individual guided practice in the practice room.
- A11 Practical application of theory, controlled and directed by the teacher.
- A13 Carrying out practical application or research work.

Inaddition, activities outside the classroom (field work) are carried out for the photographic documentation of real architectural or urban environments . Students also have access to tutoring with professors outside of class hours , depending on their learning needs.

5. Assessment system

The assessment of this subject is global and will consist of two parts:
- The realization of practices throughout the subject, both in the laboratory and in the classroom and in field sessions. The total value of the assessment of these practices is 30% of the final grade.
- The realization of a work that includes the main contents of the subject, and that will be delivered the day designated to the final test of the subject. Its value is 70%.

Studentswho do not follow the weekly practicals in person, may submit on the day of the global test some practice scripts reflecting the contents and procedures of these practices, as proof of the understanding of the contents of the subject. They should contact the teacher to assign them the exercise of field to be performed, whose presentation will take place on the day assigned by the center for the global test of the subject.

The criteria and evaluations will be the same as those set forth in the previous section: 30% for the practice scripts, 70% for the final course work.