

## 30749 - Graphical Representation of Heritage

### Información del Plan Docente

Academic Year	2017/18
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**

#### **1.1.Introduction**

#### **1.2.Recommendations to take this course**

#### **1.3.Context and importance of this course in the degree**

#### **1.4.Activities and key dates**

### **2.Learning goals**

#### **2.1.Learning goals**

#### **2.2.Importance of learning goals**

### **3.Aims of the course and competences**

#### **3.1.Aims of the course**

#### **3.2.Competences**

### **4.Assessment (1st and 2nd call)**

#### **4.1.Assessment tasks (description of tasks, marking system and assessment criteria)**

### **5.Methodology, learning tasks, syllabus and resources**

#### **5.1.Methodological overview**

The subject of the course is eminently practice, so that the activities proposed, the teaching hours (primarily workshop hours), both out of them are practical.

It is attached to the start of the semester, the calendar of activities. Activities that relate to the analysis of urban public spaces, or buildings may be substituted for other locations or similar buildings, according to the needs of the course or other external factors, as permissions, availability in external practices, etc.

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### 5.2. Learning tasks

- Introduction to photogrammetry. Digital acquisition of images. Camera model and calibration. Stereo vision.
- Set photogrammetric
- Reconstruction and measurement; analysis of precision. Dense reconstruction, visual scanner-points of control and measuring with a photo. Taking data and practical rules-mix of real and virtual objects
- Notions of measuring, drawing and representation,
- Strategies for a photogrammetric survey.
- Practices directed at the laboratory of photogrammetry, from data.
- Field practices, capturing the natural.
- Data practices of restitution, export and, where necessary, intervention in the digital models from data taken by the students themselves.

### 5.3. Syllabus

The program of the course:

Image acquisition,

Photogrammetric reconstruction. Scale-up, referenced, and measured.

Basic reconstruction.

Camera calibration model.

Epipolar geometry.

Advanced reconstruction.

Photogrammetric reconstruction.

Analysis of precision.

Table of points and precision handling.

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Geometric constraints.

Reconstruction with a view. Automatic pairing of images.

Targets. Calibracion.

Fotogrametria and laser scanner.

Creation of a cloud of points from photographs.

Photographic, processed pictures.

Topographic measurements, processing of photographs and measurements.

Integration of models photogrammetric in 3D environments.

### 5.4.Course planning and calendar

It facilitates in the first session of class and detail explains the development of each class, placing it in the Moodle of the subject for future reference or for students who cannot attend class.

The standard for this type of project development: the use of a laptop is recommended, camera and photogrammetric software.

### 5.5.Bibliography and recommended resources

- Almagro gorbea, A. Levantamiento Arquitectónico / Almagro gorbea, A.. Universidad de Granada, 2004.
- Almagro gorbea, A.. Simple Methods of Photogrammetry: Easy and Fast / Almagro gorbea, A. (En: XVIII International Symposium of CIPA, 2001. pp. 32-38.)
- Almagro gorbea, A. . La Representación De La Arquitectura a Través De La Fotogrametría. Posibilidades y Limitaciones / Almagro gorbea, A. (En: X Symposium Internacional, Comité Nacional Español Del ICOMOS, Comité Internacional De Fotogrametría Arquitectónica CIPA, Fotogrametría y Representación De La Arquitectura, 1987. pp. 56-61)
- Burtch, R. History of Photogrammetry / Burtch, R. Centre for Photogrammetry Training. Surveying Engineering Department Ferris State University.
- Buill, F., Núñez, M.A. Fotogrametría Arquitectónica / Buill, F., Núñez, M.A. Ediciones UPC, 2007
- Cueli, J.T.. Fotogrametría práctica. Tutorial Photomodeler / Cueli, J.T. Editorial Tantin. 2011
- DOCCI, M.. Manuale Di Rilvamento Architettonico e Urbano / DOCCI, M.; and MAESTRI, D.. - 2ª ed. Laterza editoriale, 2010
- Mikhail, E.M.. Modern Photogrammetry / E.M. Mikhail, J.S. Bethel J.C. McGlone Wesley 2001
- Kraus, K.. Fotogrammetry, Volume I, Fundamentals and Standard Process / Kraus K. . Fourth Edition Dümmler, 1997
- Kraus, K.. Fotogrammetry, Volume II, Advanced Methods and Applications / Kraus K. . - Fourth edition Dümmler, 1997
- Gomez Lahoz, J.. Pasado, presente y futuro de la Fotogrametría / Gomez Lahoz, J. (En: III Jornadas de Fotogrametría Arquitectónica de la Escuela de Arquitectura de Valladolid). 2001
- Lerma García, J. L. Fotogrametría Moderna: Analítica y Digital / Lerma García, J. L. Editorial Universidad

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Politécnica de Valencia, 2002

- Fotogrametría De Bajo Coste Para La Modelización De Edificios Históricos / Pérez, J. L., et al. (En: II Congreso Internacional De Arqueología e Informática Gráfica, Patrimonio e Innovación., 2010. pp. 267-271)
- Schenk, Toni F.. Fotogrametría digital. Vol. 1, Antecedentes, fundamentos , procedimientos automáticos de orientación / Toni Schenk ; [traducido por Isaura E. Alonso Martínez y Francisco García Cepeda] . Barcelona : Marcombo [etc.] , 2002