



## **NAAB International Certification**

### **Appendix 1: Template for Course Descriptions [limit 1 page per course]**

#### **Number & Title of Course (total credits awarded):**

ELINTR402 - Digital 3D Surveying, Drawing, and Documentation in Heritage: Digital Photogrammetry and 3D Laser Scanning - Semester 8 - ECTS 3 - Cycle/Profile: 2nd. Cycle/Electives - Scientific Area: DGC-Drawing, Geometry and CAD

#### **Course Description (limit 25 words)**

The course aims to provide the students with the basic knowledge and skills of reality capture methods based in photogrammetry and 3D laser scanning.

#### **Course Goals & Objectives (list):**

1. Explore workflows for recording built reality, using 3d scanning processes and techniques.
2. Explore the point cloud and mesh models through the extraction of 2D outputs.
3. Enable students to use 3D modelling techniques based on photogrammetric and laser scanning data.

#### **Student Performance Criterion addressed (list number and title):**

Primary - B.2 Site Design; B.4 Technical Documentation; Secondary - A.1 Professional Communication Skills; A.4 Architectural Design Skills; A.6 Use of Precedents;

#### **Topical Outline (include percentage of time in course spent in each subject area):**

1. Drawing as tool to prepare the survey (5%).
2. Image based modelling - photogrammetry (Structure from Motion + Multi view stereo) (15%)
3. Range based modelling - laser scanning (15%)
4. Textured mesh generation and ortho imagery extraction (15%)
5. 2D and 3D outputs (10%)
6. Applications □ development of a recording a documentation project including site visits (40%)

#### **Prerequisites:**

It does not have;

#### **Textbooks/Learning Resources:**

Historic England (2018). 3D Laser Scanning for Heritage. Advice and Guidance on the Use of Laser Scanning in Archaeology and Architecture (3rd Edition). Swindon. Historic England  
Historic England (2016). Drawing for understanding. Creating Interpretive Drawings of Historic Buildings. Historic England  
Historic England (2017). Photogrammetric applications for Cultural Heritage. Guidance for good practice. Swindon. Historic England  
BRYAN, Paul; BLAKE, Bill; BEDFORD, Jon (2015). Metric survey specifications for Cultural Heritage (3rd Ed). Historic England

#### **Offered (semester and year):**

4nd Year - Fall;

#### **Faculty assigned (list all faculty assigned during the two academic years prior to the visit):**

Luís Miguel Cotrim Mateus; Victor Manuel Mota Ferreira;