3RD EDITION

Digital tools for built heritage

Online (4h) and face to face (30h)

16-20 June 2025

Blended Intensive Programme

LOCATION

Polytech Orléans
8, rue Leonard de Vinci
45100 Orléans, France

TOPICS

3D survey, photogrammetry, laser scanning, cultural heritage diagnosis, image analysis, artifical intelligence, on site experiments and visit (Chambord)

CONVENORS

Sylvie Treuillet
Prisme/University of Orléans - FR

Xavier Brunetaud
LaMé/University of Orléans - FR

Façade nord du château de Chambord
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Program

2. FACE TO FACE

1. **Online (4h)** | May 2025 | Preparation
2. **Face to face (30h)** | 16-20 June 2025 Orléans, France
3. **Independant group work (20h)** | July and August 2025 | Online evaluation end of August

Monday, June 16th	Topic
9:00 – 9:30	Welcome
9:30 – 10:00	Summer school introduction
10:00 – 12:00	Photogrammetry
12:00 – 14:00	Lunch break
14:00 – 17:00	Scanning acquisition with labs (laser, structured light)
Tuesday, June 17th	**Topic**
9:00 – 10:00	Heritage diagnosis overview
10:00 – 11:00	Mechanical computation based on 3D point clouds
11:00 – 12:00	Virtual Reality
12:00 – 14:00	Lunch break
14:00 – 17:00	Heritage diagnosis - labs
Wednesday, June 18th	**Topic**
9:00 – 12:00	Creating maps for GIS – labs
12:00 – 14:00	Lunch break
14:00 – 17:00	GIS applications – labs
Thursday, 19th	**Topic**
9:00 – 10:00	Transport to Chambord
10:00 – 12:30	Field trip
12:30 – 14:30	Lunch break at Chambord
14:30 – 16:30	Touristic visit of the castle
16:30 – 17:30	Transport back to university
Friday, June 20th	**Topic**
9:00 – 12:00	Artificial intelligence for image analysis : basic concepts and practical tools
12:00 – 14:00	Lunch break
14:00 – 16:00	Artificial intelligence for image analysis : basic concepts and practical tools
16:00 – 17:00	Debriefing & closing

3. INDEPENDANT GROUP WORK

TRAINERS LIST

Xavier DESQUESNES
Kévin BECK
Xavier BRUNETAUD
Dashnor HOXHA
Stuardo LUCHO
Sylvie TREUILLET
Barthélemy SERRE
Gilles VENTURINI

OBJECTIVES AND DESCRIPTION

The growing use of 3D digitization is opening up new strategies for the analysis of complex objects. Built heritage structures are undoubtedly complex objects due to their physical singularities (architecture, size, materials, ageing over a long period...), to which is added the transdisciplinary scientific approach required to provide relevant analysis. Digital tools represent a new opportunity to meet the challenge of diagnosing built heritage. This blended intensive program will provide students with the essential skills to be able to carry out and analyze the results of a 3D acquisition campaign, including the use of artificial intelligence to automate part of the procedures.

Beyond its application to built heritage, which is of interest to a wide range of scientific communities, this course is aimed at anyone wishing to develop their skills in digital tools, regardless of their application.

Number of ECTS issued
5 ECTS

Language of instruction
English

Outcomes
Participants will be able to :

- design and perform a 3D survey campaign
- process the data collected to obtain a 3D representation of the studied object
- extract maps to support further analysis
- analyze maps using a geographic information system (GIS)
- use AI to automate part of the analysis procedure

METHODS

The blended program will take place in three phases, the first online, followed by a face-to-face session in Orleans, France. The online phase, in May, will involve defining the ambitions and modalities of the training course, disseminating the information needed to prepare the face-to-face part, and gathering the specific expectations of participants to adapt the content and level of face-to-face courses. The face-to-face part will consist of 5 days of classes at the University of Orleans, France. The courses will be made up of 30% lectures and 70% practical computer work. A field trip dedicated to the discovery of the Château de Chambord, in relation with the BIP themes, is scheduled on the 4th day. The final part is a period of independent group work, to apply the lessons learned to a case study selected by the participants. Each group's work will be assessed in an online presentation at the end of August.

TARGET AUDIENCE / PARTICIPANTS PROFILE

Level : students from Bachelor to PhD

Profile : anyone willing to develop their skill on digital tools, such as Mechanical & Civil Engineering ; Material Science ; Electrical & Computer Engineering ; Geology, Geophysics ; Multimedia and Graphics Representations ; History ; Conservation Sciences ; Architecture ; Tourism...