UAB
Universitat Autònoma de Barcelona

Digital Cultural Heritage

Code: 45527
ECTS Credits: 6

2025/2026

Degree	Type	Year
Digital Humanities and Heritage	OB	1

Contact

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Teachers

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Teaching groups languages

You can view this information at the of this
document.

Prerequisites

No prior knowledge of computer science or programming is required, except for some familiarity with computer equipment at an advanced user level. Prior knowledge of mathematics corresponds to that of compulsory secondary education.

Some familiarity with humanities and/or cultural topics is recommended.

Knowledge of English that allows reading texts.

Objectives and Contextualisation

The course introduces the concept of Cultural, Artistic, and Historical Heritage, as well as the current state of research in preservation and dissemination, emphasizing the legal and ethical framework established by UNESCO and ICOMOS.
It addresses the topic of reconstruction/recreation of the past through digital means, introducing the fundamentals of geometric modeling and computer-assisted visualization techniques. Students carry out practical work in photogrammetry and 3D scanning techniques and learn to use specialized software for 3D

modeling and animation of virtual models.

Once the technologies and computer tools are mastered, students explore the dissemination of these models, examining the educational and scientific possibilities of Virtual Archaeology and analyzing the concept of the Virtual Museum through various case studies.

Learning Outcomes

1. CA08 (Competence) Use different multimedia and interactive technologies in a digital project simply and efficiently.
2. CA09 (Competence) Interpret the use of digital heritage for a better scientific understanding, teaching and dissemination of the past to different types of audiences.
3. CA10 (Competence) Apply the gender perspective in the design of digital models on historical and artistic heritage issues.
4. KA10 (Knowledge) Describe the innovative potential of technology and the digital medium in the research and/or dissemination of historical and artistic heritage.
5. KA11 (Knowledge) List the theoretical foundations and principles of operation of the digitisation of cultural objects.
6. KA12 (Knowledge) List the theoretical foundations and operating principles of interactive human-computer systems that can be used for the dissemination and understanding of cultural heritage.
7. SA12 (Skill) Apply 2D and 3D digitisation techniques and technologies to cultural property, and historical and architectural objects using photogrammetry and laser scanning.
8. SA13 (Skill) Apply technologies for the geometric modelling, editing and animation of 3D models for the study and dissemination of historical and artistic objects.
9. SA14 (Skill) Evaluate the usefulness of digital heritage models in the research and dissemination of art and history.

Content

- Introduction to Heritage Digitization. Regulatory Framework. Good Practice Criteria

- 3D Photogrammetry. Theory and Methods

- 3D Photogrammetry. Practical Work

- 3D Scanning. Theory and Methods

- 3D Scanning. Classroom Practice

- 3D Geometry Editing. Blender

- Unreal Animation

- 3D Documentation and Digital Repositories

- Virtual Museums

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes

Type: Directed			
Assistence to lectures by the professor	18	0.72	CA09, CA10, KA10, KA11, KA12, SA14, CA09
Lab Practical work with computer equipment	18	0.72	CA08, SA12, SA13, SA14, CA08
Type: Supervised			
Suplemmentary practical work at the lab and classroom	34	1.36	CA08, KA10, SA12, SA13, SA14, CA08
Type: Autonomous			
Personal study. Text reading	60	2.4	CA08, CA09, CA10, KA10, KA11, KA12, SA12, SA13, SA14, CA08

Attendance at theoretical classes led by the professor.

Attendance at seminar sessions and practical work with computers and specialized software led by the professor.

Classes are held in a special computer lab.

Comprehensive reading of texts.

The student must dedicate independent effort to consulting specialized bibliography. Part of the documentation is in English.

Class debates, moderated by the teaching staff, on the most important topics.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Evaluation practical work asked by the professor	40%	10	0.4	CA08, SA12, SA13, SA14
Presentation of a critical written essay using Generative Artificial Intelligence	30%	5	0.2	CA08, CA09, CA10, KA10, KA11, KA12, SA12, SA13, SA14
Presentation written comments on suggested bibliography	30%	5	0.2	CA08, CA09, CA10, KA10, KA11, KA12, SA12, SA13, SA14

The evaluation methodology for this master's course is based on the active and reflective participation of students. Their analytical skills will be assessed through written comments on articles and bibliographic references proposed by the teaching staff. In addition, students will prepare critical summaries of class debates, in which they must express and argue their own viewpoints in relation to opposing opinions, demonstrating dialogue skills and critical thinking. Another key element of the evaluation will be the completion of a critical exercise involving the use of Generative Artificial Intelligence tools, applied to one of the topics

covered during the course. This work must include a reflection on the limitations and potential of such technologies within the field of Digital Humanities. Specific details regarding the format, criteria, and deadlines for this activity will be explained and discussed in class by the teaching staff.

Single assessment is permitted, upon request following the procedure approved by the Dean of the Faculty of Humanities.

At the time each assessment activity takes place, the teaching staff will inform students (via Moodle) of the procedure and the date for reviewing grades.

Resit procedure: only the final assignment (second case study) is eligible for resubmission. This decision will be made on a case-by-case basis after a personalized interview between the student and the instructor.

The resubmission deadline will also be set individually and by mutual agreement between the teaching staff and the student.

The student will receive a "Not assessed" grade if any of the required assignments are not submitted.

If the student commits any irregularity that could significantly affect the grade of an assessment activity, that activity will be graded with a 0, regardless of any disciplinary action that may be taken. If multiple irregularities occur in the evaluation activities of the same course, the final grade will be a 0.

The use of Artificial Intelligence (AI) technologies is encouraged in this course as an integral part of the assignment development, provided that the final result reflects a significant contribution from the student in terms of analysis and personal reflection. The student must:
(i) identify which parts were generated using AI;
(ii) specify the tools used; and
(iii) include a critical reflection on how these tools influenced the process and the final outcome of the activity.

Lack of transparency in the use of AI in this graded activity will be considered academic dishonesty and will result in the activity being graded with a 0 and not eligible for resubmission, or in more serious cases, may lead to further sanctions.

Bibliography

Additional references will be provided through UAB Campus Virtual-MOOC

General references:

Adane, A., Chekole, A., & Gedamu, G. (2019). Cultural heritage digitization: Challenges and opportunities. International Journal of Computer Applications, 178(33), 1-5.

Cieslik, E. (2020). 3D digitization in cultural heritage institutions guidebook. Univeristy of Maryland: Baltimore, MD, USA.

D'Amico, S., & Venuti, V. (Eds.). (2022). Handbook of Cultural Heritage Analysis. Cham: Springer.

Gervasi, O., Perri, D., Simonetti, M., & Tasso, S. (2022, July). Strategies for the digitalization of cultural heritage. In International Conference on Computational Science and Its Applications (pp. 486-502). Cham: Springer International Publishing.

Hou, Y., Kenderdine, S., Picca, D., Egloff, M., & Adamou, A. (2022). Digitizing intangible cultural heritage embodied: State of the art. Journal on Computing and Cultural Heritage (JOCCH), 15(3), 1-20.

Luximon, A., & Luximon, Y. (2021). New technologies-3D scanning, 3D design, and 3D printing. In Handbook of Footwear Design and Manufacture (pp. 477-503). Woodhead Publishing.

Mason, M., & Vavoula, G. (2021). Digital cultural heritage design practice: a conceptual framework. The Design Journal, 24(3), 405-424.

Pieraccini, M., Guidi, G., & Atzeni, C. (2001). 3D digitizing of cultural heritage. Journal of Cultural Heritage, 2 (1), 63-70.

Münster, S., Utescher, R., & Ulutas Aydogan, S. (2021). Digital topics on cultural heritage investigated: how can data-driven and data-guided methods support to identify current topics and trends in digital heritage?. Built Heritage, 5, 1-13.

Rahaman, H. (2021). Photogrammetry: what, how, and where. Virtual Heritage, 25.

Stylianidis, E. (2020). Photogrammetric survey for the recording and documentation of historic buildings. Cham, Switzerland: Springer.

Software

Blender, https://www.blender.org/

Unreal, https://www.unrealengine.com/

Sketchfab, https://sketchfab.com/

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(SEMm) Seminars (master)	1	Spanish	first semester	afternoon