University of Gdańsk

Subject card

Subject name and code	Digital Heritage Technologies, PG_00215477						
Field of study	Historical Games and Digital Heritage						
Date of commencement of studies	October 2027		Academic year of realisation of subject		2027/2028		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		English		
Semester of study	2		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor						
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	60.0	0.0	0.0	60
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	60		5.0		10.0	75
Subject objectives	The aim of the course is to familiarize students with modern digital technologies used to document , preserve , interpret and disseminate cultural and natural heritage . The course focuses on developing practical skills in the digitization of historic buildings and the critical and ethical implementation of IT tools (such as 3D scanning , 2D documentation , photogrammetry, databases , VR / AR technologies) in the cultural and museology sector .						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[GHDCMU2_W04] Compares theories and methods of digital heritage interpretation and the museum experience design in terms of their premises, applications, and limitations.	Compares theories and methods for digital heritage documentation using various techniques (including 2D, 3D, and XR), including techniques for non-invasive documentation and modeling of monuments.	[SW2] presentation/project/paper/ report
[GHDCMU2_U04] Selects and employs digital tools for the analysis, documentation, and interpretation of heritage in a manner appropriate to the project's objectives, the quality of available data, and technological constraints, while also considering the accessibility of the results.	Selects and uses digital tools to document a chosen heritage object, taking into account the purpose of documentation, data capture conditions, the quality of the digital representation, and the format and accessibility of the output for further use.	[SU6] demonstration of practical skills [SU8] observation of student's independent or team work
[GHDCMU2_K03] Develops concepts for research, creative, and research-and-development initiatives that address various goals and needs, including commercial projects and activities serving the public interest.	Develops a concept for research or research and development in the field of digital heritage documentation, based on existing imaging techniques and 2D and 3D documentation, including photogrammetry.	[SK5] implementation of a problem task
[GHDCMU2_K02] Proposes and co-organizes initiatives aimed at the responsible interpretation of history, as well as the protection and popularization of heritage, while taking into account a diversity of perspectives and accessibility for audiences.	Proposes actions to address ethical and social challenges related to the protection of tangible and intangible cultural heritage.	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report

Subject contents

The use of modern digital tools in the documentation, protection, analysis and dissemination of cultural heritage. Students will learn about methods of three-dimensional digitization of historic objects, including laser (3D) scanning and advanced photogrammetry. The program also includes virtual and augmented reality (VR/AR) techniques as tools for creating interactive reconstructions and digital museum exhibitions. An important element of the course is the management of digital databases, modeling of information about monuments (HBIM) and the analysis of legal and ethical issues related to the storage and sharing of data in the digital space

Prerequisites and co-requisites

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Problem work - project	51.0%	75.0%
Class participation and assignments	51.0%	25.0%

Recommended reading

Basic literature	1. K. Król, B. Czesak, (2021). *Początki cyfrowego dziedzictwa*, Kraków. 2. *Ochrona i zarządzanie dziedzictwem kulturowym*, red. nauk. P. Dobosz, (2011), Warszawa *3. Cyfrowe dziedzictwo kulturowe w perspektywie przemian i zagrożeń* , red. J. Kita, M. Korytkowski, (2018) Łódź . 4. E. Goudarouli, A. M. Sichani, J. Winters, (2026), *Exploring Digital Cultural Heritage*, London . *5. Digital Cultural Heritage: Challenges, Solutions, and Future Directions*, ed. V. Kukreja, A. Singh, (2026) London–New York .
Supplementary literature	1. Z. Mingquan, G. Geng, Z. Wu, (2012) *Digital Preservation Technology for Cultural Heritage*, Beijing–Heidelberg .
eResources addresses	Basic https://www.unesco.org/en/culture-and-digital-technologies - The UNESCO Programme on Cultural and Digital Technologies,

Example issues/ example questions/ tasks being completed	1. The most popular devices for digital documentation of monuments are ..... 2. In what formats do we save digital files after obtaining documentation in 2D or 3D format.... 3. Compare photogrammetry and laser scanning for a selected object. Which method better serves the purpose of documentation? Justify your choice, considering the object's characteristics, data capture conditions and the required quality of the digital representation. 4. Document a selected object using an available method. Process the data, identify at least one limitation or gap in the digital representation, and prepare a file for a specified use, such as a digital exhibition, research or a game.
Work placement	Not applicable

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