

## MODULE OUTLINE

### 1. GENERAL INFORMATION

<b>SCHOOL</b>	SCHOOL OF APPLIED ARTS AND SUSTAINABLE DESIGN		
<b>PROGRAM COURSE</b>	PROTECTION OF CULTURAL HERITAGE AND MONUMENTS OF NATURE FROM THE EFFECTS OF CLIMATE CHANGE		
<b>LEVEL OF STUDY</b>	POSTGRADUATE		
<b>MODULE CODE</b>	CCC61	<b>YEAR OF STUDY</b>	2 <sup>nd</sup>
<b>MODULE TITLE</b>	Resilience Strategies for Moveable Heritage		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>		<b>HOURS</b>	<b>CREDIS</b>
Weekly studying hours 18-19 x 30 weeks		560	20 ECTS
<b>COURSE TYPE</b> Compulsory, Optional, Optional mandatory	Elective (students choose among course modules CCC61, CCC62 and CCC63)		
<b>PREREQUISITE MODULES:</b>	The choice of CCC61 requires the completion of the compulsory modules of the 1 <sup>st</sup> Year CCC50, CCC51, CCC 52		
<b>LANGUAGE OF INSTRUCTION AND EXAMS</b>	English		
<b>THE MODULE IS OFFERED TO ERASMUS STUDENTS</b>	No (due to annual duration of the module)		
<b>MODULE WEBSITE (URL)</b>	<a href="https://www.eap.gr/en/protection-of-cultural-heritage-and-monuments-of-nature-from-the-effects-of-climate-change/topics/#ccc61">https://www.eap.gr/en/protection-of-cultural-heritage-and-monuments-of-nature-from-the-effects-of-climate-change/topics/#ccc61</a>  Each module has its own space in the Learning Management System of EAP ( <a href="https://study.eap.gr/login/index.php">https://study.eap.gr/login/index.php</a> ), with controlled access (use of code) for students and teaching staff.		

### 2. LEARNING OUTCOMES

<p><b>Learning Outcomes</b></p> <ul style="list-style-type: none"> <li>The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail. It is necessary to consult:</li> </ul>
<p>Upon the successful completion of the Course Module students will be able to:</p> <ul style="list-style-type: none"> <li>identify the factors and their possible synergistic action that lead to gradual degradation of movable cultural heritage and the ways to detect, report and mitigate their impact (damage they cause),</li> </ul>

- assess the risk of climate change impacts or climate-triggered threats on museums, collections, repositories and storage facilities,
- adopt collection-specific monitoring methodologies and preventive conservation approaches including structural diagnosis and material analysis techniques specializing in the typology, structure and composition of the materials of the object itself and of the decoration that it carries,
- promote risk management approaches to the preservation of cultural heritage, and will acquire the awareness and knowledge required for planning and implementation of measures and practical actions aimed at avoiding and minimizing future deterioration or loss,
- design climate change adaptation or mitigation strategies for objects, collections and housing facilities, based on the expected severity of climate change impacts.

### **General Competences**

*Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?*

<i>Search for, analysis and synthesis of data and information by the use of appropriate technologies,</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for diversity and multiculturalism</i>
<i>Decision-making</i>	<i>Environmental awareness</i>
<i>Individual/Independent work</i>	<i>Social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Group/Team work</i>	<i>Critical thinking</i>
<i>Working in an international environment</i>	<i>Development of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment (Other.....citizenship, spiritual freedom, social awareness, altruism etc.) .....</i>	<i>.....</i>
<i>Introduction of innovative research</i>	<i>.....</i>

Search for, analysis and synthesis of data and information by literature review  
 Adapting to new situations  
 Decision-making  
 Individual/Independent work  
 Project planning and management  
 Critical thinking  
 Development of free, creative and inductive thinking

### **3. MODULE CONTENT**

Climate change is a recognized threat to cultural heritage objects and cultural resources. This Course Module focuses on resilience strategies for the preservation and preventive conservation of movable cultural heritage (e.g. archaeological collections; ceramic, glass, metal objects; paintings; paper objects, photographic collections; textiles and costumes; leather, skin and fur objects; wooden objects and furniture; natural history collections; plastic objects; audio, video and data recording media), and the buildings that house them (museums, archives, storage facilities).

It emphasizes on a) the effects of climate change impacts on the condition of heritage objects through the understanding of weathering agents and other factors that lead to gradual degradation, using simulation techniques, non-destructive methods, sampling and

monitoring methodologies and b) the assessment of the susceptibility of the housing facility itself to climate change impacts, such as anomalous fluctuation of ambient relative humidity, temperature, or threats, such as sea level rise, extreme weather events, water flooding, wildfires etc.

Sustainability is another issue to be addressed, since museums, repositories, archives and storage facilities already spend a large number of their resources to maintain indoor environmental conditions and these costs are expected to increase due to the effects of climate change.

#### 4. TEACHING METHODS--ASSESSMENT

<p><b>MODES OF DELIVERY</b> <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i></p>	<p>Distance education with five Group Counseling Meetings (OSS) during the academic year on weekends.</p>																	
<p><b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b> <i>Use of ICT in teaching, Laboratory Education, Communication with students</i></p>	<p>We use : Remote meetings tools (cisco webex), Presentation software (e.g. power point),  Additionally, the students use office automation tools, web browsers and e-reader for digital books.</p>																	
<p><b>MODULE DESIGN</b> <i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc</i></p> <p><i>The study hours for each learning activity as well as the hours of selfdirected study are given following the principles of the ECTS.</i></p>	<table border="1"> <thead> <tr> <th data-bbox="695 1188 1019 1224"><b>Activity</b></th> <th data-bbox="1019 1188 1352 1224"><b>Annual Workload</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="695 1224 1019 1297">5 Group tutorial meetings x 4 hours</td> <td data-bbox="1019 1224 1352 1297">20</td> </tr> <tr> <td data-bbox="695 1297 1019 1371">5 Horizontal tutorial OSS (* 2 hours)</td> <td data-bbox="1019 1297 1352 1371">10</td> </tr> <tr> <td data-bbox="695 1371 1019 1476">Activities and Multiple Choice Exercises (32 x0.5 hours)</td> <td data-bbox="1019 1371 1352 1476">16</td> </tr> <tr> <td data-bbox="695 1476 1019 1581">Preparation of 4 assignments (4 x 20 hours)</td> <td data-bbox="1019 1476 1352 1581">60</td> </tr> <tr> <td data-bbox="695 1581 1019 1623">Examination</td> <td data-bbox="1019 1581 1352 1623">3</td> </tr> <tr> <td data-bbox="695 1623 1019 1665">Individual study</td> <td data-bbox="1019 1623 1352 1665">451</td> </tr> <tr> <td data-bbox="695 1665 1019 1738"><b>Total module workload (hours)</b></td> <td data-bbox="1019 1665 1352 1738"><b>560</b></td> </tr> </tbody> </table>		<b>Activity</b>	<b>Annual Workload</b>	5 Group tutorial meetings x 4 hours	20	5 Horizontal tutorial OSS (* 2 hours)	10	Activities and Multiple Choice Exercises (32 x0.5 hours)	16	Preparation of 4 assignments (4 x 20 hours)	60	Examination	3	Individual study	451	<b>Total module workload (hours)</b>	<b>560</b>
<b>Activity</b>	<b>Annual Workload</b>																	
5 Group tutorial meetings x 4 hours	20																	
5 Horizontal tutorial OSS (* 2 hours)	10																	
Activities and Multiple Choice Exercises (32 x0.5 hours)	16																	
Preparation of 4 assignments (4 x 20 hours)	60																	
Examination	3																	
Individual study	451																	
<b>Total module workload (hours)</b>	<b>560</b>																	
<p><b>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</b></p>	<p>Four (4) written assignments during the academic year, the average of the grades of which participates in the formation of the final grade by 30%. Students need to have successfully completed the written assignment</p>																	

<p><i>Detailed description of the evaluation procedures.</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students</i></p>	<p>obtaining an average grade of at least 50%, in order to be eligible to the final exams. Final written examinations, that participate in the formation of the final degree by 70%.</p> <p>All the criteria are posted, both in each written assignment (in the: <a href="https://study.eap.gr/login/index.php">https://study.eap.gr/login/index.php</a>), as well as in the general regulation of HOU at: <a href="https://www.eap.gr/wp-content/uploads/2022/03/kanonismos-spoudwn-isxys-apo-to-didaktiko-etos-2022-2023.pdf">https://www.eap.gr/wp-content/uploads/2022/03/kanonismos-spoudwn-isxys-apo-to-didaktiko-etos-2022-2023.pdf</a></p>
---	---

## (6) SUGGESTED BIBLIOGRAPHY

*- Suggested bibliography:*

*-Main*

Dario Camuffo, *Microclimate for Cultural Heritage*, 3rd Edition, Measurement, Risk Assessment, Conservation, Restoration, and Maintenance of Indoor and Outdoor Monuments, 2019 (Book 1)

Barbara Stuart, *Analytical techniques in materials conservation*, John Wiley & Sons Ltd., Chichester, 2007 (Book 2)

Rocco Mazzeo (ed.), 2017, *Analytical Chemistry for Cultural Heritage*, Topics in Current Chemistry Collections, Springer International Publishing AG (Book 3)

*Additional:*

- Camuffo, D., Fassina, V., Havermans, J. (Eds.), *Basic Environmental Mechanisms Affecting Cultural Heritage - Understanding Deterioration Mechanisms for Conservation Purposes*. COST Action D42 "Enviart". Nardini, Florence.
- Sesana, E., Gagnon, A.S., Bertolin, C., Hughes, J. *Adapting cultural heritage to climate change risks: Perspectives of cultural heritage experts in Europe*, *Geosciences* 2018, 8, 305, p. 1-23
- Fatorić, S., Seekamp, E. *Are cultural heritage and resources threatened by climate change? A systematic literature review*. *Climatic Change* 142, 227–254 (2017) <http://dx.doi.org/10.1007/s10584-017-1929-9>
- Huijbregts, Z., Martens, M. H. J., Schijndel, van, A. W. M., & Schellen, H. L. (2013). *Computer modelling to evaluate the risks of damage to objects exposed to varying indoor climate conditions in the past, present, and future*. In A. Mahdavi, & B. Martens (Eds.), *Contributions to building physics: proceedings of the 2nd central European conference on building physics, 9-11 September 2013, Vienna, Austria* (pp. 335-342). Vienna University of Technology.

- Scott Allan Orr, Jenny Richards & Sandra Fatorić (2021) Climate Change and Cultural Heritage: A Systematic Literature Review (2016–2020), *The Historic Environment: Policy & Practice*, 12:3-4, 434-477, DOI: [10.1080/17567505.2021.1957264](https://doi.org/10.1080/17567505.2021.1957264)
- Kubik, M. Preserving the Painted Image: The Art and Science of Conservation, *JAIC - Journal of the International Colour Association*, 2010 (5), 1-8
- Beltran, Vincent Laudato. 2019. Advancing Microfading Tester Practice: A Report from an Experts Meeting Organized by the Getty Conservation Institute, March 13–15, 2018. Los Angeles: Getty Conservation Institute
- Arkadiusz Kupczak, Mariusz Jędrychowski, Marcin Strojecki, Leszek Krzemień, Łukasz Bratasz, Michał Łukomski & Roman Kozłowski (2018) HERie: A Web-Based Decision-Supporting Tool for Assessing Risk of Physical Damage Using Various Failure Criteria, *Studies in Conservation*, 63:sup1, 151-155, DOI: 10.1080/00393630.2018.1504447
- Shin Maekawa, Vincent L. Beltran, Michael C. Henry, *Environmental Management for Collections Alternate Preservation Strategies for Hot and Humid Climates*, Getty Conservation Institute, 2015, Series Tools for Conservation, 344 pages
- NPS Museum Handbook, Part I: Museum Collections, <https://www.nps.gov/museum/publications/MHI/mushbkl.html>
- Managing Collection Environments Initiative The Getty Conservation Institute current project:
- [https://www.getty.edu/conservation/our\\_projects/education/managing/index.html](https://www.getty.edu/conservation/our_projects/education/managing/index.html)
- European Commission, Directorate-General for Education, Youth, Sport and Culture, *Strengthening cultural heritage resilience for climate change : where the European Green Deal meets cultural heritage*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2766/44688>

*-Related Scientific Journals*

- 1) Journal of Cultural Heritage
- 2) Heritage Science
- 3) Journal of Archeological Science
- 4) Journal of Archeological Science: Reports
- 5) Journal of Archeological Research
- 6) Heritage