

## PHD PROGRAMME TABLE 37TH CYCLE

PROGRAMME'S NAME	<b>CULTURAL AND ENVIRONMENTAL HERITAGE</b>
DURATION	3 years
PROGRAMME START DATE	01/11/2021
LANGUAGES	Italian and English
MANDATORY STAY ABROAD	No
COORDINATOR	Prof. Stefano Benazzi ( <a href="mailto:stefano.benazzi@unibo.it">stefano.benazzi@unibo.it</a> )
CURRICULA	<ol style="list-style-type: none"> <li>1. Cultural and environmental heritage: memory, protection, rights</li> <li>2. Science and Technologies for Cultural Heritage</li> </ol>
RESEARCH TOPICS	<a href="#">Detailed list at the bottom of the present document</a>
PhD POSITIONS	7
ADMISSION PROCEDURE	Qualifications and research proposal evaluation Oral examination

### Available Positions and Scholarships

Pos. n.	Financial Support	Description	Curriculum	Positions linked to research topics
1	PhD Scholarship	Totally funded by the University of Bologna general budget	1	Ancient craftsmanship in "Erānshahr": A Multidisciplinary Study of the Evolution of Artefacts in the Iranian World and Adjacent Areas
2	PhD Scholarship	Totally funded by the University of Bologna general budget	1	Venetian Chronicles as Source for Studying Relations with Eastern Mediterranean
3	PhD Scholarship	Totally funded by the University of Bologna general budget	1	Understanding aniconic decoration between antiquity and the Middle Ages: purpose and meaning
4	PhD Scholarship	Totally funded by the University of Bologna general budget	1	Digital editions of <i>volgarizzamenti</i> of Greek and Latin classical texts during XV and XVI centuries
5	PhD Scholarship	Totally funded by the University of Bologna general budget	2	Advanced geomatic techniques for Cultural Heritage
6	PhD Scholarship	Co-funded by the University of Bologna general budget and by the Department of Cultural Heritage with funds of the project "FARE-2018"	1	Development of innovative methods for the study of cremated remains
7	PhD Scholarship	Totally funded by Department of Legal Studies	1	The supranational protection of Cultural Heritage: the contribution of the European Union

### Admission Exams

	DATE AND TIME	RESULTS
<b>Qualifications and research proposal evaluation</b>	Applicants' participation is not required	Available from <b>08/06/2021**</b>
<b>Oral examination</b>	<b>Date:</b> starting from <b>23/06/2021 - 10.30 a.m. CEST*</b> <b>Place:</b> Remotely, using Microsoft Teams.	Available from <b>07/07/2021**</b>

\* In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral examination detailed schedule shall be made available on the webpage [Studenti Online](#) together with the results of the qualifications evaluation. **During the oral examination and in the first page of the research proposal applicants may express their interest in the positions linked to specific research subjects.**

\*\* The **results of the admission exams** will be available on the webpage [Studenti Online](#) (select “summary of the requests in progress” > “see detail” and open the .pdf file at the bottom of the page. **No personal written communication will be sent to applicants concerning the examinations results.**

## Required and Supporting Documents to be attached to the application

*(only documents in Italian, English, French, German and Spanish shall be considered as valid and be assessed by the Admission Board)*

Only qualifications obtained during the last 5 calendar years shall be taken into consideration, except for the University Degree. The Admission Board will assess the relevance of the supporting documents to the PhD Programme.

REQUIRED DOCUMENTS	
<b>Identity document</b>	Valid identity document with photo (i.e. identity card, passport)
<b>Curriculum Vitae</b>	No specific CV format is required
<b>Degrees</b>	Documents attesting the awarding of the first and second cycle degrees, the exams taken and the marks obtained (see Art. 3 of the Call for Applications)
SUPPORTING DOCUMENTS	
<b>Research proposal</b>	Multi-annual research proposal, with particular emphasis on the activities of the first year, that the applicant proposes to develop during the PhD programme. The proposal must meet the following requirements: <ul style="list-style-type: none"> <li>- On the first page of the research proposal (see <a href="#">Attachment 1</a>), indicating the <b>Curriculum and the position related to a research topic</b> in which the applicant is interested and that is associated to the research proposal (<b><u>research proposals without this indication will receive an evaluation of zero points</u></b>);</li> <li>- it must have a length of maximum 20,000 characters, including spaces and formulas, excluded title, outline, bibliography and images such as graphs, diagrams, tables etc. if present;</li> <li>- it must include: state of the art; project’s description; expected results; articulation of the project, times of realisation; bibliography.</li> </ul>
<b>Thesis abstract</b>	Abstract of the second cycle degree thesis. Graduands may submit the draft of their thesis (abstracts cannot exceed 5.000 characters, including spaces and formulas, if present. The above figure does not include: title, outline, images such as graphs, diagrams, tables etc. if present).
<b>Reference Letter/s</b>	<b>No more than 2 reference letters</b> signed by <b>Italian and/or International academics and professionals</b> in the research field, which do not form part of the Admission Board, attesting the suitability of the applicant and his/her interest for the scientific research. Letters shall be uploaded following the procedure on <a href="#">Studenti Online</a> , detailed in the Call for Applications (Art. 3.2).
<b>Personal Statement</b>	The statement shall include <b>the reasons prompting the applicant to attend the PhD Programme</b> and those relevant experiences and research interests, that make the applicant suitable for the specific PhD Programme (3000 characters maximum, including spaces).
<b>Publications</b>	List of publications (i.e. monographs, articles on scientific journals, volume chapters, etc..) and abstracts and posters presented during academic conferences.
<b>Other documents</b>	<ul style="list-style-type: none"> <li>- University Master Courses (Master Universitari di I e II livello), Postgraduate vocational training programmes and/or specialisation programmes relevant to the PhD Programme</li> <li>- Specialisation thesis</li> <li>- Teaching activity carried out at university level</li> <li>- Research activity - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research units</li> <li>- Professional internship</li> <li>- Language proficiency certificates</li> </ul>

	<ul style="list-style-type: none"> <li>- Periods of study abroad, outside the country of origin (e.g. Erasmus programme or other similar mobility programmes)</li> <li>- Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc)</li> </ul>
--	--

## Evaluation criteria \*

Scores will be expressed in points out of 100, as follows.

### 1. Qualifications and research proposal evaluation

Minimum score for admission to the oral examination: 30 points, Maximum score: 50 points

<b>Qualifications evaluation</b>	University degree final mark. Graduands shall be evaluated according to the Weighted Average Mark (WAM)	15 points max
	Publications	5 points max
	Reference letters and other documents requested in the PhD Programme Table	5 points max
<b>Research proposal evaluation</b>	Scientific value and innovative nature of the proposal	15 points max
	description and structure of the proposal	5 points max
	proposal feasibility	5 points max

### 2. Oral examination

Minimum score for eligibility: 30 points, Maximum score 50 points

English proficiency	5 points max
Research proposal presentation	25 points max
General knowledge of issues encompassed by the PhD Programme	20 points max

Oral examination aims to assess the suitability of the applicant for scientific research as well as the general knowledge of issues encompassed by the PhD Programme ([see the list of research topics at the bottom of the present document](#)). During the oral examination, **English language proficiency shall be assessed**. The oral examination is carried out in **Italian or in English**.

\*Possible further evaluation criteria will be available on the [University website](#), selecting the relevant PhD Programme > "More information", at the bottom of the page in the section "Notices".

## Final Ranking List and Enrollment

After the publication of the results of the oral examination, the **final ranking list** will be available on the [University website](#), selecting the relevant PhD Programme > "More information", section "Notices" at the bottom of the page.

**Each position is reserved to one of the two Curricula and dedicated to one specific research topic, as detailed at the end of this PhD Programme Table.** Therefore, positions are awarded on the basis of the interest for a research topic and for a Curriculum, expressed by the applicant on the first page of the research proposal.

**Should one or more of the abovementioned positions remain vacant**, eligible applicants that have chosen the same Curriculum may be contacted. If among these applicants, nobody accepts the position, eligible applicants that have chosen the other Curriculum will be contacted.

Following the publication of the final ranking list, successful applicants shall **enroll** on [Studenti Online](#) by the deadline indicated on the [University website](#), selecting the relevant PhD Programme > "More information".

If a successful applicant withdraws from a position, the following applicant in the ranking list, who is also eligible for the specific position, will be contacted. During the replacement procedure, the new terms of enrollment shall be communicated via e-mail to the chosen applicant.

## Research Topics

Research topics are the subjects of the oral exam.

### Curriculum 1 : Cultural and environmental heritage: memory, protection, rights

- **Cultural heritage:** Historic, social, economic, and cultural processes in European, Mediterranean, and Western Asian contexts; public history; conservation of ethno-cultural heritage and management of cultural resources in endangered areas.

- **Environment, objects, and rights:** diagnostic analysis of monumental and portable artefacts of historical interest; musealisation through digital and virtual modelling; promoting the appreciation and use of bio-environmental goods as common goods; legal and regulatory consequences.
- **Environment and landscape, cities and architecture:** tools for the analysis and conservation of the environment, biological and anthropological heritage, archaeology, urban settings, industrial archaeology, consolidation and restoration of historical architecture; the historical relationship between urban areas and their territories, sustainable development of tourism, fruition of historic towns.
- **Governance and management of common goods:** risk assessment and risk management, efficient use of resources, definition and quantification of ecosystemic service value, assessment of natural resource consumption and of production of solid, liquid, and gaseous waste.

## Curriculum 2: Science and Technologies for Cultural Heritage

- **Production techniques, material characterization, state of conservation:**
  - Development of: advanced analytical protocols (spectroscopy, immune chemistry, DFT, chemometrics), micro and non-invasive diagnostic methods, intervention methods on humidity phenomena of historical buildings, interaction with pollutants, tomographic systems (digital radiography, X-Ray computer tomography, software for real-time tomography and 3D rendering).
  - Development of innovative restoration materials and methods. Design, development, testing and performance evaluation of innovative materials (nanomaterials, polymers, biopolymers, composite materials) and methods for the consolidation, cleaning and protection of both movable and immovable cultural heritage.
- **Survey, monitoring and representation technologies:**
  - Definition of protocols and standards for the production of 3D contents aimed at monitoring cultural heritage, methods and protocols for the production of 3D models with semantic structure to be applied to cognitive systems
  - Design of web-based application for the archiving and use of technical-scientific data related to conservation and restoration projects
  - Production contents and design of augmented reality systems, efficient workflows, survey and monitoring multiscale
  - Integrated techniques integrated by topographic, photogrammetric, laser scanner and special positioning
  - UAV survey for data management
  - Acquisition with multispectral sensors and scanners
  - GIS applications
  - 3D models (development of new procedures for the collection and optimal elaboration)
  - ICT methodologies and techniques for the creation, analysis and representation (virtual reality and augmented/mixed reality) and multi sensorial interaction by means of digital data.

## Research fields

Research fields are topics related to each PhD options. Applicants shall choose a research field during the application procedure, indicating it in the first page of the research proposal (see [Attachment 1](#)).

### Research field 1 (Curriculum 1): Ancient craftsmanship in “Ērānshahr”: A Multidisciplinary Study of the Evolution of Artefacts in the Iranian World and Adjacent Areas

This line of research is open to all multidisciplinary projects involving archaeology or/and art history, archaeometry and statistics (and all other disciplines that might be useful for the study of the materials in question) on a diachronic study of one or more classes of artefacts of different materials and various functions (including architectural elements and decorations) belonging to one or more areas of the Iranian world and neighbouring areas in a period between the beginning of the first millennium BC and the end of the eighth century AD. In addition, the projects presented may extend to include comparative studies on artefacts from cultures that have had exchanges and dialogues with Iranian culture (e.g. the Greek and Hellenistic world, the Roman and Byzantine empires, India, the Far East) that have left an imprint on the evolution of artefacts from the Iranian world.

The research proposal will initially concerns the evolution of one or more classes of artefacts of the Iranian world from an intrinsic point of view of craft and artistic production: the support of the analytical methodologies of archaeometry will allow a precise definition of the material and production aspects, while the application of statistical methods will allow a certain solidity of the classificatory approach. The investigation of the contexts will be a necessary completion as it will be of great help both to archaeology, if the dating of these objects will be used to date uncertain archaeological

contexts, and to chronological and functional interpretations in the case of scarce results or data available from the study of the materials themselves.

#### **Research field 2 (Curriculum 1): Venetian Chronicles as Source for Studying Relations with Eastern Mediterranean**

The complex of Venetian medieval Chronicles (XIIIth-XVIth Century) presents a considerable amount of still unpublished texts useful for studying the urban centers that stands on high and middle Adriatic coasts (e.g., not only Venice, but also Ravenna, Ferrara or Ancona) and their relations with Eastern Roman Empire, or Byzantine Empire and with eastern Mediterranean Sea. The particular technic of elaborating the plot choose by the author give the reader a complex of histories, mentality, human, trading, institutional and artistic relations, psychological and ideological file rouge made by facts mixed with civic laus, propaganda and myth, nowadays still unexplored, so many times neglected by official historiography.

So, the Project of investigation focused the study of relations between Adriatic maritime centers, Constantinople and Byzantine Empire in XIIth-XVth Century: venetian chronicles presents useful and original sources of knowledge, even when revised by authors.

#### **Research field 3 (Curriculum 1): Understanding aniconic decoration between antiquity and the Middle Ages: purpose and meaning**

Between Late Antiquity and the Middle Ages, cornices, depictions of architectural carvings, and other elements used to fill empty spaces in monumental decoration appear to draw on stylistic features and motifs typical of Hellenistic and Roman art, sometimes with a clear intention of re-appropriation of the past, in other cases exploring and modifying ancient objects, with new and extremely complex results. Historiography has mostly considered aniconic decoration as a mere accessory completing the adornment of surfaces dominated by figures – or as the pictorial reproduction of architectural or natural space – underestimating its value. In fact, aniconic decoration always creates a spatial system that is both a mental structure and a vision of the world. If it is studied in relation to its specific context and in the perspective of the Mediterranean, originally the Mare Nostrum united by a common Hellenistic culture, aniconic decoration appears to convey cosmological concepts and significant values, to be a communicative sign of culture and, therefore, of a vision of the world. The kingdoms that until at least the ninth century inherited the Greco-Roman heritage, recognizing themselves in its artistic expression, drew on ancient motifs, reusing them as visual spolia.

The candidate is expected to investigate forms and stylistic features of the aniconic decoration, exploring models and their primary use, understanding those in their context and delineating their meaning in their cultural and geochronological context. The outcome will be a multidisciplinary research, based on a direct approach to the evidence from an archaeological and historical-artistic point of view, which investigates the material aspects and then observes forms and motifs in a visual perspective. The candidate shall be able to define aesthetic values and historical and cultural processes that favored the choice of ancient motifs and the formation of new themes, not underestimating the fundamental contribution of written sources. In short, s/he shall study the material in order to retrieve the idea, understanding the necessity for the use of ancient forms, which for too long have been considered insignificant, in their new contexts.

#### **Research field 4 (Curriculum 1): Digital editions of *volgarizzamenti* of Greek and Latin classical texts during XV and XVI centuries**

The *volgarizzamenti* of the classical texts in the XV-XVI centuries represent a decisive chapter in the history of the tradition and permanence of classics in European culture.

In the same period when humanists develop preliminary forms of text editions and the new medium of printing delivers to the modernity a mostly defined tradition, authors and texts from classical antiquity are the object of an intensive process of translation in “vulgar” through a vast amount of manuscripts, heritage of the most important European libraries.

The practice of the *volgarizzamenti*, already common in the XIII and XIV centuries, is enhanced both by the diffusion of the knowledge of the Greek language and by the growing demand of access to classical models in the courts and in the humanistic circles.

The tradition of the studies regarding this subject lacks a systematic approach able to go beyond the aim of provide reliable critical editions. The aim of research project is the development of new methodologies for the study of *volgarizzamenti* and related cultural artifacts (manuscripts, printed books, artworks) through digital editions of one or more case-study. The aim is to focus on the relationships between later works and the original texts with the application of ontologies such as FRBR. The resulting descriptive, bibliographical, and documentary apparatus will produce a historical-critical framework mapping the cultural memory of the fortune of classics.

The links to external data (antiquity, medieval and renaissance-themed digital libraries) will allow a progressive extension of the digital edition in a proper knowledge base where single metatextual (place, format, collocation, etc.) and

informative elements (authors, texts, themes, people) are related each other, also through a semantic information retrieval.

#### **Research field 5 (Curriculum 2): Advanced geomatic techniques for Cultural Heritage**

The research is devoted to surveying, monitoring and representation methods and technologies for Cultural Heritage. Geomatics is the scientific framework to develop and setup new approaches and workflows dealing with the different aspects of Cultural Heritage, from the analysis at territorial level to the scale of the single objects.

The PhD research can be oriented towards data acquisition, processing and visualization, exploitation of the products, mainly in 3D environments.

Acquisition techniques can include different advanced technologies, ranging from topographic instrumentation, digital photogrammetry, laser scanning and other 3D high-resolution scanners, UAV, satellite remote sensing by optical multispectral or radar imagery. A main aim is the data fusion and integration of data coming from different techniques.

Data processing and exploitation can be oriented to advanced 3D modeling and GIS-HBIM applications, using point clouds data management and digital image analysis with computer vision derived methods. The issues related to different aspects of risk management, diagnosis and long-time monitoring for Cultural Heritage can be taken also in consideration. The PhD candidate will concentrate the research on the characterization of the quality of the achieved data and on the possibility to use them for multi-scale, multi-resolution and multi-temporal analyses, working on selected case studies.

#### **Research field 6 (Curriculum 1): Development of innovative methods for the study of cremated remains**

Development of innovative methods for the study of cremated remains

Cremation is a widespread funerary practice shared by a variety of human cultures across the globe since Prehistory. European contexts are especially useful to understand this process and its link to change over time in human culture, society, economy, and population structure. Contexts dated from the Bronze Age to the Roman Empire across the continent are of particular interest for this purpose. Anthropological analysis of cremated individuals, however, is particularly difficult due to the complexity of the above mentioned contexts and to the destructiveness of the combustion process. Anthropological data obtained from this study are therefore irremediably underdetermined to model the biological profile of the populations of interest. The present line of research requires projects aimed at developing, experimenting, and adopt innovative and transdisciplinary methods, which can help addressing questions concerning the relationship between funerary practices and socioeconomic change, demography, health status, and individual/group mobility in the populations of interest. Main objective is to identify both individual- and population-level biological markers that can be linked to the above mentioned social and cultural change. The proposed research will therefore be interdisciplinary and use/innovate methods developed in anthropology (including taphonomy), archaeology (e.g. micro-excavation), chemical (e.g. isotopes and other elements obtained from apatite), physical (e.g. FTIR spectroscopy), and virtual analysis (e.g. computer tomography of urns, automated methods, 3D geometric morphometrics), throughout the study from documentation, to excavation, to the final interpretation of results.

#### **Research field 7 (Curriculum 1): The supranational protection of Cultural Heritage: the contribution of the European Union**

Since the birth of the European integration process, the Community legal system has expressed rules aimed at protecting cultural goods. Initially considered as an exception to the free movement of goods, the protection of works of art and cultural heritage has gradually acquired an independent treatment in an increasing number of sources, first of the Community and then of the European Union. In parallel with the development of the notion of cultural heritage in the UNESCO system, the European system has thus regulated and protected not only artistic and monumental heritage, but also natural heritage, intangible heritage and cultural diversity, and has recently also promoted an ambitious programme of digitisation of cultural heritage to ensure its preservation. The protection of cultural and natural heritage, as well as of cultural diversity, is also one of the distinctive features of the external relations of the European Union, which also has a consolidated and intense cooperation with UNESCO to promote education and culture. It is therefore necessary to promote research into the wide-ranging, articulated and constantly evolving set of legal instruments, practices, projects and reports prepared by the European Union in relation to cultural heritage. This is in order to assess its positive and critical aspects, also considering how the Member States, in particular Italy, stand in relation to the policy of the European Union on world heritage. A solid legal background is required.

## Attachment 1 – First page of the research proposal

Name:

Surname:

Date of birth:

Title research proposal:

### Curriculum of the PhD programme and positions linked to research topic (select only one topic)

1. Cultural and environmental heritage: memory, protection, rights
  - Ancient craftsmanship in “Ērānshahr”: A Multidisciplinary Study of the Evolution of Artefacts in the Iranian World and Adjacent Areas
  - Venetian Chronicles as Source for Studying Relations with Eastern Mediterranean
  - Understanding aniconic decoration between antiquity and the Middle Ages: purpose and meaning
  - Digital editions of *volgarizzamenti* of Greek and Latin classical texts during XV and XVI centuries
  - Development of innovative methods for the study of cremated remains
  - The supranational protection of Cultural Heritage: the contribution of the European Union
  
2. Science and Technologies for Cultural Heritage
  - Advanced geomatic techniques for Cultural Heritage