# UNIVERSITA' DEGLI STUDI DI MILANO
# PROGRAMME DESCRIPTION - ACADEMIC YEAR 2020/21
# MASTER DEGREE
## Cultural heritage conservation science (Class LM-11)
## Enrolled from 2015/16 academic year

| *HEADING* | |
|---|---|
| **Degree classification - Denomination and code:** | LM-11 Conservation and restoration of culturale heritage |
| **Degree title:** | Dottore Magistrale |
| **Length of course:** | 2 years |
| **Credits required for admission:** | 180 |
| **Total number of credits required to complete programme:** | 120 |
| **Years of course currently available:** | 1st , 2nd |
| **Access procedures:** | Open, subject to completion of self-assessment test prior to enrolment |
| **Course code:** | F8Y |

## *PERSONS/ROLES*

**Head of Study Programme**

Prof. Luca Trombino

**Tutors - Faculty**

Tutor per l'orientamento - prof. Nicola Ludwig, prof. ssa Flavia Groppi, prof. Andrea Zerboni
Tutor perla mobilità internazionale e l'Erasmus - prof. ssa Francesca Cappitelli.
Tutor per i piani di studio:
prof.ssa Silvia Bruni - percorso per Esperti di diagnostica e tecnologia applicata ai beni culturali storico-artistici
prof. Andrea Zerboni - percorso per Esperti di diagnostica e tecnologia applicata ai beni culturali archeologici
dott. Leonardo Gariboldi - percorso per Esperti di conservazione applicata ai beni culturali museali
prof. Goffredo Haus - percorso per Esperti di diagnostica e tecnologia applicata ai supporti dell'informazione.
Tutor per stage e tirocini - prof. ssa Elisabetta Onelli
Tutor per laboratori e altra attività - prof.ssa Elisabetta Onelli
Tutor per tesi di Laurea - prof.ssa Elisabetta Onelli
Tutor per trasferimenti - prof. Marco Merlini
Tutor per ammissioni Lauree Magistrali - prof. Luca Trombino
Tutor per riconoscimento crediti - prof. Marco Merlini

**Degree Course website**

https://www.unimi.it/it/corsi/corsi-di-laurea/scienze-la-conservazione-e-la-diagnostica-dei-beni-culturali

Via Luigi Mangiagalli, 34 piano terra stanza n. 26 ricevimento studenti martedì e giovedì dalle ore 09.30 alle ore 11.30
https://www.unimi.it/it/corsi/corsi-di-laurea/scienze-la-conservazione-e-la-diagnostica-dei-beni-culturali Email: sportello.beniculturali@unimi.it

Via Mangiagalli 34 - II piano Quando disponibile o su appuntamento Email: luca.trombino@unimi.it

Via Celoria, 18 - 20133 Milano Phone 0250325032 https://www.unimi.it/it/node/360 https://www.unimi.it/it/node/359

https://www.unimi.it/it/studiare/biblioteche

## *CHARACTERISTICS OF DEGREE PROGRAMME*

**General and specific learning objectives**

The master degree in "Cultural Heritage Conservation Science" is aimed at students who want to extend and deepen the skills acquired in previous degree courses to enter in the world of research or profession in the field of conservation science of cultural heritage.

In this light, the master degree aims to transmit an in-depth knowledge of the methods and technologies that the mathematical, physical and natural sciences make available today for the preservation of cultural heritage; moreover, it aims to provide the scientific skills allowing further development in these research fields. It aims to train future Conservation Scientists, i.e. experts in science and technology applied to cultural heritage with a high interdisciplinary educational background. Since there are many types of cultural heritage, it is appropriate to specify that the course will focus on the historical-artistic, archaeological, architectural, on museums and on information storage media, because they are the ones deeply rooted in the cultural tradition of the proposers and, in view of the future professional opportunities for graduates, the most relevant for the research field and the employment market. Therefore, the master degree will prepare professional

profiles of: 1 - experts in diagnostics and application technology to historical and artistic cultural heritage, with particular reference to wall and on wooden paintings and textile supports; 2 - experts in diagnostics and technology applied to archaeological cultural heritage (geoarchaeologists and archaeometres); 3 - conservation experts applied to museum cultural heritage; 4 - experts in diagnostics and technology applied to information storage media.
In addition to theoretical courses, numerous laboratories are provided to support the notions with the necessary applications, in order to make the interface with the research and professional worlds stricter. The training offer proposed is composed of courses for each area envisaged by the ministerial educational system (Conservation Sciences and Technologies, Earth and Nature Sciences, Interdisciplinary Training), corroborated by supplementary courses, as well as by the internships and the final dissertation. Through this offer the students will be oriented and guided to finalize their training to achieve one of the proposed professional profiles.
The master degree aims to transmit the wide range of knowledge necessary to operate at the level of excellence in the field of cultural heritage diagnostics and conservation, taking as a cultural reference the interdisciplinary nature of the professions of the research field.
In particular, the master graduated will acquire in-depth theoretical, methodological and experimental skills in the Conservation Sciences applied to Cultural Heritage, in order to identify new theoretical developments and to operate at decision-making level in all areas of the sciences applied. to Cultural Heritage.

**Expected learning outcomes**

In-depth knowledge and understanding of the disciplines characterizing the class, in particular, those relating to scientific techniques applied to the diagnosis and conservation of historical-artistic, architectural, archaeological, museum and cultural media and information storage media;
- knowledge and understanding of the techniques and good practices for diagnostics and conservation of the categories of cultural heritage above mentioned;
- understanding of the interdisciplinary aspects of problems related to diagnostics and conservation of cultural heritage.
The knowledge and comprehension skills listed above are achieved through participation in lectures, exercises and personal study, provided by the training activities activated within the disciplinary areas of Biology, Chemistry, Physics, Computer Science, and Earth Sciences.
The acquisition of knowledge and comprehension skills will be verified through judgments based on the evaluation of the activities carried out by the individual student during the teaching period (elaborates and short essays, solutions of problems and exercises, oral presentations during lessons and exercises, etc.) and a final exam in written and/or oral form.

APPLYING KNOWLEDGE AND UNDERSTANDING
- Ability to autonomously use the main experimental methods of diagnostics applied to the conservation of cultural heritage and to operate with management and coordination roles, in diagnostic laboratories, in archaeological excavation sites, in restoration sites and laboratories and in museums;
- ability to organize and frame complex problems and information in an appropriate and coherent way.
The achievement of the ability to apply the knowledge listed above will take place through participation in lessons, individual study and through the practical exercises in laboratory and field activities. In this context, courses with laboratory exercises and field experience are particularly important.
To verify the above mentioned skills, written and/or oral exams are provided, as well as practical tests in which the student is called to demonstrate mastery of tools and methodologies. The ability to apply the acquired knowledge is also verified through other practical activities, such as participation in archaeological excavations and restoration sites.

MAKING JUDGEMENTS
- Ability to choose methods and techniques on the basis of both the reference manuals and the most advanced good practices
- to be applied to specific types of cultural heritage;
- ability to evaluate the legal implications of the planning and execution of conservation and diagnostic operations applied to cultural heritage;
- knowledge of modern detection, management and data processing instruments.
The autonomy in making judgments and the ability to plan and conduct interventions are mainly developed during the study groups, seminars, reports preparation.
The acquisition of independent judgment is verified through critical discussion during the examinations, but also by assessing the ability to work in group during the graduation thesis.

**Professional profile and employment opportunities**

- Experts in diagnostics and technology applied to historical-artistic cultural heritage
Work Context
The master graduated in Cultural Heritage Conservation Science carries out functions of high responsibility in the areas of the conservation of historical-artistic heritage, both in terms of diagnostics (in support of restoration) and of protection and development:
- carrying out research activities in public and private institutes responsible for the conservation of cultural heritage (museums, art galleries, galleries, private collections);
- coordinating activities related to the scientific knowledge of cultural heritage performed by experts from different sectors, in the context of conservation / restoration campaigns;
- carrying out freelance activities the conservation of movable property belonging to public institutions and private collections;

- carrying out dissemination activities in the field of sciences applied to diagnostics and conservation of historical and artistic heritage;
- collaborating in the creation of scientific apparatus for temporary exhibitions and displays;
- examining and harmonizing the analytical results of specific diagnostic campaigns, on behalf of public and private institutions involved in the conservation of the historical and artistic heritage.

Skills Associated to the Role

The master graduated in Cultural Heritage Conservation Science has specific knowledge of the most modern applications of the biological, chemical, physical, geological and IT sciences used in the field of the conservation of historical-artistic heritage, in different contexts related to specific environmental or provenance conditions. He is aware of the ethical and legislative aspects of the restoration of the artworks of public and private institutions.

Career Opportunities

- universities and public research agencies;
- public and private biological, chemical, physical, geological and IT analysis laboratories;
- superintendences, museums, and art galleries;
- private museums;
- scientific journalism, specifically linked to the dissemination of scientific analyzes related to the study and conservation of historical and artistic heritage;
- freelance activities in the field of laboratory analysis on historical and artistic heritage.

2 - Experts in diagnostics and technology applied to archaeological cultural heritage (geoarchaelogists and archaeometres)

Work Context

**Notes**

To obtain the degree, students are required to demonstrate an English language proficiency at level B2 within the Common European Framework of Reference for Languages (CEFR). This level can be assessed in the following ways:

- by submitting the language certificate achieved no more than three years prior to the submission, at level B2 or higher, recognised by the University (the list of recognised language certificates can be found at https://www.unimi.it/en/node/297/). The language certificate must be uploaded during the admission process;
- by taking the Placement Test, organised by SLAM exclusively during the first year, from October to January. Students who fail to reach level B2 will have to attend an English course organised by SLAM. The Placement Test is compulsory for all students who do not have a valid language certificate.

Students who do not take the Placement Test within the deadline and students who fail the SLAM end-of-course test within six attempts will have to obtain a language certificate within the year in which the language exam is scheduled.

LEVEL OF ENGLISH ASSESSED THROUGH A COMPUTER-BASED TEST DURING THE BACHELOR'S DEGREES OBTAINED AT THE UNIVERSITY OF MILAN. English levels B1 and B2 achieved no more than four years previously are deemed valid. The verification is automatic with no need to attach any certificate during the application phase.

## *EXPERIENCE OF STUDY ABROAD AS PART OF THE TRAINING PROGRAM*

The University of Milan supports international mobility by providing its students with the opportunity to spend study and internship periods abroad. It is a unique chance to enrich your educational path in a new exciting environment.

The agreements entered into by the University with over 300 universities from 30 different countries under the European Erasmus+ programme allow regularly enrolled students to carry out part of their studies at one of the partner universities or to undertake internships at companies, training and research centres and other organizations.

Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

For assistance, please contact:
International Mobility Office
Via Santa Sofia 9 (second floor)
Tel. 02 503 13501-12589-13495-13502
E-mail: mobility.out@unimi.it
Desk opening hours: Monday to Friday 9 am - 12 noon

**Study and internships abroad**

Erasmus is a grant that finances the study abroad experience at a partner university, as part of bilateral agreements with selected universities and research centers in many foreign countries. When abroad, students attend courses, carry out research activities or do an internship.

In order to get these grants, students must contact a professor of this program who will scientifically supervise the exchange. Every topic related to this program is suitable. Two types of grants are available:

Erasmus+, for attending courses and carry out research activities (refer to the call in the Geological Sciences area).

Erasmus+ Traineeship (see Placement on unimi.it website), exclusively for internships.

For Erasmus+, see the call on the Geology area in the unimi.it website. Among other agreements, please have a look at the undergraduate and graduate courses offered by TEI, Technological Educational Institute, Atene (Grecia), who has a special agreement with this program.
The call for Erasmus+ Traineeship is published on the unimi.it website for all programs. In the recent past, Traneeship partners were: Cergy-Pontoise (France), Poitiers (France), Santiago de Compostela (Spain) and Ghent (Belgium). Anyway, new agreements with other universities or research centers can be signed if a professor of this program has some scientific collaboration with them. Apart from courses and exams, any activity carried out at the abroad institution is worth 5 credits (CFU) per month.
The “learning agreement” between professors at the home and abroad institution will define the activities the student will carry out. This document, together with the transcript of the exams and other research activities, will allow for the acknowledgment of such activities by this program.
To attend courses and take exams abroad has many advantages. In addition to being an unconventional experience in a student’s life, it offers a big opportunity to practice in the local language. The students will also experience and compare different teaching systems, gaining more flexibility in their studying activities. Finally, the study abroad experience is in some cases a good opportunity to use facilities otherwise not available (for example, special equipment for experiments), work with large research groups on a cosmopolitan scale.

**How to participate in Erasmus mobility programs**

How to participate in Erasmus+ mobility programmes

The students of the University of Milan can participate in mobility programmes, which last 3 to 12 months, through a public selection procedure.
Ad hoc commissions will evaluate:
• the candidate's proposed study programme abroad
• his/her foreign language proficiency
• the reasons behind his/her application
Call for applications and informative meetings
The public selection generally begins around February each year with the publication of a call for applications specifying the destinations, with the respective programme duration, requirements and online application deadline.

Every year, before the deadline for the call, the University organizes informative meetings to illustrate opportunities and rules for participation to students.

Erasmus+ scholarship
The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which is supplemented by the University funding for disadvantaged students.

Language courses
Students who pass the selections for mobility programmes can benefit from intensive foreign language courses offered each year by the University.

Learn more at https://www.unimi.it/en/international/study-abroad/studying-abroad-erasmus.

For assistance, please contact:
International Mobility Office
Via Festa del Perdono 7 (first floor)
Tel. 02 503 13501-12589-13495-13502
E-mail: mobility.out@unimi.it
Desk opening hours: Monday to Friday 9 am - 12 noon

***1st COURSE YEAR Core/compulsory courses/activities common***

| Learning activity | Ects | Sector |
|---|---|---|
| English proficiency B2 (3 ECTS) | 3 | ND |
| Total compulsory credits | 3 | |

***2nd COURSE YEAR Core/compulsory courses/activities common***

| Learning activity | Ects | Sector |
|---|---|---|
| FINAL EXAM | 33 | NA |
| TRAINING | 12 | NA |
| Total compulsory credits | 45 | |

***Further elective courses***

| | | |
|---|---|---|
| **Characterizing Formation Activities - Conservation Sciences and Technologies (18 CFU)** | | |
| ANALYTICAL METHODS FOR THE ENVIRONMENTAL DEGRADATION OF CULTURAL HERITAGE | 6 | CHIM/01 |
| CALORIMETRY AND THERMAL ANALYSIS, LABORATORY | 6 | CHIM/02 |
| CONSERVATION AND VALORIZATION OF SCIENTIFIC INSTRUMENTS | 6 | FIS/07 |
| PHYSIC TECHNIQUES APPLIED TO CULTURAL HERITAGE: LABORATORY | 6 | FIS/07 |
| **Characterizing Formation Activities - Earth and Natural Sciences (18 CFU)** | | |
| ADVANCED ANALYTICAL METHODS IN MINERALOGY AND PETROGRAPHY FOR CULTURAL HERITAGE, LABORATORY | 6 | (6) GEO/06, (6) GEO/07 |
| APPLIED GEOLOGY FOR THE PRESERVATION OF ARCHAEOLOGICAL AND ARCHITECTONICAL HERITAGES | 6 | GEO/05 |
| ARCHAEOBOTANY | 6 | BIO/02 |
| GEOPHYSICS APPLIED TO CULTURAL HERITAGE | 6 | GEO/11 |
| PALAEONTOLOGY AND VERTEBRATE PALAEONTOLOGY, MUSEOLOGICAL ASPECTS | 6 | GEO/01 |
| SEDIMENTOLOGY AND CULTURAL HERITAGE | 6 | GEO/02 |
| **Characterizing Formation Activities - Interdisciplinary Formation (12 CFU)** | | |
| COLORIMETRY AND COLOR MANAGEMENT FOR CULTURAL HERITAGE | 6 | ING-INF/05 |
| COMPUTING TECHNOLOGIES APPLIED TO CULTURAL HERITAGE | 6 | INF/01 |
| INTEGRATED COURSE OF ADVANCED BIOTECHNOLOGIES APPLIED TO CULTURAL HERITAGE: LABORATORY | 6 | (6) AGR/16, (6) AGR/11, (6) AGR/12 |
| MOVIE RESTORATION | 6 | INF/01 |
| SITE MANAGMENT AND PREVENTIVE ARCHAEOLOGY | 6 | L-ANT/10 |
| **Related and Complementary Formation Activities (12 CFU)** | | |
| ANALYSIS AND DIAGNOSTICS OF ARCHITECTURAL CULTURAL HERITAGE | 6 | AGR/10 |
| FORMATION PROCESSES IN ARCHAEOLOGICAL SITES | 6 | GEO/04 |
| MICROCLIMATOLOGY APPLIED TO CULTURAL HERITAGE | 6 | GEO/12 |
| TOPOGRAPHIC TECHNIQUES AND EQUIPMENT FOR ARCHAEOLOGICAL AND ARCHITECTONICAL SURVEY | 6 | ICAR/06 |
| **Other Formation Activities, freely selected by students among courses held by University of Milan (12 CFU)** | | |

## *COURSE PROGRESSION REQUIREMENTS*

The program of each course indicates the preliminary knowledge necessary to adequately deal with the contents of the course itself. It is the responsibility, as well as the interest, of the student to comply with these indications.