# UNIVERSITA' DEGLI STUDI DI MILANO
# PROGRAMME DESCRIPTION - ACADEMIC YEAR 2020/21
# BACHELOR
# Science and Technology for Studying and Preserving the Cultural Heritage and Information Storage Media (Classe L-43)
# enrolled from 2011/2012 academic year

## *HEADING*

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|---|---|
| **Degree classification - Denomination and code:** | L-43 Conservation and restoration of culturale heritage |
| **Degree title:** | Dottore |
| **Length of course:** | 3 years |
| **Total number of credits required to complete programme:** | 180 |
| **Years of course currently available:** | 1st , 2nd , 3rd |
| **Access procedures:** | Open, subject to completion of self-assessment test prior to enrolment |
| **Course code:** | F8X |

## *PERSONS/ROLES*

**Head of Study Programme**

Prof. Luca Trombino

**Degree Course Coordinator**

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 - Orientamento analisi e conservazione dei beni storico-artistici
prof. Andrea Zerboni - Orientamento analisi e conservazione dei beni culturali archeologici
prof. Goffredo Haus - Orientamento analisi, conservazione e restauro dell'informazione e dei supporti informativi
dott. Leonardo Gariboldi - Orientamento analisi e conservazione dei beni museali scientifico-tecnologici
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://conservazionebeniculturali.cdl.unimi.it/it

Via Botticelli 23 Email: sportello.beniculturali@unimi.it

Via Luigi 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**

This bachelor program is devoted to train up scientific professionals specialized for Studying and Preserving the Cultural Heritage and Information Storage Media.

People who get this bachelor's degree have specific methodological, scientific, and technological knowledge needed for:

- evaluating the state of preservation of cultural heritage, its morphological-structural characteristics, and the properties of its constituting materials;
- the identification, risks' evaluation, diagnosis and rescuing actions for avoiding deterioration processes in cultural heritage with respect to archaeological sites, historical-artistic artifacts, museum collections, information storage media and related contents;
- restoring of information storage media and related contents;

- taking the scientific-technological leadership of institutions and professional organizations devoted to the preservation, management, and maintenance of cultural heritage, and also of private professional organizations devoted to conservative restoration and environmental rescuing;
- being able to exchange professional oral and written information in at least a couple of European languages (tipically italian and english);
- doing operative actions for the communication, preservation, fruition, and management of information concerning cultural heritage;
- working in the frame of a team, with a high level of autonomy, easily joining a working environment.

A robust basic scientific education is coupled to this specialistic qualification, so that students acquire fundamental scientific and professional methodologies.

**Expected learning outcomes**

knowledge and understandig

Graduates of the degree course in "Science and Technology for Studying and Preserving the Cultural Heritage and Information Storage Media" will have theoretical and operational knowledge and skills in the following fields:
- biology, chemistry, physics, geology, computer science, all applied to cultural heritage;
- analysis and conservation of archaeological, historical-artistic, scientific-technological cultural heritage, as well as information and information storage media;
- foundations of law and statistics.

Expected learning outcomes:
- knowledge of conceptual methods, principles and systems, for studying and preserving cultural heritage and information storage media;
- knowledge of analytical and diagnostic methods and tools aimed at the preservation of cultural heritage and information storage media;
- understanding and controlling main tools and methods (both quantitative and qualitative) for the preservation of cultural heritage and information storage media;
- knowledge of the main research results and the most important theoretical developments in one or more disciplinary sub-areas and related research fields.

**Professional profile and employment opportunities**

People who get the bachelor's degree in Science and Technology for Studying and Preserving the Cultural Heritage and Information Storage Media will conduct their professional activities for public and private institutions whose focus is on cultural heritage such as museums, libraries, archives, and also for professional companies working in the fields of archaelogical excavations, preservation and restoring of cultural heritage , information, and related storage media.

Specific roles and professional skills of people who get the bachelor's degree in Science and Technology for Studying and Preserving the Cultural Heritage and Information Storage Media, are only partially considered in the classification made by ISTAT, and particularly they are somewhat close to PROFESSIONI INTELLETTUALI, SCIENTIFICHE E DI ELEVATA SPECIALIZZAZIONE (2.5.4.5, 2.5.5.1.3); the main reason follows from the recent definition of new professional figures concerning Science and Technology for Studying and Preserving the Cultural Heritage and Information Storage Media.

This bachelor program is devoted to train up professional figures such as:
- experts in geoarchaelogy and archaeometry, skilled for the study, diagnosis, and preservation of archaelogical sites and artifacts, and also for supporting excavations' activities;
- experts in the application of analytical techniques for supporting historical-philological studies, characterizing materials and the causes of their degradation state, and defining needed rescuing actions;
- experts specialized in the exploitation of historical, scientific, technological, naturalistic cultural heritage: they will be able in understanding, diagnosis, preserving, managing, cataloguing, digitazing, exploitation, and cultural promotion;
- experts in the analysis of the preservation state, in the definition and application of the more efficient techniques for preserving, organizing, exploiting, and restoring of both information storage media (analogue and digital) and the related information contents.

**Notes**

To obtain the degree, students are required to demonstrate an English language proficiency at level B1 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 B1 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 December. Students who fail to reach level B1 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.

## *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.

**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, 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 3 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 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

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

| Learning activity | Ects | Sector |
|---|---|---|
| ELEMENTS OF MINERALOGY AND PETROGRAPHY | 6 | GEO/06, GEO/07 |
| English assessment B1 (3 ECTS) | 3 | ND |
| GENERAL AND INORGANIC CHEMISTRY | 6 | CHIM/03 |
| GENERAL COMPUTER SCIENCE | 12 | INF/01 |
| GENERAL MATHEMATICS | 6 | MAT/09, MAT/01, MAT/02, MAT/03, MAT/04, MAT/05, MAT/06, MAT/07, MAT/08 |
| GENERAL PHYSICS | 6 | FIS/01 |
| LAW FOR CULTURAL HERITAGE | 6 | IUS/10 |
| METHODOLOGY OF THE ARCHAEOLOGICAL RESEARCH AND OF THE HISTORY OF ART | 12 | (6) L-ART/01, (6) L-ANT/10 |
| PLANT BIOLOGY | 6 | BIO/02 |
| PROBABILISTIC AND STATISTIC METHODS | 6 | SECS-S/01 |
| Total compulsory credits | 69 | |

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

| Learning activity | Ects | Sector |
|---|---|---|
| ANALYSIS METHODS FOR CULTURAL GOODS | 9 | FIS/07 |
| ANALYTICAL CHEMISTRY | 9 | CHIM/12, CHIM/01 |
| Cultural Heritage Microbiology | 6 | AGR/16 |
| PALEONTOLOGY AND STRATIGRAPHIC GEOLOGY | 6 | GEO/02, GEO/01 |
| RESTORATION OF CULTURAL HERITAGE | 6 | ICAR/19 |
| Total compulsory credits | 36 | |

## *3rd COURSE YEAR Core/compulsory courses/activities common*

| Learning activity | Ects | Sector |
|---|---|---|
| Training | 10 | NA |
| Total compulsory credits | 10 | |

## *COURSE YEAR UNDEFINED Core/compulsory courses/activities common*

| Learning activity | Ects | Sector |
|---|---|---|
| Stage | 8 | NA |
| Total compulsory credits | 8 | |

## *Further elective courses*

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|---|---|---|
| ANTHROPOLOGY | 6 | BIO/08 |
| ARCHAEOMETALLURGY | 6 | ING-IND/23 |
| ARCHAEOZOOLOGY | 9 | BIO/05 |
| ARCHIVAL STUDIES | 6 | M-STO/08 |
| CHEMICAL AND PHYSICAL METHODS FOR THE CULTURAL GOODS CONSERVATION | 9 | CHIM/02 |
| CHEMICO-PHYSICAL METHODS FOR CONSERVATION AND RESTORATION OF CULTURAL HERITAGE | 9 | CHIM/02 |
| CHEMISTRY OF MATERIALS | 6 | CHIM/05, ING-IND/23 |
| CONTEMPORARY MUSEOLOGY | 6 | ING-IND/23, L-ART/04 |
| ELEMENTS OF OPTICS AND NUCLEAR PHYSICS | 9 | FIS/04, FIS/03 |
| ENTOMOLOGY FOR CULTURAL GOODS | 6 | AGR/11 |
| GEOARCHAEOLOGY AND QUATERNARY GEOLOGY | 6 | GEO/04 |
| HISTORY OF TECHNOLOGY | 9 | FIS/08 |
| Methods and languages for data management | 6 | INF/01 |
| MULTIMEDIAL TECHA ORGANIZATION AND DIGITALIZATION | 6 | INF/01 |
| NON-DESTRUCTIVE ANALYSES | 6 | ING-IND/23 |
| ORGANIC CHEMISTRY | 9 | CHIM/06 |
| X-RAY METHODOLOGIES FOR CULTURAL GOODS | 6 | FIS/04, FIS/03 |

## *End of course requirements*

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|---|---|---|
| FINAL EXAM | 6 | NA |
| Total compulsory credits | 6 | |

## *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.