UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2022/23
MASTER DEGREE
BIOGEOSCIENCES: ANALYSIS OF ECOSYSTEM AND SCIENZE COMMUNICATION - (Classe LM-60)
enrolled from 2018/2019 academic year

HEADING

Degree classification - Denomination and code:	LM-60 Nature sciences
Degree title:	Dottore Magistrale
Curricula currently available:	Ecosystem analysis, monitoring and management / Science communication, dissemination and teaching
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 entry requirements
Course code:	F2B

PERSONS/ROLES

Head of Interdepartmental Study Programme
Prof.ssa Lucia Angiolini

Degree Course Coordinator
Prof.ssa Lucia Angiolini

Tutors - Faculty
Tutor orientamento e piani di studio:
Curriculum ANALISI, MONITORAGGIO E GESTIONE DEGLI ECOSISTEMI
Cristina Bonza, Roberta Pennati, Marco Caccianiga, Maria Rose Petrizzo
Curriculum COMUNICAZIONE, DIVULGAZIONE E METODOLOGIE DIDATTICHE DELLE SCIENZE
Manuela Pelfini, Morena Casartelli, Alessandra Moscatelli, Paolo Tremolada

Tutor per la mobilità internazionale e l'Erasmus - Morena Casartelli
Tutor per stage e tirocini - Alessandra Moscatelli
Tutor per trasferimenti - Morena Casartelli
Tutor per riconoscimento crediti - Cristina Bonza
Tutor per ammissione magistrale - Cristina Bonza

Degree Course website
https://biogeoscienze.cdl.unimi.it/it
via Mangiagalli 34 (primo piano) Email: lucia.angiolini@unimi.it

Course management
via Botticelli, 23 Email: cclsn@unimi.it

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

Student registrar
via Celoria 18 Phone 0250325032 https://www.unimi.it/it/node/360 https://www.unimi.it/it/node/359

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The master's degree course in BioGeosciences: Analysis of ecosystems and Science communication aims to provide an in-depth, interdisciplinary and multidisciplinary knowledge of the structural and functional components of ecosystems in the present - also in relation to the anthropic presence - and in the geological past. It is aimed to show the conceptual tools for environmental conservation, defense and management, to provide knowledge and methodologies for the dissemination, communication and teaching of Natural Sciences. The course is addressed to students who want to extend and deepen their culture in the field of nature and environment, maintaining the traditional balance between abiotic and biotic factors, to obtain an organic and synthetic vision of nature and environment. The master's degree course addressed to students who intend to work in the field of training, communication and teaching of Natural Sciences.

Expected learning outcomes

Expected outcomes

A.

- In-depth knowledge and understanding of the biotic and abiotic components of ecosystems, their conservation and enhancement, and land management.
- In-depth knowledge of the most important processes that control the quality of the environment and the conservation of biodiversity and geodiversity.
- Understanding of the interdisciplinary aspects of the studies on environment.
- In-depth knowledge of IT tools useful for the acquisition and analysis of geographic data and georeferenced naturalistic data.
- Knowledge of methodologies and technologies to operate in scientific dissemination and communication.
- Knowledge of the psycho-pedagogical and anthropological-sociological aspects of scientific teaching.

The knowledge and comprehension skills are achieved through participation in lectures and exercises and personal study.

B.

- Ability to independently use the most important experimental methods in Natural Sciences and to describe, analyze and critically evaluate the data collected in the laboratory and/or in the field.
- Ability to apply knowledge about the components of the ecosystems and their interactions, monitoring procedures and land management practices.
- Ability to organize naturalistic data for dissemination and communication.
- Ability to effectively use the English language in science, education and teaching.

The achievement of the ability to apply the knowledge listed above takes place through participation in the lessons of the courses.

C.

- Ability to choose the appropriate techniques for the analysis of biotic and abiotic components of ecosystems.
- Ability to evaluate in detail the social and ethical implications in the planning of interventions on the natural environment.
- Ability to evaluate how to disseminate knowledge on nature and environment

The autonomy of judgment and the ability to plan and perform analyses and experiments are developed during the preparation of papers and the participation in study groups and seminars.

D.

- Ability to communicate orally and in writing to a public of experts and to a non-specialist public with language properties.
- Ability to use the new communication technologies.
- In-depth knowledge of a second European language.

Written and oral communication skills are developed during exams, seminars, exercises and training activities that require the preparation of reports or documents and their presentation.

E.

- Ability to use scientific updating tools and to access scientific literature produced in at least one European language.

Capacity to understand the multidisciplinary and interdisciplinary aspects of the Natural Sciences.

- Ability to develop skills to perform research, acquired through training activities and the elaboration of the thesis.
- Ability to use the new communication technologies tools (e-learning platforms).

Professional profile and employment opportunities

Career opportunities for master's degree in BioGeosciences: Analysis of ecosystems and Science communication can be found in the public sector and in the private sector.

In addition, the degree allows access to PhDs and II level masters.

Graduates in curriculum Ecosystem analysis, monitoring and management will be able to perform monitoring of biotic naturalistic components (flora and fauna with particular reference to species indicated in the EU directives and to the alien species, habitats of community interest) and abiotic (rocks, geological structures, landscape forms with particular reference to the enhancement and geoconservation) on behalf of institutions responsible for the management of the territory and the natural heritage (regions, municipalities, other public and private agencies, parks and reserves) and as freelance.

Graduates in curriculum Science communication, dissemination and teaching will be able to perform activities for the dissemination of knowledge of the natural ecosystems of the present and of the geological past; environmental education activities in schools and institutions, parks and organizations; preparation of exhibitions on nature and environment; awareness-raising activities on sustainable development. Furthermore, the degree course provides adequate preparation for

teaching scientific disciplines and the suitable background to participate in the competition for access to the role of teacher of secondary school, according to current legislation.

The course, after passing a specific state exam allows to enroll in the professional registers of graduate agro-technician and graduate agricultural expert.

Initial knowledge required

Requirements and knowledge required for admission

The curricular requirements for admission to the Master's degree course in BioGeosciences: Analysis of Ecosystems and Communication of Sciences are fully satisfied by graduates of the degree class in Sciences and Technologies for the Environment and Nature (L-32) and of the corresponding class relating to Ministerial Decree 509/99. Graduates with a degree from another class, as well as those holding another qualification obtained abroad and recognised as suitable are also eligible for admission to the Master's degree course, providing they can demonstrate that they meet the curricular requirements and the adequacy of their personal preparation necessary to successfully pursue their studies, as specified below.

Students with a degree obtained abroad will be assessed by the Admission Committee for the Master's degree on the basis of their curriculum (type of bachelor degree, bachelor study programme) and through an interview (also online) aimed at verifying whether they meet the specific curricular requirements and the adequacy of their personal preparation for admission to the Master's degree. The date of the interview is the one indicated in the Manifesto degli Studi for all other students.

For students who have obtained a Bachelor's degree in Italy in classes other than L-32, the curricular requirements for access to the Master's degree imply having acquired at least:

- 6 CFU in mathematical disciplines (MAT/01 Mathematical Logic, MAT/02 Algebra, MAT/03 Geometry, MAT/04 Complementary Mathematics, MAT/05 Mathematical Analysis, MAT/06 Probability and Mathematical Statistics, MAT/07 Mathematical Physics, MAT/08 Numerical Analysis),
- 6 CFU in physics (FIS/01 Experimental physics, FIS/02 Theoretical physics, mathematical models and methods, FIS/03 Physics of matter, FIS/04 Nuclear and subnuclear physics, FIS/05 Astronomy and astrophysics, FIS/06 Physics for the Earth system and the circum-terrestrial medium, FIS/07 Applied physics (cultural heritage, environmental, biology and medicine), FIS/08 Physics education and history),
- 6 CFU in chemical disciplines (CHIM/01 Analytical chemistry, CHIM/02 Physical chemistry, CHIM/03 General and inorganic chemistry, CHIM/06 Organic chemistry),

and having acquired at least 60 CFU in the following characterising disciplines of class L-32:

- Agricultural disciplines (AGR/01 Rural economics and valuation, AGR/02 Agronomy and herbaceous cultivation, AGR/03 General arboriculture and tree cultivation, AGR/04 Horticulture and floriculture, AGR/05 Forest management and silviculture, AGR/06 Wood technology and forestry, AGR/07 Agricultural genetics, AGR/08 Agricultural hydraulics and hydraulic-forestry systems, AGR/10 Rural construction and agroforestry, AGR/11 General and applied entomology, AGR/12 Plant pathology, AGR/13 Agricultural chemistry, AGR/14 Pedology, AGR/16 Agricultural microbiology, AGR/19 Special zootechnics, AGR/20 Zoocultures),
- biological disciplines (BIO/01 General botany, BIO/02 Systematic botany, BIO/04 Plant physiology, BIO/05 Zoology, BIO/06 Comparative anatomy and cytology, BIO/08 Anthropology, BIO/10 Biochemistry, BIO/11 Molecular biology, BIO/16 Human anatomy, BIO/18 Genetics, BIO/19 Microbiology)
- ecological disciplines (BIO/03 Environmental and applied botany, BIO/07 Ecology, GEO/04 Physical geography and geomorphology),
- Earth science disciplines (GEO/01 Palaeontology and palaeoecology, GEO/02 Stratigraphic and sedimentary geology, GEO/03 Structural geology, GEO/05 Applied geology, GEO/06 Mineralogy, GEO/07 Petrology and petrography, GEO/08 Geochemistry and volcanology, GEO/09 Mineral resources and mineralogical-petrographic applications for the environment and cultural heritage, GEO/10 Solid Earth Geophysics, GEO/11 Applied Geophysics, GEO/12 Oceanography and Atmospheric Physics).

Of these 60 CFU, the student must have acquired at least 6 CFU in biological disciplines, 6 CFU in ecological disciplines and 6 CFU in Earth Sciences disciplines.

Compulsory attendance

Attendance to didactic activitites including laboratories, field activities, internships which provide credits, is compulsory.

Degree programme final exams

The Master's degree in BioGeosciences: Analysis of Ecosystems and Communication of Sciences is completed after passing a final exam, which consists of the presentation of a thesis written in an original form by the student, under the guidance of a tutor. To be admitted to the final exam, which implies the acquisition of 33 or 39 credits depending on the chosen curriculum, the student must have obtained 87 or 81 credits respectively.

The final exam may be taken in English, as well as the drafting of the relative paper.

The committee consists of at least five and no more than eleven members. The grade is expressed in 110ths and is based on the calculated average of the marks for the examinations of the individual subjects in the study plan, plus a maximum of 9 points for the thesis and a maximum of 1 point for the career (additional credits, career speed, field activities, international mobility programmes). The total number of points to be added to the average should not exceed a maximum of 10 (9 + 1). The points for the thesis are distributed as follows: 3-4 poor; 5-6 sufficient; 7 good; 8 excellent; 9 excellent on the basis of the quality of the thesis, the ability to present the results and to answer the committee's questions and on the basis of the

judgement expressed by the co-examiner and the tutor.

https://www.unimi.it/it/studiare/frequentare-un-corso-di-laurea/laurearsi

Campus

Course locations: Department of Biosciences (via Celoria 26), Settore Didattico (via Celoria 20, via Golgi 19, via Venezian 14), Department of Earth Sciences "Ardito Desio" (via Mangiagalli 34 e via Botticelli 23) and other departments/buildings located in Milan-Città Studi.

Notes

In order to obtain their degree, students must be proficient in English at a B2 level. This proficiency level may be certified as follows:
- Through a language certificate at a B2 level or higher, as submitted during the admission procedure;
- Through the entrance test (B2 level or higher);
- Through a Placement Test, which is delivered by the University Language Centre (SLAM) during year I only, from October to January (B2 or higher).

All students who do not have a B2 level or higher will be required to attend a B2-level English course, which will be delivered by the University Language Centre (SLAM), in the second semester of year I only.
Those who do not attend the course or do not pass the end-of-course test within six attempts must obtain a paid language certificate by graduation.

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 the 27 EU member countries and other Extra-EU 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

As part of the ERASMUS + program, for students enrolled in the Master Degree agreements with Danish, Spanish, French, Swiss and Romanian universities have been concluded. During the study period abroad, the students can attend courses and take exams, and carry out researches for the thesis. Students in the mobility program must submit a study plan proposal that includes the training activities they plan to carry out abroad. As far as possible, the number of CFU of the proposed study plan must correspond to what the student would acquire in an equivalent period of time at his university. The proposed activities, selected among the host university's educational activities, must be consistent with the educational project of the Master Degree course. The study plan must be submitted for approval to the Erasmus Commission of the Collegio Didattico Interdipartimentale. The Commission may ask the student to integrate the program of an exam taken in the host university with an interview to be carried out in the University of Milano on an agreed supplementary program. At the end of the mobility program, in compliance with the University guidelines, the exams passed will be recorded in the student's career with the original name of the course in the host foreign university, and their ECTS converted into CFU and the vote expressed in thirtieths.

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, through a public selection procedure.
Ad hoc commissions will evaluate:
• Academic career
• 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 (from 2/3 to 12 months), 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
Contacts: InformaStudenti mobility.out@unimi.it
Student Desk booking through InformaStudenti

1st COURSE YEAR Core/compulsory courses/activities common to all curricula			
Learning activity		**Ects**	**Sector**
English proficiency B2 (3 ECTS)		3	ND
	Total compulsory credits	3	

ACTIVE CURRICULA LIST

Ecosystem analysis, monitoring and management Course years currently available: 1st , 2nd
Science communication, dissemination and teaching Course years currently available: 1st , 2nd

Procedure for choosing a curriculum

Curriculum selection
The selection of the curriculum will be performed at the inscription.

CURRICULUM: [F2B-A] Ecosystem analysis, monitoring and management

Qualifying Training Objectives

The curriculum Ecosystem analysis, monitoring and management aims to provide an in-depth, interdisciplinary and multidisciplinary knowledge of the structural and functional components of ecosystems in the present - also in relation to the anthropic presence - and in the geological past. It aims to outline the conceptual tools for environmental conservation, defense and management. The curriculum is addressed to students who want to extend and deepen their culture in the field of nature and environment, maintaining the traditional balance between abiotic and biotic factors, to obtain an organic and synthetic vision of nature and environment.

Skills acquired

A.
- In-depth knowledge and understanding of the biotic and abiotic components of ecosystems, their conservation and enhancement, and land management.
- In-depth knowledge of the most important processes that control the quality of the environment and the conservation of biodiversity and geodiversity.
- Understanding of the interdisciplinary aspects of the studies on environment.
- In-depth knowledge of informatic tools useful for the acquisition and analysis of geographic data and georeferenced naturalistic data.

B.
- Ability to independently use the most important experimental methods in Natural Sciences and to describe, analyze and critically evaluate the data collected in the laboratory and/or in the field.
- Ability to apply knowledge about the components of the ecosystems and their interactions, monitoring procedures and land management practices.
- Ability to effectively use the English language in science.

C.
- Ability to choose the appropriate techniques for the analysis of biotic and abiotic components of ecosystems.
- Ability to evaluate in detail the social and ethical implications in the planning of interventions on the natural environment.

D.
- Ability to communicate orally and in writing to a public of experts with language properties.
- Ability to use the new communication technologies.
- In-depth knowledge of a second European language.

E.
- Ability to use scientific updating tools and to access scientific literature produced in at least one European language.

- Capacity to understand the multidisciplinary and interdisciplinary aspects of the Natural Sciences.
- Ability to develop skills to perform research, acquired through training activities and the elaboration of the thesis.
- Ability to use the new communication technologies tools (e-learning platforms)

Professional profile and employment possibilities

Graduates will be able to perform monitoring of biotic naturalistic components (flora and fauna with particular reference to species indicated in the EU directives and to the alien species, habitats of community interest) and abiotic (rocks, geological structures, landscape forms with particular reference to the enhancement and geoconservation) on behalf of institutions responsible for the management of the territory and the natural heritage (regions, municipalities, other public and private agencies, parks and reserves) and as freelance;

Career opportunities for this master's degree can be found in the public sector, School, University, research bodies (CNR, ENEA), management companies and environmental services, Ministries, Higher Institute for Environmental Protection and Research (ISPRA), Regional Agencies for the Protection of the Environment (ARPA), Higher Institute of Health, Experimental Stations, Archaeological Superintendence, and in the private sector, where graduates will be able to carry out their activities in different types of companies and in the increasingly numerous agencies and cooperatives of consultancy and sustainable use of the territory. In addition, the skills of the master's degree can be of support to the Administrations of the Regions, Provinces, Municipalities, Mountain Communities, Environmental Associations, Foundations that operate in the management of environmental issues and in scientific publishing and dissemination.

1st COURSE YEAR Core/compulsory courses/activities Curriculum-specific features Ecosystem analysis, monitoring and management			
Learning activity		**Ects**	**Sector**
Methods in Ecosystem analysis		12	GEO/04, BIO/07, BIO/03
	Total compulsory credits	12	
Further elective courses Curriculum-specific features Ecosystem analysis, monitoring and management			
Astronomy		6	FIS/05
Environmental chemistry		6	CHIM/12
Geographic Information Systems and Environmental Modelling		6	INF/01
Environmental economics and policy		6	AGR/01
Environmental Ethic		6	AGR/01
Population Biology and Genetics		6	AGR/07
Alpine Glaciology and Climatology		6	GEO/04
Applied geomorphology		6	GEO/04
Geomorphological heritage and geodiversity		6	GEO/04
Plant ecology		6	BIO/03
Quantitative ecology		6	BIO/07
Applied palaeoecology		6	GEO/01
Biomineralization		6	GEO/01
Environmental Geochemistry		6	GEO/08
Gemology		6	GEO/06, GEO/09
Geological evolution of a habitable planet		6	GEO/02
Geology of the Mediterranean area		6	GEO/03, GEO/07
Stratigraphic Paleontology		6	GEO/01
Vertebrate paleontology		6	GEO/01
Adaptation of animals and plants to environment		6	BIO/09, BIO/04
Anatomy and physiology of the integrated systems		6	BIO/09, BIO/06
Animal behaviour		6	BIO/05
Applied geobotany		6	BIO/02
Biogeography		6	BIO/05, BIO/02
Laboratory methods for biodiversity		6	BIO/06, BIO/05, BIO/01
Palynology		6	BIO/02
Phylogeny and evolution		6	BIO/05
Wildlife management		6	BIO/05
Anthropology		6	BIO/08
Biological interactions and social behaviour in insects		6	VET/06, AGR/11
Control strategies for insect pests and vectors		6	VET/06, AGR/11
Forensic sciences		6	MED/43
Geophysics for natural risks		6	GEO/12, GEO/11
Mathematical Modeling		6	MAT/07
Micropedology Laboratory		6	AGR/14
Principles And Dynamics of the "Critical Zone"		6	AGR/14
Symbiosis and parasitism		6	AGR/11
End of course requirements Curriculum-specific features Ecosystem analysis, monitoring and management			
Final exam		39	ND
	Total compulsory credits	39	

CURRICULUM: [F2B-B] Science communication, dissemination and teaching

Qualifying Training Objectives

Objectives

The curriculum Ecosystem analysis, monitoring and management aims to provide an in-depth, interdisciplinary and multidisciplinary knowledge of the structural and functional components of ecosystems in the present - also in relation to the anthropic presence - and in the geological past. It aims to outline the conceptual tools for environmental conservation, defense and management. The curriculum is addressed to students who want to extend and deepen their culture in the field of nature and environment, maintaining the traditional balance between abiotic and biotic factors, to obtain an organic and synthetic vision of nature and environment.

Skills acquired

A.

- In-depth knowledge and understanding of the biotic and abiotic components of ecosystems, their conservation and enhancement.
- Understanding of the interdisciplinary aspects of the studies on environment.
- Knowledge of methodologies and technologies to operate in scientific dissemination and communication.
- Knowledge of the psycho-pedagogical and anthropological-sociological aspects of scientific teaching.

B.

- Ability to organize naturalistic data for dissemination and communication.
- Ability to disseminate the basic concepts of Natural Sciences to a non-specialistic audience and students in various school settings.
- Ability to propose evaluation processes for education.
- Ability to effectively use the English language in science, education and teaching.

C.

- Ability to evaluate how to disseminate knowledge on nature and environment

D.

- Ability to communicate orally and in writing to a public of experts and to a non-specialist public with language properties.
- Ability to use the new communication technologies.
- In-depth knowledge of a second European language.

E.

- Ability to use scientific updating tools and to access scientific literature produced in at least one European language.
- Capacity to understand the multidisciplinary and interdisciplinary aspects of the Natural Sciences.
- Ability to develop skills to perform communication and dissemination, acquired through training activities and the elaboration of the thesis.
- Ability to use the new communication technologies tools (e-learning platforms) also for education.

Professional profile and employment possibilities

Graduates will be able to perform activities for the dissemination of knowledge of the natural ecosystems of the present and of the geological past; environmental education activities in schools and institutions, parks and organizations; preparation of exhibitions on nature and environment; awareness-raising activities on sustainable development.

Furthermore, the degree course provides adequate preparation for teaching scientific disciplines and the suitable background to participate in the competition for access to the role of teacher of secondary school, in the following classes: classes A-31 (ex A057) - Food sciences, A-32 (ex A011 and A054) - Geology and mineralogy sciences, A-50 (ex A060) - Natural, chemical and biological sciences. It also allows students from the three-year degree in Natural Sciences of the University of Milan to fully acquire the requirements for the class A-28 (ex A059) - Mathematics and science for first grade secondary school (attachment A of DM-259-17). The curriculum also allows the student to fully acquire the 24 CFUs in the anthropo-psycho-pedagogical disciplines and the teaching methodologies and technologies required for all competition classes by the current law.

1st COURSE YEAR Core/compulsory courses/activities Curriculum-specific features Science communication, dissemination and teaching			
Learning activity		**Ects**	**Sector**
Teaching methodologies and techniques for biogeosciences		12	(6) GEO/04, (6) BIO/07
	Total compulsory credits	12	

Further elective courses Curriculum-specific features Science communication, dissemination and teaching		
Astronomy	6	FIS/05
Comunication and teaching of Mathematics	6	MAT/04
Geographic Information Systems and Environmental Modelling	6	INF/01
Geometry in natural and anthropic environments and its teaching	6	MAT/03, MAT/04
Environmental economics and policy	6	AGR/01
Environmental Ethic	6	AGR/01
Fundamentals of psychology	6	M-PSI/01
General pedagogy	6	M-PED/01
Methods of communication	6	SPS/08
Applied geomorphology	6	GEO/04
Geomorphological heritage and geodiversity	6	GEO/04

Plant ecology		6	BIO/03
Geological evolution of a habitable planet		6	GEO/02
Geology of the Mediterranean area		6	GEO/03, GEO/07
Stratigraphic Paleontology		6	GEO/01
Vertebrate paleontology		6	GEO/01
Anatomy and physiology of the integrated systems		6	BIO/09, BIO/06
Biogeography		6	BIO/05, BIO/02
Cell biology		6	BIO/06, BIO/16, BIO/01
Human Anatomy		6	BIO/16
Phylogeny and evolution		6	BIO/05
Anthropology		6	BIO/08
Communication, dissemination and teaching of natural sciences		6	M-PED/03
Elementary Mathematics Teaching Workshop		6	MAT/04
History and teaching of Physics		6	FIS/08
Mathematical Modeling		6	MAT/07
Social anthropology		6	M-DEA/01
Symbiosis and parasitism		6	AGR/11
Urban and regional geography		6	M-GGR/01
Teaching methodologies and techniques for biosciences		6	BIO/07
Teaching methodologies and techniques for geosciences		6	GEO/04
End of course requirements Curriculum-specific features Science communication, dissemination and teaching			
Final exam		33	ND
	Total compulsory credits	33	