# UNIVERSITÀ DEGLI STUDI DI PALERMO

**Department: null**

**A.Y. 2013/2014**

**DEGREE COURSE IN NATURAL AND ENVIRONMENTAL SCIENCES**

**- ENVIRONMENTAL -**

## Characteristics

| | | | | |
|---|---|---|---|---|
| Class of Bachelor's Degree (BSc) on Environmental Sciences (L-32) | 3 YEARS | PALERMO | PLANNED ACCESS | 2180 |

## Educational objectives

The 1st cycle degree course in Natural and Environmental science derives from the merger of the two courses in Natural Sciences and Environmental Sciences, already existing in the university of Palermo before the structuring in 2 cycles of degree courses provided by the rules set out in Ministerial Decree 509 and 270.
This merger, arising essentially for reasons of simplification of the educational offer and optimization of the use of available human resources, has been designed so that it is possible, through the activation of multiple curricula, to maintain, within a common framework, educational programs aimed at the classical disciplines of the natural as well as of environmental sciences.
The aim is to provide a sound basis for a systemic approach to the world of nature, seen in its biotic and abiotic components and their relationships.
The course trains therefore professional with cultural baggage, enabling them to a further deepening of knowledge and acquisition of skills through access to the 2nd cycle degree courses.
The educational programme, in fact, allows the acquisition of the specific credits which constitute the curricular requirements for access to the 2nd cycle degree courses in the field of natural and environmental sciences as well as to the 2nd cycle degree course in the class LM- 95.
Graduates of this course will still have acquired the scientific and methodological foundations enabling them to carry out professional activities, at an intermediate level of responsibility, in the various fields of the natural and environmental sciences, as well as to operate in the field of environmental education and teaching at large.

In order to achieve its educational objectives, the course has been structured so as to allow a good understanding of the fundamentals of mathematics, computer science, physics and chemistry, also through the acquisition of the basic languages of the individual disciplines.
This knowledge base will help to address, through the application of the scientific method, the study of knowledge of the forms, phenomena and processes of plant and animal organisms, even at the evolutionary level; the knowledge of the Earth system, through the study of the processes endogenous and exogenous understanding of the interdisciplinary aspects of the studies on nature and the environment.
Through exercises, workshops and training activities, students will develop the ability to collect, analyze and process the data obtained in the field and in the laboratory, they will learn experimental procedures and protocols, to apply these latter and draw up reports on the subject; they will also acquire the ability to apply appropriate measures for prevention and safety in the laboratory and in the field.

During the construction of the cultural project it was decided to ensure a large degree of freedom to the possibility of activating teaching in the above areas mentioned, which are strategic to the graduation project.
This resulted in the formation of a wide range of credits for basic and specialized training activities, which may help in the drafting of the course outline, a more adequate articulation of the objectives to be achieved, consistent with available resources.

The programme includes a number of credits reserved for core activities ( 39 to 66 CFU), higher than the threshold set by the DM 270, to provide the student with the sound scientific evidence on which to set the specific study.

Class specific activities are awarded from 54 to 117 credits, with a substantial balance between the biological, ecological and

earth sciences subjects, which represent the cultural contexts for graduates in Natural and Environmental Sciences, and a space to other disciplines that complement the specific training.

The wide range of related and integrative disciplines, provides a spectrum sufficiently articulated to allow for integration with the acquired class specific skills, also emphasizing disciplines already included among class specific ones, for the specificity of the educational offer and its territorial context..

Ample space is then devoted to other educational activities (30 to 36 CFU), giving due weight to multidisciplinary trips, internships, apprenticeships, and other activities, oriented towards the world of work, as well as stays at other Italian and European universities, also in the framework of international agreements.
Graduates will be able to use effectively, in written and oral form, at least one European Union language, other than Italian, in the specific field of expertise.

**Professional opportunities**

- Activities for the detection, classification, analysis, restoration and conservation of the abiotic and biotic components of natural ecosystems.
- Activities in parks and nature reserves, scientific museums and educational centres.
- Activities for the location, diagnostics, protection and recovery of natural and environmental assets.
- Technical professions in the public or private sectors, working for the protection and enhancement of the natural heritage, at intermediate decision making levels.
- National and regional public authorities, institutionally responsible for the control and protection of the environment, public and private agencies engaged in studies of regional planning, private agencies for environmental, studies and research, marine and terrestrial protected areas.

**Final examination features**

The final examination consists of the discussion (in Italian or in another European language) of an original paper or a bibliographic review about a topic related to natural and environmental sciences. The Board of the degree course specifies the criteria for awarding the final mark, adequate to the quality of the work, to the consistency between educational objectives and the outcomes of the whole course, taking also into account the clarity, rigour and effectiveness of the presentation. The final examination takes place in a public session before a board, expressing a value judgment for the formulation of the final mark.

| Subjects 1 ° year | CFU | Sem. | Val. | SSD | TAF |
|---|---|---|---|---|---|
| 01597 - CELL BIOLOGY<br>*Roccheri(CU)* | 6 | 1 | V | BIO/06 | B |
| 01900 - GENERAL AND INORGANIC CHEMISTRY<br>*Gennaro(PA)* | 6 | 1 | V | CHIM/03 | A |
| 04882 - MATHEMATICS - INTEGRATED COURSE | 12 | 1 | V | | |
| *- MATHEMATICAL AND STATISTICAL METHODS*<br>*Mannino(PQ)* | *6* | *1* | | *MAT/05* | *A* |
| *- MATHEMATICS*<br>*Mannino(PQ)* | *6* | *1* | | *MAT/05* | *A* |
| 03245 - PHYSICS<br>*Argiroffi(RU)* | 6 | 1 | V | FIS/05 | A |
| 04677 - ENGLISH LANGUAGE | 3 | 1 | G | | E |
| 01690 - BOTANY - INTEGRATED COURSE | 12 | 2 | V | | |
| *- BOTANY 1*<br>*Orlando(RU)* | *6* | *2* | | *BIO/02* | *C* |
| *- BOTANY 2*<br>*Ottonello(CU)* | *6* | *2* | | *BIO/02* | *B* |
| 07744 - ZOOLOGY - INTEGRATED COURSE | 12 | 2 | V | | |
| *- ZOOLOGY 1*<br>*Arizza(PO)* | *6* | *2* | | *BIO/05* | *B* |
| *- ZOOLOGY 2*<br>*Cammarata(PO)* | *6* | *2* | | *BIO/05* | *B* |
| | **57** | | | | |

| Subjects 2 ° year | CFU | Sem. | Val. | SSD | TAF |
|---|---|---|---|---|---|
| 16465 - MINERALOGY AND GEOCHEMISTRY - INTEGRATED COURSE | 12 | 1 | V | | |
| *- GEOCHEMISTRY*<br>*Parello(PO)* | *6* | *1* | | *GEO/08* | *B* |

Legenda: Per. = periodo o semestre, Val. = Valutazione (V=voto, G=giudizio), TAF= Tipologia Attività Formativa (A=base, B=caratterizzante, C=Affine, S=stages, D=a scelta, F=altre)

| Subjects 2 ° year | CFU | Sem. | Val. | SSD | TAF |
|---|---|---|---|---|---|
| *- MINERALOGY*<br>*Merli(PA)* | *6* | *1* | | *GEO/06* | *B* |
| 01933 - ORGANIC CHEMISTRY<br>*Riela(PA)* | 6 | 1 | V | CHIM/06 | A |
| 16464 - PHYSICAL GEOGRAPHY AND GEOLOGY - INTEGRATED COURSE | 12 | 1 | V | | |
| *- GEOLOGY*<br>*Basilone(RD)* | *6* | *1* | | *GEO/02* | *B* |
| *- PHYSICAL GEOGRAPHY*<br>*Madonia(PA)* | *6* | *1* | | *GEO/04* | *A* |
| 01799 - ANALYTICAL CHEMISTRY<br>*Piazzese(PA)* | 6 | 2 | V | CHIM/01 | A |
| 05193 - MICROBIOLOGY<br>*Puglia(PQ)* | 6 | 2 | V | BIO/19 | B |
| 01874 - PHYSICAL CHEMISTRY<br>*Pignataro(PO)* | 6 | 2 | V | CHIM/02 | A |
| 13851 - PRINCIPLES OF BIOCHEMISTRY<br>*Vento(CU)* | 6 | 2 | V | BIO/10 | C |
| | **54** | | | | |

| Subjects 3 ° year | CFU | Sem. | Val. | SSD | TAF |
|---|---|---|---|---|---|
| 03927 - COMPUTER SCIENCE<br>*Pennacchio(PC)* | 6 | 1 | V | INF/01 | B |
| 02679 - ECOLOGY - INTEGRATED COURSE | 12 | 1 | V | | |
| *- ECOLOGY 1*<br>*Chemello(PO)* | *6* | *1* | | *BIO/07* | *B* |
| *- ECOLOGY 2*<br>*Vizzini(PO)* | *6* | *1* | | *BIO/07* | *B* |
| 03690 - GEOMORPHOLOGY<br>*Agnesi(PQ)* | 6 | 1 | V | GEO/04 | A |
| 16163 - ENVIRONMENT LAW<br>*Gullo(PO)* | 6 | 2 | V | IUS/10 | B |
| 01662 - ENVIRONMENTAL BIOMONITORING<br>*Naselli Flores(PA)* | 6 | 2 | V | BIO/03 | B |
| 03583 - ENVIRONMENTAL GEOCHEMISTRY<br>*Varrica(PA)* | 6 | 2 | V | GEO/08 | C |
| 13351 - ADVANCED SKILLS RELATED TO THE LABOUR MARKET | 6 | 2 | G | | F |
| 05917 - FINAL EXAMINATION | 3 | 2 | G | | E |
| Free subjects (suggested) | 12 | | | | D |
| Stage and others | 6 | | | | S |
| | **69** | | | | |

# OPTIONAL SUBJECTS

| Stage and others | CFU | Sem. | Val. | SSD | TAF |
|---|---|---|---|---|---|
| 06634 - INTERNSHIP | 2 | 1 | G | | S |
| 11033 - INTERNSHIP 3 CREDITS | 3 | 1 | G | | S |
| 15458 - INTERNSHIP 4 CREDITS | 4 | 1 | G | | S |
| 11351 - INTERNSHIP 5 CREDITS | 5 | 1 | V | | S |
| 11028 - INTERNSHIP 6 CREDITS | 6 | 1 | G | | S |
| 07553 - PROFESSIONAL PRACTICE | 6 | 1 | G | | S |

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# OPTIONAL SUBJECTS

| Free subjects (suggested) | CFU | Sem. | Val. | SSD | TAF |
|---|---|---|---|---|---|
| 17753 - ECOLOGY OF MARINE COASTAL ENVIRONMENT<br>*Vizzini(PO)* | 6 | 2 | V | BIO/07 | D |
| 17241 - PALYNOLOGY AND PALAEOBOTANY<br>*Troia(RD)* | 6 | 2 | V | BIO/03 | D |

# PROPAEDEUTICAL TEACHINGS

01933 - ORGANIC CHEMISTRY

01900 - GENERAL AND INORGANIC CHEMISTRY

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