



# UNIVERSITÀ DEGLI STUDI DI PALERMO

**Department: Earth and sea sciences**

**A.Y. 2020/2021**

## **DEGREE COURSE IN ANALYSIS AND ENVIRONMENTAL MANAGEMENT - ENVIRONMENTAL ANALYSIS AND MANAGEMENT -**

### **Characteristics**



Class of Master's Degree  
(MSc) on Environmental and  
land sciences (LM-75)



2 YEARS



PALERMO



FREE ACCESS



2110

### **Educational objectives**

Specific objectives:

The 2nd cycle Degree Course in Environmental Analysis and Management aims at training highly qualified and specialized professionals able to intervene with multidisciplinary skills in the prevention, requalification, diagnosis and solution of environmental problems, also taking direct responsibility for projects and structures.

The objectives of educational activities are the following:

- providing an in-depth cultural background with a systemic orientation towards the environment and a good command of the scientific method, also in view of a possible access to PhD courses;
- creating the ability to identify and organize the interactions of the various factors intervening in complex environmental processes, systems and problems;
- building the ability to apply different survey methodologies for the knowledge and control of complex environmental situations with respect to environmental recovery and remediation interventions;
- providing specific skills in remote sensing techniques and geographic information systems;
- enabling to use bioindicators in the environmental analysis, management and requalification;
- enabling to operate with coordination responsibilities, in the fields of environmental analysis, management and requalification;
- providing the knowledge to evaluate environmental resources and formulate hypotheses for the management and planning of the territory and the conservation of the environment, also by integrating environmental variables.

The acquisition of the skills and knowledge needed to achieve the general objectives is achieved through the integrated knowledge of the physical, mathematical, biological, chemical, ecological, earth sciences and juridical-economic-evaluation subjects.

Educational activities consist of lectures, laboratory and field exercises, specialist seminars and ongoing tests. The educational programme of the Degree Course consists of 11 mandatory exams, an elective subject, a language test, a practical/applicative internship at affiliated facilities, and the final exam on specific topics of the course.

### **Professional opportunities**

Profile:

Expert in the management and monitoring of environmental systems

Functions:

interventions on the production of goods, services and methodologies aimed at improving environmental quality; design and management of environmental remediation, monitoring and control interventions.

Skills:

evaluation and design of environmental impact, strategic assessment and environmental risk studies; development of methods and techniques of investigation on the territory; knowledge of the experimental data analysis methods and techniques.

Professional opportunities:

Central Public Administrations, such as the Ministries of the Environment, Health, Cultural Heritage and Activities, Infrastructures, University and Scientific and Technological Research; Local administrations such as Regions, Provinces, Municipalities and ARPA; Private companies

Profile:

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)

### Safety and environmental protection expert

#### Functions:

dealing with environmental pollution in the sampling and environmental analysis phases, using adequate instruments and processing the relevant results;  
evaluation and design of strategic and environmental risk assessment studies; monitoring the compliance with the environmental protection regulations; promotion of public initiatives for the prevention of environmental damage and dissemination of the public culture of sustainability.

#### Skills:

Ability to use territorial information systems; ability to plan, illustrate and interpret activities in the field and in the laboratory, selecting the most appropriate data processing, analysis and synthesis procedures, aimed at assessing safety and environmental protection; ability to use prevention, de-pollution and reclamation methods and technologies, for the protection of man and the environment.

#### Professional opportunities:

Central Public Administrations, such as the Ministries of the Environment, Health, Cultural Heritage and Activities, Infrastructure, University and Scientific and Technological Research; Local administrations such as Regions, Provinces, Municipalities and ARPA; Private companies

#### Profile:

Freelancer: Biologist (section A)

#### Functions:

consultancy in the field of quality control, community legislation, environmental impact assessment and in general in all the areas related to the assessment and control of the processes regulating the biotic sector.

#### Skills:

environmental legislation; specific scientific knowledge related to the professional field of competence.

#### Professional opportunities:

Public and private bodies (after passing the qualification exam for the profession and registration in the relevant professional register)

#### Profile:

Freelancer: Geologist (section A)

#### Functions:

consultancy in the field of quality control, community legislation, environmental impact assessment and in general in all the areas related assessments on the structure and processes dominating the terrestrial sector.

#### Skills:

environmental legislation; specific scientific knowledge related to the professional field of competence (hydrogeology, geotechnics, applied geology, geological surveys, technical geological survey).

#### Professional opportunities:

Public and private bodies (after passing the qualification exam for the profession and registration in the relevant professional register)

#### Profile:

Researcher at research agencies and institutions

#### Functions:

Original research activity in the environmental sciences

#### Skills:

knowledge of the scientific method; ability to approach environmental issues with a multidisciplinary approach; perception of the complex, dynamic and interactive structure of the environment system.

#### Professional opportunities:

research at Universities, CNR, ENEA, etc. through participation in PhD courses in different scientific fields (biology, geology, chemistry)

#### Profile:

Soil Protection Technician

#### Functions:

Senior Soil Protection Technicians are second level experts in evaluating preventive actions and in designing suitable interventions for soil defence and conservation. They enrol in section A of the Register of Agronomists and Foresters.

#### Skills:

- application of mathematical models for the simulation of physical and chemical processes in degraded environments
- prevention and intervention in the control of soil defence and conservation

#### Professional opportunities:

Companies, public and private bodies at various territorial levels and professional firms for the design, planning, implementation and management of works and systems of survey, control and monitoring of the environment and of the territory, of soil defence, of the management of waste and raw materials, and environmental, geological and energy resources

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)

and for the evaluation of the impacts and environmental compatibility of plans and works.

Public administrations and local authorities in charge of territorial governance will be able to make use of this professional figure, as well as the operating units of design companies, private agencies and production systems aimed at assessing the environmental quality, the realization and evaluation of environmental impact studies and the recovery and restoration projects of complex eco-systemic realities.

Graduates can also enter the school teaching career, after completion of the teaching qualification process and having passed the competitive exams required by current legislation; they may also access PhD Courses and 2nd level University Master Courses.

Profile:

Environmental Monitoring Technician

Functions:

Senior Technicians for Environmental Monitoring are second level experts in the use of geographical information systems and in the application of mathematical models in degraded environments to be redeveloped. They may enrol in section A of the register of Agronomists and Foresters.

Skills:

- ability to use remote surveying techniques and geographic information systems.
- ability to apply mathematical models for the simulation of physical and chemical processes in degraded environments.

Professional opportunities:

Companies, public and private bodies at various territorial levels and professional firms for the design, planning, implementation and management of works and systems of survey, control and monitoring of the environment and of the territory, of soil defence, of the management of waste, raw materials and environmental, geological and energy resources and for the evaluation of the impacts and environmental compatibility of plans and works.

Public administrations and local authorities in charge of territorial governance will be able to make use of this professional figure, such as well as the operating units of design companies, private subjects and production systems aimed at assessing the environmental quality, the realization and evaluation of environmental impact studies and the recovery and restoration projects of complex ecosystem realities.

Graduates can also enter the school teaching career, after completion of the teaching qualification process and having passed the competitive exams required by current legislation; they may also access PhD Courses and 2nd level University Master Courses.

#### Final examination features

The final examination consists of the elaboration of an original written thesis consistent with the objectives of the course, under the guidance of a Professor of the course and of its presentation and discussion before the Degree Board. The characteristics of the final examinations are described in the Course Educational Regulations, approved by CISNAM in the session of 31 January 2017

Subjects 1 ° year	CFU	Sem.	Val.	SSD	TAF
19803 - ANALYTICAL ENVIRONMENTAL CONTROL METHODOLOGIES <i>Piazzese(PA)</i>	6	1	V	CHIM/01	B
11718 - LANDSCAPE ECOLOGY <i>Ilardi(PA)</i>	6	1	V	BIO/03	C
20543 - MATHEMATICAL MODELS AND DATA ANALYSIS FOR ENVIRONMENTAL MANAGEMENT <i>Gambino(PA)</i>	6	1	V	MAT/07	B
20540 - DEFENCE SYSTEMS AND ANIMAL WELLBEING <i>Cammarata(PO)</i>	6	2	V	BIO/05	B
20542 - ENVIRONMENTAL GEOLOGY, REMOTE SENSING AND GIS - INTEGRATED COURSE	12	2	V		
- ENVIRONMENTAL GEOLOGY AND GIS ANALYSIS <i>Conoscenti(PO)</i>	6	2		GEO/04	B
- REMOTE SENSING AND TERRITORIAL INFORMATION SYSTEMS <i>Maltese(RD)</i>	6	2		ICAR/06	B
07706 - ENVIRONMENTAL IMPACT EVALUATION <i>Calvo(PQ)</i>	6	2	V	BIO/07	B
18183 - POLLUTION PHENOMENA AND ENVIRONMENTAL RECLAMATION TECHNOLOGIES <i>Cosenza(RD)</i>	6	2	V	ICAR/03	B

48

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
16164 - APPLIED ECOLOGY <i>Signa(PA)</i>	6	1	V	BIO/07	B
20541 - BIOINDICATORS AND BIOMARKERS <i>Parisi(PA)</i>	6	1	V	BIO/05	C
19805 - GEOCHEMISTRY OF SURFACE PROCESSES <i>Censi(PA)</i>	6	1	V	GEO/08	B
19796 - CHEMISTRY OF ENVIRONMENT AND NATURAL SUBSTANCES - INTEGRATED COURSE	9	2	V		
- CHEMISTRY OF NATURAL SUBSTANCES <i>Fontana(RU)</i>	3	2		CHIM/06	C
- ENVIRONMENTAL CHEMISTRY <i>Orecchio(PA)</i>	6	2		CHIM/12	B
20691 - ENGLISH LANGUAGE SKILLS - EQUIVALENT TO LEVEL B2	6	2	G		F
13121 - PRACTICE	3	2	G		F
05917 - FINAL EXAMINATION	24	2	G		E
Free subjects (suggested)	12				D
	<b>72</b>				

## OPTIONAL SUBJECTS

Free subjects (suggested)	CFU	Sem.	Val.	SSD	TAF
20503 - BIOLOGICAL AND ENVIRONMENTAL SCIENCES TEACHING METHODOLOGY - INTEGRATED COURSE	6	2	V		
- ECOLOGY <i>Gianguzza(PA)</i>	3	2	V	BIO/07	D
- ZOOLOGY <i>Cammarata(PO)</i>	3	2	V	BIO/05	D
12451 - GEOSCIENCES TEACHING METHODOLOGY <i>Madonia(PA)</i>	6	2	V	GEO/04	D

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)