



Università di Camerino  
Scienze e Tecnologie

# GEOENVIRONMENTAL RESOURCES AND RISKS

## MASTER DEGREE

Second Cycle Degree

**duration** 2 years

**ECTS credits** 120

**Campus Location** Camerino

**web site**

[geologia.unicam.it](http://geologia.unicam.it)

*School of Science and Technology  
Geology Division*

### Director

prof. David Vitali

[direttore.scienze@unicam.it](mailto:direttore.scienze@unicam.it)

### Course Coordinator

prof. Eleonora Paris

[eleonora.paris@unicam.it](mailto:eleonora.paris@unicam.it)

### Delegates

### Educational Guidance

prof. Michael Robert Carroll

[michael.carroll@unicam.it](mailto:michael.carroll@unicam.it)

### Tutoring

prof. Miller Zambrano

[miller.zambrano@unicam.it](mailto:miller.zambrano@unicam.it)

### International Mobility

prof. Gabriele Giuli

[gabriele.giuli@unicam.it](mailto:gabriele.giuli@unicam.it)

### Stage and Placement (Internship)

prof. Pietropaolo Pierantoni

[pietropaolo.pierantoni@unicam.it](mailto:pietropaolo.pierantoni@unicam.it)

### Educational Manager

dr. Anna Maria Santroni

[annamaria.santroni@unicam.it](mailto:annamaria.santroni@unicam.it)

## INTRODUCING THE MASTER

Geosciences rule our life on the Planet! As evidenced by the UN Agenda 2030 (<https://www.coe.int/en/web/un-agenda-2030>) geologists are the professionals who can most contribute support and educate the society to understand the Earth as a complex but fragile system and help the citizens to attain the goals of the Agenda. There is a growing need for geologists all over the world who can face, using modern, quantitative and interdisciplinary technologies, the critical challenges of the Earth future, such as:

- ensure water quality and quantity
- identify and recover energy and mineral resources
- minimize the impact of natural hazards to help ensure safer, more resilient communities
- provide underground knowledge to build stable infrastructure
- monitor soil quality for a healthy environment and sustainable agriculture
- evaluate and mitigate the effects of climate change
- support a sustainable use of land and georesources
- understand the dynamics and evolution of the Earth and other planets
- analyze and help preserve our cultural heritage.

This Master of Science (MSc) course provides knowledge at an advanced level and practical expertise in fields of Earth Sciences related to the natural resources and the environmental hazards, aiming to form a geologist able to operate with managerial competences in:

- a) the study, exploration, exploitation and sustainable use of georesources (water, hydrocarbons, geothermal energy, minerals and geomaterials)
- b) the study of geological hazards and risks (monitoring, evaluation, mitigation management, prevention).

During the study period, the combination of theory, practice, fieldwork and laboratory activities, as well as the knowledge acquisition of experimental analytical methods and data statistical processing and modeling, will contribute to the cultural formation of the students. To specialize in the area of interest, up to 28 credits can be chosen to build up a personalized study plan, together with the thesis (30 credits) which requires a semester of independent experimental (field/lab) and theoretical work.

Time is also dedicated to the acquisition of interdisciplinary knowledge, especially important in addressing environmental issues (like groundwater pollution, disaster management, sustainable use of resources, effects of climate change) and transversal competences and skills (use of GIS at advanced level, specific software and programming codes). Practical workshops carried out by geologists working in various fields will help introducing the students to the professional world.

Internships in private companies, territorial agencies, national and international research institutions and universities, as well as study periods abroad within the Erasmus+ framework in EU or extra-EU countries (for exams and/or thesis), are particularly encouraged and supported by university grants. Thanks to specific extra-EU international agreements, the Master provides also the possibility to spend a semester abroad, for example in USA (GMU) and Brazil (UNICamp) universities, with acquisition of credits and valuable experience. Grants for excellent and/or low-income students are available, as well as part-time jobs.

## ADMISSION REQUIREMENTS

- Bachelor Degree that satisfies the requirements for access to University Master Degree courses, in the field of Geosciences, Geophysics, Environmental and Natural sciences, Civil/Environmental Engineering
  - Level of language proficiency (strongly recommended): ENGLISH level B2 (Independent User)
- Interviews and entrance tests will take place in the first week of October. Further information on admission rules, pre-admission deadline and other services for international students are available at <http://international.unicam.it>, whereas Italian and EU students are asked to contact the course coordinator.

Classes are held in English



HR EXCELLENCE IN RESEARCH

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1 <sup>st</sup> year	ECTS	2 <sup>nd</sup> year	ECTS	Specialization areas:
Groundwater resources and hydrological hazard	10	Seismic hazard	6	Water and energy resources
Advanced field geology	6	Volcanic hazard	6	Geological hazards and environmental management
Environmental chemistry	6	Geophysical prospection	10	Geodynamics and Earth processes
Geomaterials	6	Selective courses and activities	10	Environmental sustainability and development
Petroleum geology	6	Thesis	30	Earth and planetary materials
Geostatistics	6			Experiments and models in Earth sciences
English B2	6			Geosciences for the Cultural Heritage
Elective courses and activities	12			

The elective courses and activities for this Master degree are provided to accommodate the interests of students in the various areas of specialization. An updated list is notified in the course website ([www.geologia.unicam.it](http://www.geologia.unicam.it)) at the beginning of each academic year. The following non-exhaustive list includes:

Structural geology, Metamorphic geology, Geothermics, Marine geology, Geofluids reservoirs, Plate tectonics, Regional geology, Clastic facies models, Remote sensing, Interpretation of seismic data, Archaeological geophysics, Sedimentary petrology, Environmental sustainability, Applied petrography, Cultural heritage materials, Geochemistry and petrology, Crystallography, Geology laboratory, Sedimentology and stratigraphy, Field geology, Geomaterials laboratory, Geology laboratory, C programming, Fortran programming, Introduction to Autocad, Introduction to Matlab, Disaster management, Waste management, Project management, GIS, Advanced GIS, Rock mechanics, Geoscience education, Laboratory of professional practice. Field activities are carried out in the frame of the courses.

Workshop and seminars are organized periodically in collaboration with the Geologists' Board (Ordine dei Geologi), as well as in the frame of the Annual Seminars Program, hosting visiting researchers and professors. Workshops aimed to present specific research topics or to facilitate the entrance in the job market are provided. European language courses (English advanced levels, German and French) as well as courses on Science Communication and Geoscience Education are available.

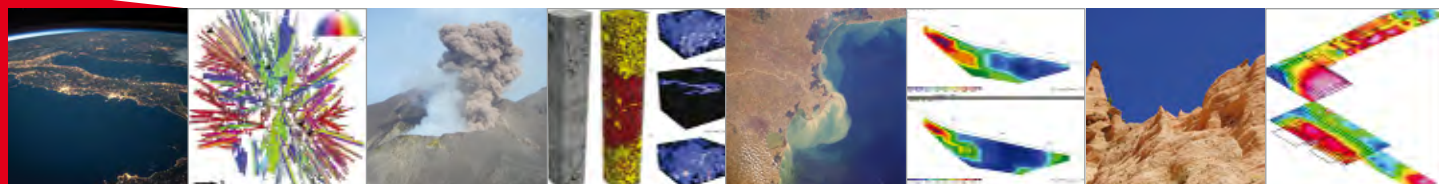
## AFTER THE DEGREE

UNICAM hosts on site the annual examinations to access the Geologists' Board. Courses to acquire the certification for school teaching are also made available periodically. Specialization masters and Summer Schools are organized for newly graduates or for continuing professional development and update. The Geology Division hosts the PhD program in Earth Sciences research topics, organized by the UNICAM School of Advanced Studies.

## SOME WORK POSSIBILITIES FOR GEOLOGISTS

Geologists can find employment in many fields, as free-lance geologist or as employees:

- in environmental or engineering consulting companies
- in construction companies for civil/public building works
- in agencies and institutions dealing with geological hazards and risks, environment and land/coastal monitoring/protection (in Italy, es. Protezione Civile, Servizi Geologici, ARPA, Servizi Tecnici di Bacino, Comunità Montane, Enti nazionali e locali)
- in the water and energy exploration and management companies (in Italy, es. ENI, ENEL, ACEA...)
- in the infrastructure and transport sector (in Italy es. ANAS, ITALFER...)
- in the mineral industry (exploitation or certification of materials, management and recycling of industrial waste, sustainability, innovation, circular economy)
- in the scientific dissemination (Natural Sciences Museums, Geosites and Parks for tourism, magazines, TV and internet)
- as experts in cartography, GIS and remote sensing (land planning, monitoring and protection, georesources, climate change, agriculture, archaeology and cultural heritage...)
- as geoscientists in research institutions, labs and universities
- as teachers in Middle and High Italian schools



## QUALITY ASSURANCE SYSTEM

UNICAM Quality Management System Certificate ISO 9001:2008 (from AFAQ-France, a French leader and one of the first certification bodies at the global level) guarantees students the quality of services provided.

The guarantee is via a rigorous analysis of internal organizational procedures and the prompt addressing of any weaknesses or shortcomings whether detected or reported by the students themselves.

The Quality Management System includes the following support services for students: orientation and guidance, mentoring, International mobility, Internships and communication.

These integrate with and support the educational activities, so as to contribute to the complete training of the student.



For 2019, in the **U-MULTIRANK** international ranking, UNICAM was placed among the top 25 universities in the world in the area of international orientation, chosen among 1700 universities (of which 49 are Italian) from 96 countries.

The annual ranking takes into consideration the areas of greatest interest to students such as teaching and learning, knowledge transfer, orientation and research.

