

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

School of Science and Technology
Geology Division

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INTRODUCING THE MASTER

Geosciences rule our life on the Planet! The UN Agenda 2030 (<https://www.coe.int/en/web/un-agenda-2030>) demonstrates how geologists are the professionals who can most contribute to support and educate the society to understand the Earth as a complex but fragile system and are involved in attaining the Agenda goals. 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 infrastructures
- 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 and environmental 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 prepare a geologist able to operate with managerial competences in:

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

The combination of theory, practice, fieldwork and laboratory activities, as well as the acquisition of competences in experimental/analytical methods and data processing and modeling, will contribute to the cultural growth 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. The students will have therefore 58 credits (2 semesters) to choose in activities for specialization in the area of interest thanks to the possibility of personalized studyplans.

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 softwares). Practical workshops carried out by geologists specialized 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. Grants for excellent and/or low-income students are available, as well as part-time jobs and grants for international students from selected countries.

ADMITTANCE REQUIREMENTS

- Bachelor Degrees that satisfy 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. Information on admission rules for international students are available at <http://international.unicam.it>.

Classes will be held face to face in the University halls but it is possible to attend them also in streaming. Practical activities and laboratories will be organized in different modalities that will be communicated at the due time.



Classes are held in English



HR EXCELLENCE IN RESEARCH

STRUCTURE OF THE MASTER

The structure of the course is organized to be highly flexible to take into consideration different expectations of the students (Italian and international). The standard study plan covers the major topics of application of the geologist in the job market. The proposed specialization areas correspond to research projects active in UNICAM, which allow the inclusion of the student in the activities of well-established research groups. Specialization is achieved choosing among the elective courses and proposing an individual study plan.

1 st year	ECTS	2 nd year	ECTS	Specialization areas:
Groundwater resources and hydrological hazard	10	Seismic hazard	6	Water and energy resources
Environmental chemistry	6	Volcanic hazard	6	Geological hazards
Geomaterials	6	Geophysical prospecting	10	Environmental sustainability, energy transition and decarbonization
Petroleum geology	6	Elective courses and activities	10	Geodynamics and Earth processes
Geostatistics	7			Experiments and models on Earth and planetary materials
Advanced field geology	5			Geosciences for the Cultural Heritage
Elective courses and activities	18	Thesis	30	

Elective courses and activities are provided to meet the interests of the students and allow their specialization in several fields. The following non-exhaustive list includes: Renewable energy, Economic geology, Geothermics, Environmental sustainability, Structural geology, Metamorphic geology, Marine geology, Geofluids reservoirs, Plate tectonics, Regional geology, Remote sensing, Project management, Archaeological geophysics, Geotechnics, Polluted sites remediation, 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, Disaster management, Waste management, GIS, Advanced GIS, Rock mechanics, Geoscience education, Laboratory of professional practice. Field activities are carried out in the frame of the courses.

The course is organized in 4 semesters, where the first three are devoted to courses and other activities, and the last is dedicated to the thesis. Lesson calendar is: first semester is from beginning of October to end of January, second semester from the beginning of March to the middle of June. The lesson timetable is available on the university website in September and sent to the students' mailing list. February and June-September are reserved to exams. Field activities are carried out during the semesters, on Fridays. Field and laboratory activities are obligatory. Lessons are also available through the UNICAM virtual classrooms. The official language is English. The course attracts students from many countries interested to study in an international environment.

All the activities are carried out in the Geology building, where students find classrooms, didactic/technical and scientific labs, study areas and professors' offices. The Geology building hosts the UNICAM unit of INGV-Istituto Nazionale di Geofisica e Vulcanologia (the National Institute for Geophysics and Volcanology) and an UNICAM Spinoff (Geomore). The Geology team in UNICAM is also launching a new hub of integrated geoscience disciplines focus on energy transition and decarbonised geology (*Earth, climate & energy centre*, ECE&C) in cooperation with RE&E (Rethinking Energy & Environment) which will provide a view from inside the energy world. The Centre is an innovative and unique initiative where the Academic excellences are blended with the business and industries experiences, with good opportunities for students.

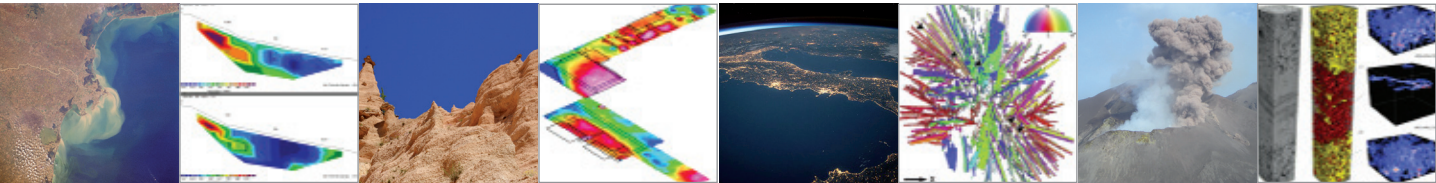
AFTER THE DEGREE

UNICAM hosts on site the examinations to access the Geologists' Board. Courses to acquire certification as school teachers 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 with a good annual number of scholarships.

SOME WORK POSSIBILITIES FOR GEOLOGISTS

Geologists can find employment in many fields, as independent geologists, or as employees in:

- environmental or engineering consulting companies
- construction companies for civil/public building works
- 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)
- water and energy exploration and management companies (in Italy, e.g. ENI, ENEL, ACEA ...)
- infrastructures and transportation sector (in Italy e.g. ANAS, ITALFER ...)
- mineral industry (exploitation or certification of materials, management and recycling of industrial waste, sustainability, innovation, circular economy)
- scientific dissemination (Natural Sciences Museums, Geosites and Parks for tourism, magazines, media)
- 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 science teachers in Middle and High Italian schools



TUITION FEES, DISCOUNTS AND GRANTS AVAILABLE

find out at

<http://www.unicam.it/studente/guida-dello-studente>

and

<https://international.unicam.it/services/scholarships>

CLASSIFICATIONS

UNICAM classified 1st in the evaluation by Censis 2020 in the group of universities with up to 10000 students, and 4th in the total list of all Italian Universities.

The Geology UNICAM is 7th in Italy for number of scientific citation of the researchers (<http://www.topitalianscientists.org/top-italian-universities>)

QUALITY ASSURANCE SYSTEM

UNICAM Quality Management System Certificate ISO 9001:2015 (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.



a.y. 2021/2022