



ORGANIZATION
INTERNATIONAL MASTER IN CO₂ Geological Storage

Art. 1 – General Information

Name of the Master	International Master in “CO ₂ Geological Storage”
Proposing /Managing Department	Earth Science Department
Reference Faculty	Mathematics, Physics and Natural Science Faculty
Level	II level
Type of title	Joint title (one document signed by the two Rectors)
Reference code	30219
type	international
Partner	Zagreb University, CO2Geonet
Duration	February – November (one year)
Partner University	University of Zagreb, Faculty of Mining, geology and Petroleum Engineering

Art. 2 – Educational information

Educational purpose of the Master	<p>The goal of the course is to provide the participants with the scientific and technical knowledge that needs to be addressed for the successful storage of CO₂ into geological formations. The programme will cover all aspects of the geological storage of CO₂ so that the students can both understand the work of all specialists who will be involved in CCS projects (such as reservoir engineers/geologists, sedimentologists, stratigraphers, geophysicists, structural geologists, geochemical modellers, regulators, etc.) and further develop their own field of specialization.</p> <p>The course is aimed at individuals interested in developing a solid professionalism in the field of geological storage of CO₂. In fact, Carbon Capture and Storage (CCS) is a rapidly advancing field with many interdisciplinary scientific and technical challenges that are being addressed globally.</p>
-----------------------------------	---

	<p>This course is provided within the EU project ENOS (Enabling Onshore CO₂ Storage in Europe) to prepare a new generation of young people who want to work on these topics. This training course will present an overview of the state-of-the-art of CCS operations and research; it will focus on the technical and scientific considerations for CO₂ injection and safety monitoring, the exploration of critical processes in laboratory studies, and numerical modelling.</p>
<p>Expected educational outcomes</p>	<p>After completing the master, the student will be able to:</p> <ul style="list-style-type: none"> · Describe the influence of anthropogenic emissions of CO₂ on climate change (and compare it with influence of other GHG on climate) · Define and explain all relevant segments of CCS process chain · Enumerate all possible options for geological storage of CO₂ and explain mechanisms that enable retention of CO₂ in different types of underground storages · Explain geochemical interactions in reservoir (between injected CO₂, pore fluids and reservoir rocks) as well as in cap-rock (between injected CO₂, pore fluids and cap-rocks) · Explain basic terms from reservoir engineering · Explain the process of enhanced oil recovery using CO₂ and how the CO₂EOR process can be optimized to maximize the retention of CO₂ in the reservoir · Perform initial screening of a sedimentary basin for possible CO₂ underground storage sites · Estimate (Calculate) static capacity for CO₂ geological storage of deep saline aquifer and depleted HC reservoir · Describe the workflow of dynamic CO₂ storage capacity estimations · Enumerate and explain all possible risks of CO₂ geological storage and define appropriate mitigation measures <p>Enumerate monitoring techniques and explain when and how each of the monitoring techniques should be applied.</p>

SSD (Italian education organization)	Geo/03, Geo/11, Geo/06, Geo/08 ING-IND24, ING-IND25, ING-IND30, ING-IND35
Requirements for admission	The Master is dedicated to candidates having a Master degree (5 years) in Earth Sciences and Petroleum Engineering according to the European educational system. Persons that have a degree issued by non EU universities can be admitted to the course according to the Sapienza rules specified in the Call.
Number of students	minimum 8; maximum 10
Selection for admission	none
Starting and ending dates	Do define on the base of the date of the call
External students	Yes
Attendance	The attendance of at least the 75% of the lessons is mandatory. Online attendance is admitted
Traineeship offers	University of Zagreb, Croatia Norce, Norvegia; GEUS, Denmark; OGS, Italy; HWU, Scotland, Tallinn University, Estonia
Final exams	Defence of the report on the results of the two months work
language	English

Art. 3 – Fonds/fee

Student Fee I rate	€1000
Student Fee II rate	€1000

Art. 4 – Organization

Locations	1 classroom+ Computer lab (about 10 days)
Tecnical-administrative personnel	1 person
Tutor	none
Teaching resources	5 professors from Sapienza University, 3 professors from Zagreb University, 1 professor from HWU, 1 professor from GEUS, 1 professor from Tallinn University of Technology.
Hosting University	Sapienza University, Zagreb University
Hosting Departments/Faculty	Dipartimento Scienze della Terra, Faculty of Mining, Geology and Petroleum Engineering

