

## ORDINAMENTO MASTER

### Art. 1 – Informazioni generali

<b>1</b>	<b>Denominazione</b>	CO2 Geological Storage
<b>2</b>	<b>Denominazione in Inglese</b>	CO2 Geological Storage
<b>3</b>	<b>Livello</b>	Secondo
<b>4</b>	<b>Dipartimento</b>	Scienze della Terra
<b>5</b>	<b>Facoltà</b>	Scienze matematiche, fisiche e naturali
<b>6</b>	<b>Codice Master</b> (solo in caso di rinnovo)	30219
<b>7</b>	<b>Area tematica</b>	area scientifico-tecnologica
<b>8</b>	<b>Tipologia</b>	internazionale
<b>9</b>	<b>Eventuali strutture istituzionali partner</b>	Università di Zagabria (Croatia)
<b>10</b>	<b>Sede delle attività didattiche</b>	Roma e Zagabria
<b>11</b>	<b>Durata</b>	Annuale
<b>12</b>	<b>CFU</b>	60

### Articolo 2 – Informazioni didattiche

<b>13</b>	<b>Obiettivi formativi</b>	<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 CO<sub>2</sub> into geological formations. The programme will cover all aspects of the geological storage of CO<sub>2</sub> 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</p>
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		<p>developing a solid professionalism in the field of geological storage of CO<sub>2</sub>. In fact, Carbon Capture and Storage (CCS) is a rapidly advancing field with many interdisciplinary scientific and technical challenges that are being addressed globally. This course is provided within the EU project ENOS (Enabling Onshore CO<sub>2</sub> 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 CO<sub>2</sub> injection and safety monitoring, the exploration of critical processes in laboratory studies, and numerical modelling</p>
14	<b>Risultati di apprendimento attesi</b>	<p>After completing the master, the student will be able to:</p> <ul style="list-style-type: none"><li>- Describe the influence of anthropogenic emissions of CO<sub>2</sub> on climate change (and compare it with influence of other GHG on climate)</li><li>- Define and explain all relevant segments of CCS process chain</li><li>- Enumerate all possible options for geological storage of CO<sub>2</sub> and explain mechanisms that enable retention of CO<sub>2</sub> in different types of underground storages</li><li>- Explain geochemical interactions in reservoir (between injected CO<sub>2</sub>, pore fluids and reservoir rocks) as well as in cap-rock (between injected CO<sub>2</sub>, pore fluids and cap-rocks)</li><li>- Explain basic terms from reservoir engineering</li><li>- Explain the process of enhanced oil recovery using CO<sub>2</sub> and how the CO<sub>2</sub>EOR process can be optimized to maximize the retention of CO<sub>2</sub> in the reservoir</li><li>- Perform initial screening of a sedimentary basin for possible CO<sub>2</sub> underground storage sites</li><li>- Estimate (Calculate) static capacity for CO<sub>2</sub> geological storage of deep saline aquifer and depleted HC reservoir</li><li>- Describe the workflow of dynamic CO<sub>2</sub> storage capacity estimations</li><li>- Enumerate and explain all possible risks of CO<sub>2</sub> geological storage and define appropriate mitigation measures</li><li>- Enumerate monitoring techniques and explain when and how each of the monitoring techniques should be applied</li></ul>



<b>15</b>	<b>Settori Scientifico Disciplinari</b>	Geo/03, Geo/06, Geo/08, Geo/10, Geo/11, Ind-Ing 24, Ind-Ing-25, Ind-Ing 30, Ing-Ind 35
<b>16</b>	<b>Numero minimo</b>	8
<b>17</b>	<b>Numero massimo</b>	10
<b>18</b>	<b>Uditori ammissibili</b>	Si
<b>19</b>	<b>Corsi Singoli</b>	Tutti
<b>20</b>	<b>Obbligo di Frequenza</b>	75%
<b>21</b>	<b>Lingua di erogazione</b>	English

#### **Articolo 3 – Fonti di finanziamento del Master**

<b>22</b>	<b>Importo quota di iscrizione</b>	€ 2000
<b>23</b>	<b>Articolazione del pagamento</b>	due rate di pari importo

#### **Articolo 4 – Informazioni organizzative previste**

<b>24</b>	<b>Risorse logistiche</b>	1 classroom - Computer lab
<b>25</b>	<b>Risorse di tutor d'aula</b>	n.d.
<b>26</b>	<b>Risorse di personale tecnico-amministrativo</b>	1
<b>27</b>	<b>Risorse di docenza di ruolo Sapienza</b>	4 + 3 (provenienti dall'Univerisità partner)
<b>28</b>	<b>Risorse di docenza a contratto</b>	Da definire