

| <b>TITOLO DEL CORSO</b>   |   |                                     |                                   |
|---|---|-------------------------------------|-----------------------------------|
| FACIES & BASIN ANALYSIS   |   |                                     |                                   |
| <b>Settore Scientifico - Disciplinare: GEO/02</b>   |   | <b>CFU: 6 (4 LF + 1 LAB + 1 AC)</b> | <b>Ore: 60</b>                    |
| <b>Ore di studio per attività:</b>  | <b>Lezioni frontali:</b><br>2   | <b>Laboratorio:</b><br>1            | <b>Attività di campo:</b><br>0.56 |
| <b>Tipologia di attività formativa:</b> characterizing  |   |                                     |                                   |
| <b>SYLLABUS</b>   |   |                                     |                                   |
| <b>Prerequisiti:</b> Mandatory basic knowledge of fundamental principles of physical geology, Stratigraphy and Sedimentology as acquired in the undergraduate program are necessary to actively participate to this course. |   |                                     |                                   |
| <b>Lezioni frontali</b>   |   |                                     |                                   |
| numero di ore<br>16   | <u>Argomento:</u><br><i>Module 1 - Basin evolution and Plate tectonics (2 CFU)</i><br>How facies analysis contribute to the understanding of the physical processes governing subsidence and how are useful professional application: a) mechanisms of basin formation, including flexure, thermal subsidence, isostasy, and sedimentary loading, and b) classification schemes and main types of sedimentary basin, with interpretation and application of diagnostic characteristics.   |                                     |                                   |
| numero di ore<br>16   | <u>Argomento:</u><br><i>Module 2 - Sedimentology and physical stratigraphy of siliciclastic systems (2 CFU)</i><br>How the sedimentary facies are analyzed to recognize a Facies Model/depositional systems: a) principles of physical and sequence stratigraphy in siliciclastic and carbonate systems, and b) mechanisms of sedimentary basin infilling.  |                                     |                                   |
| <b>Laboratorio</b>  |   |                                     |                                   |
| numero di ore<br>12   | <u>Attività:</u><br><i>Module 3 - Modern and classic techniques of integrated and applied stratigraphy (1 CFU)</i><br>Principles of subsidence analysis and step-by-step reconstruction of research activity on selected case studies showcasing the practical implications of stratigraphic knowledge; critical reading and oral presentation of selected papers; class exercises and practicals using <b>Microsoft Excel</b> , and any digital drawing software (e. g., <b>Inkscape</b> , <b>Adobe Illustrator</b> , <b>Corel Draw</b> or similar).                               |                                     |                                   |
| <b>Attività di Campo</b>  |   |                                     |                                   |
| numero di ore<br>16   | <u>Attività:</u><br><i>Module 4 - Carbonate facies and diagenesis or Inner Foredeep and Wedge Top Basinal Systems (1 CFU)</i><br>Field work, petrography and geochemistry of Triassic and Lower Cretaceous successions of Campania and Lucania; with support from Prof. Sandro Iannace, and/or alternatively, a field trip to the Northern Apennines to investigate the physical stratigraphy and sedimentology of the turbidite sandstones characterising the Eocene-Oligocene Inner Foredeep and Wedge Top Basin Systems cropping out between Liguria and Emilia-Romagna regions. |                                     |                                   |
| <b>Risultati di apprendimento attesi</b>  |   |                                     |                                   |
| <b>Knowledge and understanding:</b>   |   |                                     |                                   |
| The student must demonstrate that he/she understands the problems related to the tectonic processes influencing their structural-stratigraphic framework and the formation setting, the                                     |   |                                     |                                   |

classification and subdivision schemes of basinal systems and their diagnostic characteristics, the physical processes controlling their distribution, infilling, and preservation, principles of physical and sequence stratigraphy of siliciclastic and carbonate sedimentary systems.

**Applying knowledge and understanding:**

The student must show to be able to: combine different datasets to understand the interplay of tectonic-sedimentary processes, integrate class material with literature references, quantify the tectono-sedimentary parameters and factors, defining their importance in controlling basin formation.

**Making judgements:**

The student should be able to work individually with independence and prio-activity, and in small interdisciplinary groups.

**Communication:**

The student must be able to explain to non-expert people, presenting work results in oral and written form.

**Learning skills:**

The student must be able to properly analyse, understand and communicate complex concepts in terms of physical stratigraphy of clastic sedimentary rocks from the lamina- to the basin-scale

**Modalità di verifica dell'apprendimento**

**Prove intercorso:**

Classes dedicated to workshop/seminar-style student presentations (Assignment 1); individual work (essay) on literature review (Assignment 2); Grades in 30/30.

**Esame finale:**

Individual discussion with the candidate on course topics and assignments; Grades in 30/30.