



| General information | |
|---|--|
| Academic subject | GIS and Naturalistic Thematic Cartography i.c. |
| Degree course | <i>Laurea Magistrale in Scienze della Natura e dell'Ambiente</i> |
| Academic Year | 1 |
| European Credit Transfer and Accumulation System (ECTS) | 6 |
| Language | <i>italian</i> |
| Academic calendar (starting and ending date) | <i>II semester 7 March 2022, 31 May 2022</i> |
| Attendance | <i>strongly recommended</i> |

| Professor/ Lecturer | |
|-------------------------|---|
| Name and Surname | Antonella Marsico |
| E-mail | antonella.marsico@uniba.it |
| Telephone | |
| Department and address | <i>Dipartimento Scienze della Terra e Geoambientali, room 32, 2nd floor</i> |
| Virtual headquarters | <i>Teams code: hjpsxik</i> |
| Tutoring (time and day) | By appointment via e-mail |

| Syllabus | |
|------------------------|--|
| Learning Objectives | <i>To acquire skills in the Spatial data management of and to solve problems related to Natural Sciences</i> |
| Course prerequisites | <i>Adequate knowledge of the Natural Sciences</i> |
| Contents | <p><i>The Thematic maps; the indispensable elements of maps. Elements of geodesy: the Geoid; parameters and definition of the Ellipsoid; the reference systems; the trigonometric network and the IGM95 network; the Datum; the coordinates; projection systems</i></p> <p><i>The Geographic Information System; use of GIS; spatial data models; vector data and raster data; the topology; GIS tools; data input. History of Numerical Cartography; GIS open source and proprietary; internet mapping, WebGIS and OGC services.</i></p> <p><i>Editing process and features creation; the attributes tables, unions between tables, the graphs. Georeferencing procedure; projections storage.</i></p> <p><i>The Geodatabase; querying a database; search and identify elements; measure distances; the selections. Geoprocessing of vector and raster data; resampling; Map Algebra and Raster Calculator. Surface creation; digital elevation models (DEMs); topographic analysis; delineation of the hydrographic network. Data presentation: map creation; the elements of a map, grids and rulers; the reference system; the templates; exporting a map.</i></p> <p><i>3D data visualization; 3D shapefiles; the TIN layer; 3D scene properties; the elevation profile</i></p> |
| Books and bibliography | <p><i>Dainelli N. et alii, 2008 - Cartografia numerica - Manuale pratico per l'utilizzo dei GIS. Dario Flaccovio Editore</i></p> <p><i>Noti V. 2014 – GIS Open Source per la geologia e l'ambiente. Dario Flaccovio Editore</i></p> <p><i>Brewer C. A., 2016 – Designing better maps. Esri press.</i></p> <p><i>Bosellini A., Cavattoni T., Fantini F. 2009 - Corso di Scienze del Cielo e della Terra, Oltre il libro, III Cartografia. Italo Bovolenta Editore (on line)</i></p> |
| Additional materials | <i>Supplement by web documentations, especially in solving exercises. The PowerPoint presentation of the lessons are available as support</i> |



| Work schedule | | | |
|---|---|--|--|
| Total | Lectures | Hands on (Laboratory, working groups, seminars, field trips) | Out-of-class study hours/ Self-study hours |
| Hours | | | |
| 150 | 24 | 45 | 81 |
| ECTS | | | |
| 6 | 3 | 3 | |
| Teaching strategy | | | |
| <i>Classroom-taught lessons by PowerPoint presentation, teaching support with on-line data, exercises about geo-naturalistic cases by using data of national and regional online database, classroom discussion</i> | | | |
| Expected learning outcomes | | | |
| Knowledge and understanding on: | <ul style="list-style-type: none"> ○ Knowledge of methods for the environment analysis ○ Knowledge of criteria to representing landscape data ○ Definition of the environment elements by reading maps at different scales ○ knowledge of the tools and of the map-making process | | |
| Applying knowledge and understanding on: | <ul style="list-style-type: none"> ○ Analyzing the environment and all its components ○ geoprocessing of different type of data ○ problem solving ○ ability to represent the data processing results | | |
| Soft skills | <ul style="list-style-type: none"> ● <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Collect and process geo-naturalistic data ○ interpret data in an interdisciplinary perspective ○ show data on a map ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to clearly display and map the analysis results ○ ability to interact with other specialists ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Acquisition of understanding and deepening the contexts with a critical skill ability ○ ability of applying the method of analysis in increasingly complex situations | | |
| Assessment and feedback | | | |
| Methods of assessment | <i>The examination of the module of "GIS and Naturalistic Thematic Cartography" will be integrated with that of the "Geology and Cartography of the Quaternary" module. It consists in the discussion of the candidate report about a GIS project on naturalistic and/or geological data and the related thematic map showing the result of the analysis. It continues with an oral interview on theory arguments</i> | | |
| Evaluation criteria | <ul style="list-style-type: none"> ● <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student will have to demonstrate a good ability in defining the environment elements and in representing them in an adequate way ● <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student will have to demonstrate to have a good problem solving ability both in the analysis of the territory and in the GIS geoprocessing ● <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ The enrichment of the student's knowledge will also be demonstrated by the ability to evaluate his own work ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ The student will have to demonstrate a good capacity for cartographic representation of the analysis results | | |



| | |
|---|---|
| | <ul style="list-style-type: none">• <i>Communication skills</i><ul style="list-style-type: none">○ The student must be able to transmit the level of understanding of principles and methods of investigation with clarity and properties of language• <i>Capacities to continue learning</i><ul style="list-style-type: none">○ The student must be able to enrich the understanding of the topics through individual insights ways that show his ability to draw further knowledge starting from the basis of the topics discussed and to demonstrate to solve increasingly complex situations |
| Criteria for assessment and attribution of the final mark | <i>The final grade is awarded out of thirty. The exam is passed when the grade is greater than or equal to 18</i> |
| Additional information | Overcoming and final grade are conditioned by the integration with the "Geology and Cartography of the Quaternary" exam |
| | |