UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Physical Geography

2627-1-E3402Q005

Aims

*In terms of knowledge and understanding, the Physical Geography course provides a broad spectrum of basic knowledge and adequate terminology for understanding the factors that contribute to the formation of the landscape on planet Earth (**DdD1**).*

*Through teaching and practical activities, using the planet as a natural laboratory, students will be able to develop quantitative indicators to describe the characteristic morphologies of the main marine and terrestrial environments. They will learn to take into account both endogenous and exogenous factors, such as landscape modifiers and will evaluate the role of the anthropic impact on the climate and natural environments of the planet, following the intensive exploitation of its resources, contributing to the prediction of future climate and sustainability scenarios (**DdD2**).*

*The observation and discussion activities on the ground and the preparation of the final report for this training activity will contribute to increasing the students' critical and judgment skills (**DdD3**).*

*The oral part of the final exam will contribute to building their communication skills, using appropriate scientific language (**DdD4**).*

*The interactive lessons, with ample moments of collective discussion and scientific commentary of scientific articles and media content (video, photographs, podcasts), which deal with the topics studied in the course, will strengthen their ability to study and analyze data autonomously and critically (**DdD5**).*

Contents

The geological time

Planet Earth

Reading of topographic maps

Atmosphere and climate

Hydrosphere

The forms of the terrestrial and marine landscape

Man modifying landscape and climate

Field work in Val Valtellina, Glaciological trail of Civo (SO)

Detailed program

The geological time
Geological timetable
The "deep time"
The scale factor in geological observations

Planet Earth
The Earth in the solar system
The Earth seen from space
Reading of topographic maps; hydrographic basins and topographic profiles

Reading topographic maps
Reference systems, coordinates and point on the map
Map symbology and contour lines
Topographic profile
Drainage basin

Atmosphere and climate
Thermal composition and subdivision of the atmosphere
The climate: solar radiation, temperature, pressure, atmospheric circulation, humidity and precipitation
Cloud classification
Classifications of climates
Extreme weather events

Hydrosphere
The hydrological cycle
Oceans and seas: currents and waves
Lakes and groundwater
Rivers and sediment transport

The forms of the landscape in the terrestrial and marine environment
Distribution of continents and oceans
Coastal and wind morphology
The great geological structures of the earth's surface
The orogenic chains, the rift zones, the deserts, the volcanoes
Gravitative phenomena (Creeping, conoids and landslides)
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Glacial and periglacial morphologies
Glaciers
The erratic boulders and glacial striae
The fluvioglacial plain
Loess deposits
Soil deposits

Landscape modifier agent man
River and coastal protection works
Modification of the landscape for the exploitation of natural resources
Global climate change and anthropogenic pollution.

End of course
Review of the course topics for the final exam
Introduction to the excursion in an Alpine context.

Prerequisites

** **Prerequisites for the Physical Geography Course** **

• Having carried out the mandatory medical examination and obtained the authorization to carry out the activities on the ground.
• Following the online safety video.
• Having carried out the “Safety Course on the Ground” with the alpine guides.
• Have completed the workplace safety course test and uploaded it to the site.

Teaching form

Lectures, exercises and excursions will take place in person for the entire duration of the course.

Frontal lessons: the pdf of the lessons of the course with the contents and topics covered will be uploaded to the e-learning site, accompanied by an appropriate selection of in-depth bibliography and supplementary material to be searched online via the links indicated. Students' participation in the discussion of the topics covered will be stimulated to facilitate understanding of the topics covered through an active and continuous discussion during the course. The lessons of the course will be made available regularly, together with photographic material; simulated trips with Google Earth; movies and video excerpts.

Exercises: you will be shown topographic maps at different scales, you will learn how to locate a point on the map, you will examine the symbols in use and you will learn how to draw a topographic profile and draw a hydrographic profile.

One day field work excursion: at the end of the course, a daily excursion in the alpine environment will be carried out to recognize and describe the forms of the landscape associated with endogenous factors and shaped by exogenous ones, with particular attention to glacial and periglacial environments and to gravitational and fluvial deposits.

Breakdown in hours/CFU of Delivered Didactics (DD) and Interactive Teaching (IT): the course teaching hours/CFU subdivision will be distributed as follows
a) 18 two-hour lectures, in person, Delivered Didactics (DD), which includes some moments of Interactive Teaching

(IT) to engage students.
b) 6 two-hour lab activities, in person, Interactive Teaching (IT)
c) 1 six-hour field activities, in person, Interactive Teaching (IT)
All activities a,b,c, are carried out in person.

Textbook and teaching resource

The teacher will make the presentations shown during the lessons available on the e-learning website.

Text book suggested: Alan Strahler, 2015. Fondamenti di Geografia Fisica, Zanichelli 460 pg.

Semester

The course will start in October 2026 and will end in January 2027.
The filedwork will take place in the month of January 2027.

Assessment method

Prerequisites for accessing the oral exam
• Register for the exam on the chosen exam date.
• Have carried out a one-day field trip with the teacher of the Physical Geography course.
• Have drawn up and sent the field work report (.pdf) to the professor, following the model indicated on the course e-learning site within the indicated deadlines.
• Present at the time of the exam the notebook with the notes with the drawings made during the field work, in the original; and the map of descriptive outcrops.
• Present an identity document with a recent and recognizable photograph.

Tips for preparing for the exam

- Resume and deepen the basic knowledge of the geography of the landscape of planet Earth.
- A knowledge of introductory notions to Earth Sciences.

The final exam will be divided into 4 parts and will be evaluated:
the completeness of the information, the understanding of the analyzed processes, the expository clarity, the ability to connect the topics, the use of an appropriate language.

a) **field work report**: evaluated between 0 and 5 points. The individual report of up to 10 pages of text, prepared at home on the computer and enriched with photos personally taken by the students during the outing in an Apline context, will be prepared following the model shared by the teacher on the e-learning site, in Word and will be sent in .pdf to the professor according to the agreed times, before the oral exam, to the e-mail: *sergio.ando@unimib.it*.
The completeness of the information, the understanding of the analyzed processes, the quality of the photos and figures, the ability to connect the topics, the use of an appropriate personal language (without the use of AI), the quality of the notes taken on the ground and the quality of the ground map will be evaluated with the stops straight in the text marked.

b) **cartography written test**: evaluated between 0 and 5 points. The test will consist in identifying the geographical or kilometric coordinates of a point on a topographic map (evaluated between 0-1); creation of a topographic profile at the map scale, on graph paper (evaluated between 0-2); tracing of a hydrographic basin starting from the closure section and estimation of its areal surface (evaluated between 0-2). The precision, accuracy and quality of the graphic drawings will be evaluated.

c) **geological times**: knowledge of the table of geological times will be verified (Periods and Epochs for the Cenozoic and Periods for the Mesozoic and Paleozoic); lack of knowledge of geological times will lead to exclusion from the oral exam. A positive evaluation will allow you to face the oral exam.

d) **oral exam** 4 questions will be asked, chosen by the teacher, in about 30 minutes, on all the topics of the course, each will be evaluated between 0 and 5 points, for a total between 0 and 20 points. The exam will verify the learning of the topics covered during the semester. During the oral exam, the teacher will be able to verify the knowledge of the activities carried out during the excursion and presented in the report and the ability to read a topographic map.
The completeness of the information, the understanding of the analyzed processes, the expository clarity, the ability to connect the topics, the use of an appropriate language will be evaluated.

The final oral grade will be the sum of the four partial tests a+b+c+d and the final grade will be expressed out of thirty.
The dates of the exam sessions, once available, will appear in the first row of the course site on the e-learning site.

Office hours

The course teacher is always available, by appointment, by contacting him via e-mail, at *sergio.ando@unimib.it*

Sustainable Development Goals

QUALITY EDUCATION | GENDER EQUALITY | AFFORDABLE AND CLEAN ENERGY | RESPONSIBLE CONSUMPTION AND PRODUCTION | CLIMATE ACTION