UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

## Advanced Gis Analysis

**2627-1-F7402Q015**

### Aims

The course aims at providing the student with te capability to improve the analysis and the modelling of spatial data with advanced techniques in GIS environment.

### Contents

Theoretical and practical analysis and modelling of spatial data with advanced techniques related to: geomorphology, marine geology, engineering geology, structural geology.

### Detailed program

**Lectures (Delivered Didactics) 2CFU**
*Geomorphometry*: DEM generation techniques and methods for editing and correction of DEM, topographic functions (slope, aspect, curvature) and terrain classification, hydrological functions and automatic detections of drainage basins. Examples of application for geological problems.

*Geostatistics*: generation of experimental variogram, variogram modelling, simple kriging, ordinary kriging, co-kriging. Examples of application to geological problems.

**Lab work (Interactive Teaching) 2CFU**
Application of commercial (e.g., ESRI ArcGIS) and open-source (e.g., SAGA-GIS, SGeMS) software for a practical implementation of techniques

## Prerequisites

GIS Lab (Bachelor Degree L34) or similar basic course on GIS.

## Teaching form

The course is taught in English and divided into:

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7 two-hour Lectures in person, Delivered Didactics (2 ECTS, 14 hours)
12 two-hour lab activities, in person, Interactive Teaching (2 ECTS, 24 hours)
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## Textbook and teaching resource

Hengl T. & Reuter H.I. (2009): Geomorphometry: concepts, software, applications. Elsevier, 1-765.

M. Kanevsky and M. Maignan, (2004) Analysis and modelling of spatial environmental data, EPFL Press, Lausanne,

+ Course notes and power-point slides provided by the teacher. Scientific papers.

## Semester

Fall semester

## Assessment method

Test for the evaluation of the theoretical part + GIS exercise in the laboratory + discussion on the exercise.

## Office hours

From Monday to Friday, 2 p.m. - 4 p.m.

## Sustainable Development Goals

QUALITY EDUCATION | CLIMATE ACTION