

The informal interview, in English, will be based on the following topics, whose knowledge is considered relevant to successfully follow the Master program:

**Fundamentals of mathematics, physics and informatics**

Vector and matrix algebra

Elementary functions (exponential, trigonometric functions, ...)

Integral calculus and differential calculus

Differential operators (gradient, curl, ...)

Simple differential equations (e.g. harmonic oscillator, friction, ..)

Newton Laws

Energy conservation

Maxwell equations

I and II principles of Thermodynamics

Equation of state for gas and liquids

Knowledge of programming languages (python, fortran, C++, Matlab, Mathematica, R, ...)

**Additional topics**

Basic concepts of fluid dynamics

Atomic and molecular structure

Descriptive statistics and probability theory

Components of global hydrological cycle.

Role of climate in shaping communities and ecosystems

Climate change effects on terrestrial and marine ecosystems

Water resources and climate change

Elements of Physical Geography and Geomorphology

**Suggested readings:**

Any textbook on classical physics and basic algebra and analysis for the first block of topics

For the second one: Barry and Hall-McKim, Essentials of the Earth's Climate System, Cambridge University Press, 2014, pp. 271.