Title of BIP: Biodiversity in Mountain Ecosystems

General information
Objectives and Description:
Students learn to design and execute an integrated mountain-biodiversity assessment, linking environmental components (water and soils) to biodiversity patterns across microorganisms, vegetation, and fauna.
Methods and outcomes:
The virtual component builds shared basic foundations in pedology, microbiology, river ecology, and sampling standards for assessing mountain biodiversity. During the physical mobility, the students will apply these tools in coordinated field and lab work, using standard protocols.
Field of Education:
Life Sciences
Target audience / Participants profile:
Students coming from Degrees related to Environmental, Biological, Agricultural, Forestry, Veterinary, Natural Sciences and Earth Sciences
No of ECTS issued:
3 ECTS
Language of instruction and requirements:
English
Dates for physical activity:
1-5 June 2026
Location of physical activity:
Ostana (CN), Valle Po, Italy
Alpine Stream Research Centre-ALPSTREAM
Dates for virtual component:
April and May 2026
Virtual Component Description:
Introductory virtual classes will focus on methods for evaluating, sampling, and analysing mountain biodiversity.
Organizing Board
Receiving/Host university:
Università degli Studi di Torino

Italy (DBIOS, Luca Pietro Casacci, luca.casacci@unito.it; DISAFA, Michele Freppaz, michele.freppaz@unito.it; DSV, Joana Nery, joana.nery@unito.it)

Sending/Partner universities:

P1. University De Pau Et Des Pays De L'Adour, France (Gipsy Peltier, g.peltier@univ-pau.fr)

P2. Universidad Pública de Navarra, Spain (Inigo Virto, inigo.virto@unavarra.es)

P3. Universidad de Zaragoza, Spain (Juan Herrero Cortés, herreroj@unizar.es)

Detailed programme

1. **Planned activities during the virtual component:**
• Soil diversity: genesis, survey, basic properties, ecosystem services, soil biodiversity.
• Mountain vegetation: identification methods and distribution (quadrats, transects; link to pollinators).
• Indicator animal groups in mountains: birds, amphibians, micromammals, selected insect groups (rationale and uses).
• Insect and arthropod biodiversity: sampling and monitoring methods (e.g., pan traps, sweep nets, pitfall, Malaise).
• River ecology: principles, standards for fish and macroinvertebrate sampling. The Alpstream project.
• Environmental DNA: sampling and analysis methods of different matrices such as water, soils, plants and animals.
• Microbiology: microorganisms in environmental matrices and their ecological roles (water, soil, plant surfaces; basic lab workflows).
   Language courses offered by UNITA are recommended to students who are willing to participate

2. **Planned activities during the physical component:**
1st day
Morning - Arrival in Torino and transfer to Ostana (CN).
Afternoon - River ecology fieldwork. AlpStream mesocosm concept and experimental activity; demonstration of fish survey and macroinvertebrate sampling; water collection for eDNA.

2nd and
Morning - Vegetation and soils. Phytosociological surveys; Identification and description of the main soil-forming factors; soil profile description and soil sampling.
Afternoon - Pollinators and other important animal bioindicators.

3rd day
Morning and afternoon - Field excursion. Collection of samples to assess the diet and parasitology of wildlife. Ungulates monitoring.

4th day
Morning - Transfer to Torino.
Late morning and afternoon - Laboratory activities. Macroinvertebrate sorting and identification; stream quality metrics; eDNA filtration/extraction and microorganism analysis from field samples; basic soil analyses and interpretation.

5th day

Morning and afternoon - Laboratory activities. Animal diet evaluation through microscopy techniques and introductory parasitology on collected faeces; curation and morpho-identification of pollinators; eDNA and microbiological analysis of environmental matrices.

Planned activities are subject to change depending on the weather.

Send the nomination to unita.students@unito.it

deadline: 13/04/2026 at 23:59 CEST