

Bachelor of Science in Environmental Science (4 Years, 240 ECTS)

An interdisciplinary environmental science program integrating ecology, earth systems, chemistry, and policy with strong fieldwork and data analysis training.

Program Overview

- **Award:** B.Sc. in Environmental Science
- **Duration:** 8 Semesters (4 academic years)
- **Total Credits:** 240 ECTS
- **Delivery:** Lectures (L), Tutorials (T), Laboratories (P), Studio/Project (S), Fieldwork (F)
- **Workload:** 1 ECTS \approx 25–30 hours
- **Program Pillars:** Earth System Science • Ecology & Biodiversity • Climate & Atmospheric Science • Environmental Chemistry • Hydrology & Watersheds • Geospatial Analysis (GIS/Remote Sensing) • Environmental Policy & Governance • Field Methods • Sustainability & Ethics
- **Signature Experiences:** multi-day field courses, GIS mapping studio, and a supervised summer field internship.

Graduate Learning Outcomes

Graduates will be able to:

- 1 **Systems Thinking.** Analyze environmental issues as coupled natural and human systems across scales.
- 2 **Field Skills.** Collect environmental samples and observations using standardized protocols and QA/QC practices.
- 3 **Data Analysis.** Use statistics and geospatial tools to interpret environmental datasets and uncertainty.
- 4 **Assessment.** Conduct environmental impact and risk assessments using evidence-based frameworks.
- 5 **Research Design.** Design studies from question formulation through methods selection and interpretation.

- 6 **Communication.** Communicate findings through reports, maps, dashboards, and community-facing materials.
- 7 **Professional Practice.** Work safely outdoors and in labs; apply ethical and culturally responsible practices.
- 8 **Solutions.** Propose feasible mitigation and adaptation strategies for climate, pollution, and conservation challenges.

Curriculum Structure

Structured across 8 semesters (30 ECTS each). Most courses are 6 ECTS unless otherwise noted.

Year 1

- Semester 1 (30 ECTS)**
- Introduction to Environmental Science - 6 ECTS
 - General Biology (Ecology & Evolution) - 6 ECTS
 - Earth Systems I (Geology & Soils) - 6 ECTS
 - Quantitative Skills for Environmental Scientists - 6 ECTS
 - Scientific Writing & Communication - 6 ECTS

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- Semester 2 (30 ECTS)**
- General Chemistry for Environment - 6 ECTS
 - Earth Systems II (Oceans & Atmosphere) - 6 ECTS
 - Field Methods I (Sampling & Monitoring) - 6 ECTS
 - Statistics & Data Literacy - 6 ECTS
 - Environmental Ethics & Safety - 6 ECTS

Year 2

- Semester 3 (30 ECTS)**
- Hydrology & Watershed Science - 6 ECTS
 - Environmental Chemistry I (Contaminants) - 6 ECTS
 - GIS Fundamentals - 6 ECTS
 - Ecology I (Communities & Ecosystems) - 6 ECTS
 - Technical Elective I - 6 ECTS

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- Semester 4 (30 ECTS)**
- Climate Science (Processes & Evidence) - 6 ECTS
 - Remote Sensing & Spatial Data - 6 ECTS
 - Environmental Microbiology - 6 ECTS
 - Field Methods II (Biodiversity Surveys) - 6 ECTS
 - Technical Elective II - 6 ECTS

Year 3

- Semester 5 (30 ECTS)**
- Environmental Policy & Governance - 6 ECTS
 - Conservation Biology - 6 ECTS
 - Environmental Impact Assessment - 6 ECTS
 - Analytical Laboratory (Water/Soil/Air) - 6 ECTS
 - Technical Elective III - 6 ECTS

- Semester 6 (30 ECTS)**
- Urban Sustainability & Infrastructure - 6 ECTS
 - Environmental Modeling (Systems & Scenarios) - 6 ECTS
 - Risk, Resilience & Adaptation - 6 ECTS
 - Technical Elective IV - 6 ECTS
 - Summer Field Internship - 6 ECTS
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Year 4

Semester 7 (30 ECTS)	<ul style="list-style-type: none">• Advanced GIS & Spatial Decision Support - 6 ECTS• Environmental Chemistry II (Fate & Transport) - 6 ECTS• Environmental Economics (Intro) - 6 ECTS• Technical Elective V - 6 ECTS• Capstone Research I (Project Planning) - 6 ECTS
Semester 8 (30 ECTS)	<ul style="list-style-type: none">• Capstone Research II (Fieldwork & Report) - 12 ECTS• Renewable Energy & Climate Solutions - 6 ECTS• Community Engagement Studio - 6 ECTS• Advanced Seminar & Presentation - 6 ECTS

Technical Elective Tracks

Choose at least 5 electives; focus on one track for specialization.

Track A — Climate & Atmosphere

- Climate Modeling
- Air Quality Science
- Extreme Events
- Carbon Accounting

Track B — Water & Watersheds

- Hydrochemistry
- Water Treatment
- River Restoration
- Coastal Processes

Track C — Conservation & Ecology

- Landscape Ecology
- Wildlife Management

- Invasive Species
- Protected Areas Planning

Track D — Sustainability & Policy

- Environmental Law
- Sustainable Cities
- Corporate Sustainability
- Environmental Justice

Laboratories, Field Sites & Facilities

Field Stations

Access to local field sites for river sampling, soil pits, biodiversity transects, and long-term monitoring.

Environmental Analytics Lab

Water and soil analysis equipment for nutrients, metals, organics, and microplastics screening.

GIS & Remote Sensing Suite

Software and datasets for mapping, satellite analysis, and spatial modeling.

Sustainability Living Lab

Campus-as-a-lab projects on energy, waste, mobility, and biodiversity enhancements.

Capstone Project Examples

- **Watershed Nutrient Budget**
Quantify nutrient sources and propose mitigation strategies for eutrophication risk.
- **Urban Heat Island Mapping**
Use remote sensing and field measurements to map heat exposure and design interventions.
- **Microplastics Monitoring Program**
Develop sampling and analysis workflow and create a public-facing results dashboard.
- **Nature-Based Flood Mitigation**
Evaluate green infrastructure options and model flood reduction for a target neighborhood.