

Environmental Sciences
Lab, Field, & Technical Skills List

Discipline Specific Skills:

- Environmental Impact Assessment and Risk Analysis
- Ecological Restoration Planning and Implementation
- Sample Design – Statistical Analyses
- Quantitative Literacy – Data Visualization and Communication
- Stakeholder Engagement and Science Communication
- Geospatial Technologies, Measurements and Mapping
- Systems Thinking and Sustainability Frameworks
- Environmental Problem Solving and Decision Support

Field Skills:

- Environmental monitoring (vegetation, erosion, etc.)
- Sample collection & analysis (water quality, soil sampling, nutrient levels, etc.)
- Species identification & classification
- Environmental/habitat assessment and inventory
- Data Collection and Quality
- Operate and maintain a variety of environmental field equipment
- Use of pacing, topographic maps, compass, and/or GPS equipment to navigate natural environment
- Field campaign planning - Leave No Trace

Lab & Research Skills:

- Soil and Water Quality assessment
- Sample preparation and handling
- Laboratory Safety protocols
- Microscopy
- Chemical analysis and Micro-pipetting
- Operation of various lab equipment (e.g., ICP)
- Documenting methodologies
- Analyzing and interpreting data / statistical analysis

Technical Skills:

- Python
- SPSS, JMP, R-Studio
- GIS, ArcGIS, etc.
- Microsoft Office (Word, PowerPoint, Excel, etc.)
- OneNote
- Teams

Certifications:

- Professional Ecological Certification (ESA)
- Certified Environmental Scientist (NREP)
- Wilderness First Aid (WFA)
- Registered Environmental Manager
- Registered Environmental Professional
- Certified Environmental & Safety Compliance Officer

ENSC Learning Outcomes:

Successful Environmental Sciences graduates will demonstrate the following competencies:

- **Apply** a range of scientific methodologies and disciplinary perspectives through scientific inquiry, modeling and real-world experience in addressing pressing environmental issues;
- **Employ** a systems approach to analyze how human and ecological systems interact to influence processes in air, on land, and in water, including the transport and fate of nutrients and contaminants through the environment;
- **Assess** and articulate the scientific evidence surrounding key environmental issues and evaluate ongoing efforts to mitigate environmental problem;
- **Design** solutions to real world problems in collaboration with community partners;
- **Deepen** their understanding of the concepts, processes, problems and solutions of their chosen concentration.



Rubenstein School Core Competencies & Knowledge Areas:

COMPETENCIES

1. **Communication:** Employ effective speaking, writing, listening, and digital communication techniques.
2. **Teamwork:** Contribute to collaborative efforts, facilitate contributions of others, and address conflict directly and constructively.
3. **Working Across Difference:** Critically examine dimensions of difference and apply a nuanced understanding of power and privilege through effective communication.
4. **Problem Solving:** Design, evaluate, and employ appropriate frameworks in order to effect change and generate collaborative solutions to complex problems.
5. **Inquiry & Analysis:** Apply critical thinking skills and employ qualitative and quantitative methodologies in order to formulate questions and evaluate core knowledge areas.
6. **Integrative Learning:** Synthesize and transfer learning to complex situations across disciplinary boundaries through the application of critical reflection skills.

KNOWLEDGE AREAS

7. **Ecological Processes & Systems:** Identify and describe basic ecological processes and systems.
8. **Social Processes & Systems:** Identify, interpret, and analyze cultural, economic, historical, and political dynamics of environmental issues.
9. **Planning & Management:** Describe effective strategies in ecological planning, management, stewardship, and conservation of natural resources.
10. **Sustainability:** Discuss social, economic, and ecological principles of sustainability.