Environmental Sciences

Skills

Every graduate student will acquire the following skills by taking the basic and compulsory courses. However, some skills are reinforced through optional courses.

Instrumental, personal, and systematic skills

1. To understand the knowledge of the environmental field in advanced textbooks and specialized scientific texts
2. To analyze and synthesize, and elaborate and defend arguments
3. To communicate orally and in writing
4. To solve problems and take decisions
5. To work in teams
6. To understand the diversity
7. To think critically
8. To have an ethical commitment
9. To self-learn
10. To be creative
11. To gather and interpret relevant information to make judgments that include a reflection on social, scientific or ethical issues
12. To be motivate by quality
13. To be sensitive to environmental issues
14. To apply theoretical knowledge into practice
15. To communicate with specialists and non-experts in the field
16. To develop the necessary learning skills to undertake further studies with a high degree of autonomy
17. Students must accredit the B2 level of the Common European Framework of Reference for Languages in English, as this is considered the international working language
18. To develop entrepreneurship skills in the field of environmental sciences
19. To develop skills in the field of new technologies and innovation management
20. To respect human rights, access for all and the will to eliminate discriminatory factors such as gender and origin

Specific skills

1. To master mathematical skills (algebra, calculus) to solve problems related to the environment
2. To understand the main laws of physics
3. To know and use the terminology and the units of measure in Experimental Sciences
4. To master the necessary skills for the laboratory work in Experimental Sciences
5. To know the structure, physicochemical properties, and reactivity of the elements and compounds involved in biogeochemical cycles
6. To know and understand the levels of organization of organisms
7. To know and understand the structure and role of fungi, plants, and animals
8. To know and understand the composition and structures of geological materials
9. To understand the basic geological concepts, principles, and processes
10. To be able to evaluate, interpret, and synthesize basic geological information obtained from the land and the geological maps

11. To know and understand the structure, role, and processes of transformation of organic molecules, nucleic acids, and other biomolecules
12. To know the relationships between organisms and the environment
13. To know the basic principles of population dynamics
14. To know and master the proceedings to estimate and interpret the ecological succession and the biodiversity
15. To have basic knowledge of plant biodiversity and phytogeography
16. To know the main vegetal formations
17. To have basic knowledge of animal biodiversity and zoogeography
18. To be able to analyze and interpret basic elements of geomorphology
19. To have basic knowledge of surface and subsurface hydrology
20. To have basic knowledge of edaphology: soil properties and main types
21. To know the structure, role, and biodiversity of microorganisms
22. To know the environmental importance and the main applications of organisms
23. To know the main characteristics and processes of the main ecosystems and habitats
24. To know how the terrestrial, marine, and freshwater ecosystems work and their sensitivity to human disturbance
25. To know and interpret the basic environmental laws on soils, water, atmosphere, natural resources, conservation, urbanism, and spatial planning
26. To know the main national and international agreements, protocols, and directives
27. To be able to make an economic evaluation of environmental goods, services, resources, and costs
28. To know the basic principles of environmental and ecological economics
29. To know and evaluate information sources and techniques for territorial analysis
30. To have the knowledge to carry out an analysis of the population for sustainable management of resources
31. To be able to analyze the different environmental policies
32. To study territorial models of human activities
33. To understand the natural and humanized environments and understand the interaction between the natural environment and society
34. To have basic knowledge to carry out studies on socio-cultural contexts
35. To be able to design, elaborate, and carry out environmental impact assessments and strategic environmental assessments
36. To be able to develop and implement environmental management systems
37. To be able to develop and implement quality management systems
38. To be able to design, elaborate and carry out proceedings of environmental audit
39. To be able to manage and optimize the use of energy
40. To have knowledge of clean technologies and renewable energies and value them
41. To be able to design and apply indicators of sustainable development and ecological footprint
42. To have basic knowledge of territorial planning
43. To be able to design and carry out urban and rural development plans
44. To apply landscape assessment techniques of environmental management and territorial planning
45. To know the basic aspects of water planning, management, conservation, and supply
46. To know the basic principles and techniques of soil management and conservation
47. To be able to elaborate flora management plan, including endangered species, exploited species, and plagues
48. To be able to analyze and assess the cultivation systems of plant resources
49. To be able to elaborate fauna management plan, including endangered species, exploited species, and plagues

50. To analyze and assess the supply systems of animal resources
51. To know the processes related to natural and technological risks and develop plans for risk mitigation and prevention
52. To have basic knowledge of natural environments management
53. To be able to carry out quality studies on the urban environment
54. To be able to make and apply mass and energy balance to every type of processes and installations
55. To have basic knowledge of water supply management and treatment
56. To have basic knowledge of sewage management and treatment
57. To be able to elaborate, introduce, coordinate, and evaluate waste management plans
58. To know the main gaseous emission reduction techniques
59. To know the main contaminated soil treatment techniques and their application
60. To know the air, light, and acoustic pollution analysis and quantification techniques
61. To be able to value the air quality
62. To know the use of dispersion modelling and pollution control
63. To quantify and value the water and soil pollution
64. To know the analysis and quantification main techniques of bioindicators
65. To know the use of biomolecules as markers of environmental pollution
66. To be able to analyze and interpret meteorological processes
67. To know the different climates characteristics
68. To master the principles and techniques of restoration, rehabilitation, and bioremediation applied to the recovery of the natural environment
69. To know the basic techniques of elaboration, management, and control of environmental and territorial policies, plans, and projects
70. To know and understand the scientific bases and processes that originated global change and its consequences
71. To know the temporal and spatial dimension of the environmental processes
72. To be able to design and carry out environmental education and communication programs
73. To be able to apply strategies of public participation and social learning
74. To be able to carry out an original individual project on an environmental theme. It can be a technical or a research project
75. To design samplings, and analyze and interpret information of statistical outputs
76. To be able to use statistical software
77. To know how to make environmental processes modelling
78. To be able to use geographic information systems
79. To have basic knowledge of chemical analysis and its main instrumental techniques
80. To be able to design a protocol for the analysis and quantification of pollution
81. To be able to create cartographic databases and interpret and represent information of environmental elements and processes
82. To be able to use and interpret remote sensing images for environmental application
83. To know and understand the factors that regulate the development of ecosystems and their changes
84. To be able to manage contrasting criteria in order to understand global changes in the past and compare them with recent developments