

ECOLOGICAL ENGINEERING

CHART OF COURSES



Semester 1				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
111	Mathematics	1111	Calculus I	45,00
		1112	Linear Algebra I	45,00
112	Physics	1121	Electricity and magnetism	45,00
		1122	Engineering Mechanics I	45,00
113	Chemistry	1131	General Chemistry	45,00
114	Computer science	1141	Algorithmic and programming with Python I	45,00
		1142	ICDL (International Computer Driving License)	22,50
		1143	Infomation Technology Security (ITS) workshop	22,50
115	Humanities and Social Sciences	1151	Philosophy of Science	22,50
		1152	Economics and Finance for Engineers	22,50
116	Languages	1161	French DELF	22,50
		1162	English I	22,50
Total				405,00

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Semester 2				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
121	Mathematics	1211	Calculus II	45,00
		1212	Linear Algebra II	45,00
122	Physics	1221	Engineering Mechanics II	45,00
		1222	Optical Engineering	45,00
		1223	Engineering thermodynamics	45,00
123	Chemistry	1231	Organic Chemistry	45,00
124	Computer science	1241	Algorithm and programming with Python II	45,00
		1242	Supervised personal project (ICDL/Python)	22,50
125	Humanities, and Social Sciences	1251	Sociology	22,50
126	Languages	1261	French	22,50
		1262	English 2	22,50
Total				405,00

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Semester 3				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
211	Mathematics and physics	2111	Calculus III	45,00
		2112	Physics Waves	45,00
212	Engineering tool	2121	Geotechnical Engineering	45,00
		2122	Geographic information systems (GIS)	45,00
213	Chemistry	2131	Mineralogy and Petrology	45,00
214	Computer science	2141	Database Design	45,00
		2142	Excel advanced skills	22,50
		2143	Object Oriented Programming	45,00
215	Humanities, and Social Sciences	2151	Environmental Sociology	22,50
		2152	Principles of Management	22,50
216	Languages	2161	English ESP1	22,50
Total				405,00

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Ecological Engineering Semester 4				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
221	Engineering tool	2211	Measurements and instrumentation	45,00
222	Mathematics	2222	Probability and statistics	45,00
223	Chemistry	2231	Electrochemistry	33,75
		2232	Analytical Chemistry	33,75
224	Data Base	2241	Data Base (Langage & Modeling)	45,00
225	Programming language	2252	Introducton to R for data analysis	45,00
		2253	Programming project C++	22,50
226	Life and environmental sciences	2261	General Biology	45,00
		2262	General Ecology	22,50
		22533	Cell and molecular biology	22,50
227	Humanities, and Social Sciences	2271	Legal Aspects in Environmental Sciences	22,50
		2272	English ESP 2	22,50
Total				405,00

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Ecological Engineering Semester 5				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
311	Engineering Tool	3111	Statistical Methods for Environmental Scientists and Managers	45,00
		3112	Remote sensing	45,00
312	Biological and chemical sciences	3121	Physiology	45,00
		3122	Biochemistry	45,00
313	Microbiolgy science	3123	Microbiology	45,00
314	Web multimedia	3141	Web and multimedia programming / webmapping Information	45,00
315	Software engineering	3151	Information systems : Agile Method	45,00
		3152	Object-oriented analysis and design	45,00
316	Human Sciences and soft skills	3161	Ethnoecology and conservaton	22,50
317	Project	3171	Capstone project	22,50
Total				405,00

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Ecological Engineering Semester 6				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
321	Processes and Engineering tool	3211	Operations Research Models in Engineering	45,00
		3212	Automatic Control Systems Robotics & Automation	45,00
322	Biological sciences	321	Biotechnology	45,00
		32322	Omic technologies	22,50
323	Environmental engineering	3231	Waste management	45,00
		3232	Bioremediation	45,00
324	Programming and project management	3241	Mobile programming	45,00
		3242	Agile project management	45,00
325	Humanities, and Social Sciences	3251	Innovation for Sustainable Development	22,50
326	Soft skills	3261	Technical Communication	22,50
327	Project	3271	Capstone Project	22,50
Total				405,00

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Ecological Engineering Semester 7				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
411	Biological and Environmental sciences	4111	Biodiversity	45,00
		4112	BioClimatology	45,00
412	Engineer sciences	4121	Adsorption	45,00
		4122	Extraction and purification of molecules	45,00
413	Artificial Intelligence AI	4131	Artificial Intelligence	22,50
		4132	Machine Learning	45,00
414	Spatial Data base	4141	Datawarehouse	45,00
		4142	Spatial Database Management Systems	45,00
415	Business skills	4151	Management and Governance of Ecosystem Services	22,50
		4152	Environmental Entrepreneurship	22,50
416	Soft skills	4161	Technical Communication	22,50
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Ecological Engineering Semester 8				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
421	Engineering tool	4211	Bioprocess optimization and simulation	45,00
422	Environmental Engineering	4221	Water and Wastewater treatment engineering	45,00
423	Sustainable development	4231	Bioresources for a Sustainable Future	45,00
		4232	Bioenergy & Energy Storage (Batteries, supercapacitors, etc.)	45,00
424	Computer Science Engineering	4241	Data mining	45,00
		4242	Software Engineering	45,00
425	Soft skills and languages	4251	Digital skills	22,50
		4252	English for Certificaton (TOEIC Basic)	22,50
426	Business skills	4261	Business intelligence	22,50
		4262	Design thinking	45,00
		4263	Capstone project	22,50
Total				405,00

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Ecological Engineering Semester 9				
Constitutive elements of TU				Teaching hours per semester
UE	Teaching unit	UC	Module	TOT
511	Ecological Engineering	5111	Ecosystems management	45,00
512	Environmental sciences	5121	Ecotoxicology and risk assessment	45,00
		5122	Life cycle analysis	22,50
		5123	Environmental Impact Assessment	45,00
513	Sustainable development	5131	Green buildings concept and design	22,50
514	Big Data Analytics	5141	Big Data and Cloud	45,00
		5142	Data science	45,00
		5143	Internet Of Things (IoT)	45,00
515	Humanities, and Social Sciences	5151	Environmental Ethics	22,50
		5152	Corporate social responsibility (RSE)	22,50
516	Soft skills	5161	Writing and presentation techniques	22,50
		5162	Soft skills	22,50
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Ecological Engineering Semester 10		
TU	Teaching unit	TUCE
521	Project	5211