EUROAQUAE
Euro Hydro-Informatics and Water Management

Degree Programme Regulations 2021/2022:

The programme of study is as defined below:

In semester 1 of year 1, candidates take a total of 30 ECTS credits consisting of the following compulsory modules to value 6 ECTS credits,

Code	*ECTS Credits*	*Sem*	*Comp /Opt*	*Institution*	*Descriptive title*
EU-AQ-1.5-C (BTU) EM1AUE05 (UNS) UPC - 29864 (UPC)	4	1	C	UNS/BTU/UPC	Web-based collaborative engineering
EU-AQ-1.5-C (BTU) EM1AUE06 (UNS) UPC – 29862-1 (UPC)	2	1	C	UNS/BTU/UPC	European Language I skills (French/German/Spanish)

and compulsory modules to the value of 24ECTScredits at any one selected institution as follows;

Code	*ECTS Credits*	*Sem*	*Comp /Opt*	*Institution*	*Descriptive title*
EM1AUE01	6	1	C	UNS	Mathematics and Physics
EM1AUE02	6	1	C	UNS	Hydrology and Hydraulics
EM1AUE03	6	1	C	UNS	Intro to Water and Aquatic Environment Management
EM1AUE04	6	1	C	UNS	Computer Skills, Databases & GIS-ICT
EU-AQ-1.1-C	6	1	C	BTU	Mathematics and Physics
EU-AQ-1.2-C	6	1	C	BTU	Hydrology and Hydraulics
EU-AQ-1.3-C	6	1	C	BTU	Intro to Water and Aquatic Environment Management
EU-AQ-1.4-C	6	1	C	BTU	Computer Skills, Databases & GIS-ICT
UPC 101	6	1	C	UPC	Mathematics and Physics
UPC 102	6	1	C	UPC	Hydrology and Hydraulics
UPC 103	6	1	C	UPC	Intro to Water and Aquatic Environment Management
UPC 104	6	1	C	UPC	Computer Skills, Databases & GIS-ICT

In semester 2 of year 1, candidates shall take compulsory modules to a value of 30ECTS credits at NU:

Code	*ECTS Credits*	*Sem*	*Comp /Opt*	*Institution*	*Descriptive title*
CEG8512	5	2	C	NU	Integrated River Basin Management
CEG8516	5	2	C	NU	Groundwater Modelling
CEG8514	5	2	C	NU	Climate Change Vulnerability, Impacts and Adaptation
CEG8523	5	2	C	NU	Modelling and Forecasting of Floods
CEG8517	5	2	C	NU	Computational Hydraulics
*INU8001***	5	2	C	NU	*Researching and Writing in Science & Engineering*

** Candidates who are native English speakers or who achieve entrance level 3 exam in all categories may take one of the following alternative modules (or, an alternative 10 credit at the discretion of the DPD) instead of INU8001 subject to timetabling constraints:

Code	*ECTS Credits*	*Sem*	*Comp /Opt*	*Institution*	*Descriptive title*
CEG8511	5	2	O	NU	Groundwater Assessment
CEG8107	5	2	O	NU	Environmental Engineering for Developing Countries

In semester 1 of year 2, candidates take 30 ECTS consisting of 2 compulsory modules (9 ECTS), one of two optional modules (3 ECTS) and 18 ECTS at any 1 institution (not including NU):

Code	*ECTS Credits*	*Sem*	*Comp /Opt*	*Institution*	*Descriptive title*
EU-AQ-3.X_E (BTU) EM2AUE05 (UNS) UPC - 29861 (UPC)	6	1	C	Any	Hydro-Europe Working as Virtual Company/Institute
EU-AQ-3.Y_E (BTU) EM2AUE08 (UNS) UPC – 29862-2 (UPC) 6420-01H30-0SP-0001 (WUT)	3	1	C	Any	European Language II skills (French/German/Spanish/Polish)
EU-AQ-3.Y_C (BTU) EM2AUE06 (UNS) UPC - 29863 (UPC)	3	1	O	Any	Pre-professional Training OR Research Methodology Also supported by WUT
EM2AUE01	5	1	C	UNS	Modelling Methods for Urban Waters
EM2AUE02	3	1	C	UNS	Methods for Water Supply and Waste Water Treatment
EM2AUE03	5	1	C	UNS	Economical and Legal Environments
EM2AUE04	5	1	C	UNS	Project Management for Smart Water Solutions
EU-AQ-3.1-C	6	1	C	BTU	Numerical Simulation: Free-surface and Groundwater Modelling
EU-AQ-3.2-C	6	1	C	BTU	Information Management in Hydroinformatics
EU-AQ-3.3-C	6	1	C	BTU	Modelling Process in Hydroengineering
1110-ISISR-MSA-3508 (WUT)	3	1	C	WUT	Elements of Hydrogeology
1110-ISISR-MSA-3509 (WUT)	5	1	C	WUT	Groundwater Flow and Transport
1110-ISISR-MSA-3510 (WUT)	5	1	C	WUT	Groundwater Management and Optimization
1110-ISISR-MSA-3511 (WUT)	5	1	C	WUT	Groundwater Protection
UPC 301	3	1	C	UPC	Artificial Neural Network for Decision Support Systems
UPC 302	5	1	C	UPC	Flood Risk Concepts and Application in River Basin Management
UPC 303	5	1	C	UPC	DSS for Flood Risk in Urban Areas
UPC 304	5	1	C	UPC	Real Time Control and Operation of Irrigation Canals, Rivers and Reservoirs

In semester 2 of year 2, candidates shall take one of the following modules worth 30 ECTS credits at any private or public institution:

Code	*ECTS Credits*	*Sem*	*Comp /Opt*	*Institution*	*Descriptive title*
EU-AQ-4.1_C EM2AUE07 (UNS) UPC – 29860b (UPC)	30	2	O	Any	Research and Development Project Also supported by WUT
EU-AQ-4.1_E EM2AUE07 (UNS) UPC – 29860a (UPC)	30	2	O	Any	Professional Practice Also supported by WUT

In the summer between Year 1 and Year 2 students may take part in an Action III activity fully integrated in the MSc programme consisting in a 3-month mobility at a non-European partner institutions during which students may take modules up to 10 ECTS (which will replace the equivalent number of credits in semester 1 of year 2):

Code	*ECTS credits*	*Comp/ Opt*	*Institution*	*Descriptive title*
Module 3.1	5 ECTS	O	NUS	Hydrodynamics and Sediment Transport
Module 3.2	5 ECTS	O	NUS	Advance FiniteElement Method
Module 3.3	5 ECTS	O	NUS	Neural Networks
Module 3.4	5 ECTS	O	NUS	Evolutionary Computation
Module 3.5	5 ECTS	O	NUS	Engineering Economics and Project Evaluation
Module 3.6	5 ECTS	O	NUS	System Modelling and Advanced Simulation
Module 3.7	5 ECTS	O	NUS	DecisionAnalysis
Module 3.520	3 ECTS	O	IITM	Oceanography
Module 3.521	3 ECTS	O	IITM	WaveHydrodynamics
Module 3.5.22	3 ECTS	O	IITM	Numerical Techniques in OceanHydrodynamics
Module 3.5.23	3 ECTS	O	IITM	Coastal Engineering
Module 3.B1	6 ECTS	O	EPFL	Stochastic models and statistical methods in hydrology
Module 3.B2	6 ECTS	O	EPFL	Hydrologic forecasting and risk - specialisation module
Module 3.B3	5 ECTS	O	EPFL	Snow and glacier hydrology - specialisation module
Module 3.C2	6 ECTS	O	EPFL	Dams and hydraulic engineering works - specialisation module
Module 3.C3	6 ECTS	O	EPFL	Hydroelectric power schemes - specialisation module
Module 3.D1	4 ECTS	O	EPFL	Integrated water resources management
Module 3.D2	5 ECTS	O	EPFL	Flood management and river training works
Module 3.D3	4 ECTS	O	EPFL	Hydrology, water supply, drainage and sewer in urban areas
Module 3.28	5 ECTS	O	UNL	Hydrodynamics of Water Bodies
Module 3.29	5 ECTS	O	UNL	RemoteSensingApplied to Hydrology
Module 3.30	5 ECTS	O	UNL	Groundwater Flow Modelling
Module 3.31	5 ECTS	O	UNL	Introduction to Geostatistics
Module 3.32	5 ECTS	O	UNL	Stability of ErodibleChannels
Module 3.33	5 ECTS	O	UNL	Sediment Transport
Module 3.34	5 ECTS	O	UNL	Urban Drainage
Module 3.35	5 ECTS	O	UNL	GIS for Water Resources Management
Module 3.1	5 ECTS	O	INU	Urban waters management & smart water solutions
Module 3.2	5 ECTS	O	INU	Hydroinformaticssystems
Module 3.3	5 ECTS	O	INU	Inland&coastal Waters Management
Module 3.4	5 ECTS	O	INU	Decision Support System
Module 3.5	5 ECTS	O	INU	Sustainable Water Management
Module 3.1	5 ECTS	O	HHU/ NCWU	Hydroelectricity production and management
Module 3.2	5 ECTS	O	HHU/NCW U	Smart water solutions for large hydro projects
Module 3.3	5 ECTS	O	HHU/NCW U	Design and implementation of large hydraulic infrastructures
Module 3.4	5 ECTS	O	HHU/NCW U	Decision Support System for flood and drought management
Module 3.5	5 ECTS	O	HHU/NCW U	Sustainable Water Management at basin scale
Module 3.1	5 ECTS	O	UFRJ	Urban waters: MODCEL model application
Module 3.2	5 ECTS	O	UFRJ	Hydroinformaticssystems: computationalmodels
Module 3.3	5 ECTS	O	UFRJ	Flood risk management
Module 3.4	5 ECTS	O	UFRJ	Decision Support System
Module 3.5	5 ECTS	O	UFRJ	Sustainable Water Management
Module 3.1	5 ECTS	O	UNAM	Urbanhydrology
Module 3.2	5 ECTS	O	UNAM	Hydroinformatics systems: 1D and 2D models

Module 3.3	5 ECTS	O	UNAM	Hydropower production: design and operation of powerplants
Module 3.4	5 ECTS	O	UNAM	Physical models of hydraulic structures
Module 3.5	5 ECTS	O	UNAM	Sustainable Water Management

List of Partner institutions:

- NUS = National University of Singapore (Singapore)
- IITM = Indian Institute of Technology Madras (India)
- EPFL = Ecole Polytechnique de Lausanne (Switzerland)
- UNL = UniversidadNacionaldelLitoral (Argentina)
- INU = Incheon National University (South Korea)
- HHU = HohaiUniversity (China)
- NCWU = North-China Water University (China)
- UFRJ = UniversidadeFederal do Rio de Janeiro (Brasil)
- UNAM = UniversidadNacionalAutónoma de México (Mexico)