

Course Catalogue Engineering and ICT

EXCHANGE PROGRAMME

Water Management 2023-2024

University of
Applied Sciences

Windesheim



Course summary			
VOE Code: BT.KOWM.V19		ECTS credits: 1	Level: Bachelor's degree (full-time)
Course Title	Kick Off Water Management		
Type	Compulsory		
Learning competences			
Learning outcomes	The student has an overview of major topics regarding water management and knows the structure of the program and the relations between the topics.		
Course content	Introduction in the field of international water management through lectures and assignments.		
Planned learning activities and teaching methods	Lectures and assignments, presentations, serious game.		
Recommended or required reading and other learning resources / tools	None, all materials will be provided via the ELO		
Prerequisites and co-requisites			
Level	Bachelor		
Grading scale	Not Achieved/Achieved		
Assessment methods and criteria	Type of assessment	Grade weighting	Criteria
	Assignments	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Reginald Grendelman		
Mode of delivery	(guest) Lectures will be given and students are asked to make assignments and to participate in a serious game guided by the teacher.		

Course summary			
VOE Code: BT.HYD.V21		ECTS credits: 3	Level: Bachelor's degree (full-time)
Course Title	Hydrology and Geohydrology		
Type	Compulsory		
Learning competences			
Learning outcomes	This course is about the concepts of physical hydrology and geohydrology. The course provides a solid grounding in the principles of these subjects. Exploring the principal rules that govern the flow of atmospheric water, surface water and groundwater. Students learn how to evaluate specific situations by using modelling techniques. The subject material is trained by solving a large number of hydrological examples and exercises [Source: Introduction to Physical Hydrology, Martin R. Hendriks]		
Course content	Introduction in Hydrology; hydrological cycle; drainage basin; water balance; global hydrology; Basic applications of surface water flow and groundwater flow (steady state, 1D and 2D).		
Planned learning activities and teaching methods	Tutorials and lectures, PowerPoints		
Recommended or required reading and other learning resources / tools	<ul style="list-style-type: none"> • Reader / book: Introduction to Physical Hydrology, Martin R. Hendriks • Lecture slides 		
Prerequisites and co-requisites			
Level	Bachelor		
Grading scale	1 up to 10, 1 dec.		

Assessment methods and criteria	Type of assessment	Grade weighting	Criteria
	Assignments	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Reginald Grendelman		
Mode of delivery	Lectures, Assistance and guidance		

Course summary			
VOE Code: BT.NBS.V20		ECTS credits: 2	Level: Bachelor's degree (full-time)
Course Title	Nature Based Solutions for water management		
Type	Compulsory		
Learning competences			
Learning outcomes	The student is able to select and describe appropriate and applicable Nature Based Solutions for projects regarding (one of) three water management issues: Flooding, drought and water quality. The selection is based on knowledge of existing Nature Based Solutions, theoretical concepts like Building With Nature, Green/Blue Infrastructure or Eco-system Based Adaptation and insight in trends in water and climate.		
Course content	Nature Based Solutions (NBS) are inspired by nature and use natural processes to overcome engineering and water management issues. Traditional engineering solutions have had considerable benefits but have altered our natural ecosystems. New insights in material and energy consumption, climate change, biodiversity etcetera reveal that these alterations are beneficial in short term, but are not robust and fit for future changes. Experience with NBS is growing, like the Sand-motor and the Room for the River approaches. In this course you will discover NBS for water management issues like flood prevention, drought abatement or water quality improvement.		
Planned learning activities and teaching methods	The course consists of a series of lectures (theory) and seminars (working on assignments).		
Recommended or required reading and other learning resources / tools			
Prerequisites and co-requisites			
Level	Bachelor		
Grading scale	Poor to Excellent		
Assessment methods and criteria	Type of assessment	Grade weighting	Criteria
	Assignment NBS	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Reginald Grendelman		
Mode of delivery	Lectures and coaching (during seminars)		

Course summary			
VOE Code: BT.PWM.V20		ECTS credits: 4	
Level: Bachelor's degree (full-time)			
Course Title	Project Water management		
Type	Compulsory		
Learning competences			
Learning outcomes	The student is able to go through the design process successfully, with a professional design- or advisory report as a final result. During the design process the student shows professional skills in communication and collaboration.		
Course content	<p>Students work in teams on a water related project within a specific organizational context. Within the water related project the different steps of the design process are taken. The design process concerns: Define the problem, collect information, brainstorm and analyse, develop solutions, present your ideas and receive feedback, improve on your design.</p> <p>During the project the students have to develop and improve their collaborative and communicative skills, both intern in the project group as extern to the professional organization and Windesheim. The project is coached by a professional from the organization and by a lecturer/coach from Windesheim.</p> <p>Further details can be found in the study guide of the course.</p>		
Planned learning activities and teaching methods	During the Water project, you will work in a team on a complex project in an organizational context. This means that you will be gaining work experience on a project concerning hydraulics or water management in an organization. During the period there will be an introduction to a topic, feedback sessions and discussions and peer interaction.		
Recommended or required reading and other learning resources / tools	Use of literature, computers, mobile phones, tablets (any devices using internet) and maybe programs needed for the project.		
Prerequisites and co-requisites	You are required to have two years of Bachelor's study experience in Civil Engineering or Environmental Engineering (or a similar course) and English-language skills at B2 level.		
Level	Bachelor		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	Type of assessment	Grade weighting	Criteria
	Assignments	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Reginald Grendelman		
Mode of delivery	Coaching and feedback by a coach and assistance and guidance from peer students.		

Course summary			
VOE Code: BT.AWM.V19		ECTS credits: 3	
Level: Bachelor's degree (full-time)			
Course Title	Advanced Water management: River modelling		
Type	Compulsory		
Learning competences			
Learning outcomes	Computational modelling is becoming a core part in solving water management issues. After finishing this course you should be able to understand and apply the basic		

	principles regarding soil water and surface water in the setting up of a hydraulic computational model. The student will be <ul style="list-style-type: none"> • Implementing knowledge on soil water in a basin runoff model • Implementing knowledge on river flows in a 1D model • Analysing river hydrographs to determine river discharges and water levels 		
Course content	The water cycle determines to a great extent the possibilities for live on this planet. Transport and conveyance of water in various phases and stages enables for instance plant growth or river flow and influences our climate. Thorough understanding of the physical principles of hydrology - the study of the occurrence, movement, and physical properties of non-oceanic water on and below the earth's surface – is necessary for sustainable water management and related innovations to ensure our livelihoods. This course builds on the water-related courses you have followed earlier during your bachelor study “Civil Engineering”. In other courses the water balance, atmospheric water and groundwater were discussed. This course deals with the topics of soil water and surface water and you will be working with this knowledge in a computational 1D flow model.		
Planned learning activities and teaching methods	The weekly courses will be built up by an introductory part (theory and concepts) and a practical part in which students will be building an computational river model.		
Recommended or required reading and other learning resources / tools	<ul style="list-style-type: none"> • Selected computational modelling software • Own laptop 		
Prerequisites and co-requisites			
Level	Bachelor		
Grading scale	1 up to 10, 1 dec.		
Assessment methods and criteria	Type of assessment	Grade weighting	Criteria
	Modelling Exercise	1	Higher or equal to 5.5
Language of Instruction	English		
Name of lecturer	For information about the lecturers you can contact Reginald Grendelman		
Mode of delivery	Teaching and coaching		