



**UNIVERSITY**  
.....  
**OF APPLIED SCIENCES**

# Water Management

Aquatic Ecotechnology

Delta Management

Information for exchange student

2020-2021

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## General information for exchange students in the programme Water Management

### Minors and courses in English

The Bachelor study of Water Management is a four year, applied bachelor study programme. Exchange students can apply for one of the minor programs Research and Innovation or choose from a number of courses from the study programme with a total study load of 30 ECTS per semester.

Semesters 3, 5 and 7 are from 1<sup>st</sup> of September up to end of January (fall semester).

Semesters 2, 4 and 6 from 1<sup>st</sup> of February to end of June (spring semester).

### Application deadline minors

For the minor Research and Innovation an application must be handed in before May 1<sup>st</sup> (fall semester) or November 1<sup>st</sup> (spring semester); a limited number of places is available. Students have to submit a motivation letter and may be asked to do a Skype interview in order to be selected to join the Research Minor.

### Research Minors of 30 ECTS

We offer a Research Minor called “Fit for the Future” of 30 ECTS.

The different applied research groups of HZ offer different content:

- Building with Nature
- Water Safety & Spatial Planning
- Water Technology
- Aquaculture
- Water and Energy
- Asset Management

Further information on these specific programmes can be found in the tables on the next pages.

### English courses offered in 2 specializations.

The Bachelor of Water Management is one study programme with two different specializations, Aquatic Ecotechnology and Delta Management.

If you choose for different courses from both specializations we advise to choose all courses from the same semester of one academic year and one specialization, to prevent that courses overlap in the schedule. If you choose a mixture of two or even more semesters the lectures might be scheduled at the same time. It is most of the time not possible to attend all lectures. Therefore, we advise you to have extra courses in your Learning Agreement, which have been approved by your home institute, so that you have a ‘back up’ plan if courses do overlap in the schedule.

More detailed info on the study programme can also be found [here](#)

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**Specialization Aquatic Ecotechnology: Courses offered**

Semester	Course code	Course name	ECTS
3		Water Quality	12.5
		Water Cycling	12.5
4		Hydrology	12.5
		Eco engineering	12.5
7		Delta Challenge (big multi-disciplinary project)*	10
		Aquaculture	10
		Ecological Risk Assessment	10
		Water Technology Advanced	10
		Urban Water and Asset Management	10

Detailed course descriptions for as from page 10.

**Specialization Delta Management. Course offer.**

Semester	Course code	Course name	ECTS
3		Vision development (applied in European Deltas)	15
		Adaptive Planning for Climate Change (applied in European Deltas)	15
4		Integrated Risk Assessment for delta areas (applied in Mississippi Delta)	15
		Strategic planning for resilient deltas (applied in Mississippi delta)	15
7		System analysis & Planning for circularity (applied in Mekong Delta)	20
		Coastal Challenge	10

Detailed course descriptions as from page 23.

### Optional courses especially for international students

CU34638 Dutch Culture & Languages 2 ECTS

This course will be offered at the Vlissingen Campus.

VCC3842 Peerproject 1.25 ECTS

The Peer project is to improve contact between Dutch and foreign students at HZ. Dutch students help foreign students to settle in Vlissingen so that they have a good time in Holland and at HZ. Experiences and friendship gathered by this project will hopefully enable Dutch students to study in other countries as well.

On the next pages you can find more detailed information on the courses.

## Research minors offered by the Delta Academy

<b>Name minor</b>	<b>Building with Nature– Research &amp; Innovation</b>	<b>Possible notification diploma</b>			Yes
<b>Contact person</b>	Wietse van de Lageweg	<b>Number of ECTS</b>	30	<b>Work placement</b>	No
<b>Contact moments/weeks</b>	Two to three contact moments per week. Duration and nature vary				
<b>Remarks</b>					
<b>Short description of the content</b>					
<p>Current social developments and changes raise new questions and challenges. These challenges are often very complex. A professional bachelor student has to be able to investigate problems and act in a social responsible way. In this specializing minor of HZ you get the role of researcher and learn to deal with these complex challenges. You will learn how to do applied research. You do that partly by attending classes but mainly by carrying out research yourself for an organization. The research is offered by one of the research groups of HZ University of Applied Sciences. In addition, every bachelor student is expected to deal with these questions and challenges with an more integral approach and often in a multi-disciplinary team. You will have to cross the boundaries of your own discipline and act in disciplines where others are specialized in. The job market therefore requires not only specialists but also generalists with a critical eye and a proactive attitude. Your research can be part of a complex, comprehensive, multidisciplinary, multi-year study. It may be that you carry out research with students from other disciplines. You will be guided in your research by an experienced researcher and a process supervisor.</p> <p><b>Building with Nature</b></p> <p>As a result of changes in societal demand and technical developments, water management and engineering are moving from hard traditional structures like dikes and dams, to designs in which natural structures and processes are incorporated. One of the underlying factors in this development is the increasing awareness of the impacts of climate change and its effect on water levels and extreme events. Furthermore, water managers are expected to create more safety, opportunities for recreation, and other benefits, with increasingly smaller budgets. This requires infrastructure that combines multiple functions. In our research group we work on application of the Building with Nature concept. ‘Building with Nature’ focusses on solutions that use abiotic forces of nature (e.g. wind and currents that transport sand) and ecosystem services delivered by organisms (e.g. reefs and vegetation that catch and stabilize sand). The research group also focusses on Building for Nature: creating additional nature values in and on mono functional structures such as dikes.</p>					
<b>Relation to your later profession</b>					
In this minor you learn to setup, preform and present applied research. For more information read the short description of the content above.					
<b>Practical information</b>					
This minor always starts at the beginning of the semester (around September 1 or February 1). For the minor Research and Innovation application must be done before April 1 (fall semester) or October 1 (spring semester), there are a limited number of places available. Students have to submit a motivation letter and may be asked to do a skype interview in order to be selected to join the research minor.					
<b>Reactions from former students</b>					

<b>Name minor</b>	<b>Water Safety &amp; Spatial Planning – Research &amp; Innovation</b>	<b>Possible notification diploma</b>			Yes
<b>Contact person</b>	Jean Marie Buijs	<b>Number of ECTS</b>	30	<b>Work placement</b>	No
<b>Contact moments/weeks</b>	Two to three contact moments per week. Duration and nature vary				
<b>Remarks</b>					
<b>Short description of the content</b>					
<p>Current social developments and changes raise new questions and challenges. These challenges are often very complex. A professional bachelor student has to be able to investigate problems and act in a social responsible way. In this specializing minor of HZ you get the role of researcher and learn to deal with these complex challenges. You will learn how to do applied research. You do that partly by attending classes but mainly by carrying out research yourself for an organization. The research is offered by one of the research groups of HZ University of Applied Sciences. In addition, every bachelor student is expected to deal with these questions and challenges with an more integral approach and often in a multi-disciplinary team. You will have to cross the boundaries of your own discipline and act in disciplines where others are specialized in. The job market therefore requires not only specialists but also generalists with a critical eye and a proactive attitude. Your research can be part of a complex, comprehensive, multidisciplinary, multi-year study. It may be that you carry out research with students from other disciplines. You will be guided in your research by an experienced researcher and a process supervisor.</p> <p><b>Water Safety &amp; Spatial Planning</b></p> <p>The research group Safety and Spatial Planning of the Delta Academy has its focus on the development of Resilient Deltas. Resilience is the capacity of a social system ( e.g. an organization, city, or society) to proactively adapt to and recover from disturbances that are perceived within the system to fail outside the range of normal and expected disturbances. In the resilience programme the research group focuses on four levers which contribute to the resilience of communities in Deltas: Social capital, land use, vital infrastructure and economic drivers. The aim of the research is to develop instruments to reduce vulnerability of the Deltas and to improve adaptability of the Delta communities. The focus of these instruments is not only to enhance the ability of communities to cope with crises situations, but also to contribute to the vitality of Delta communities in everyday life.</p>					
<b>Relation to your later profession</b>					
In this minor you learn to setup, preform and present applied research. For more information read the short description of the content above.					
<b>Practical information</b>					
This minor always starts at the beginning of the semester (around September 1 or February 1). For the minor Research and Innovation application must be done before April 1 (fall semester) or October 1 (spring semester), there are a limited number of places available. Students have to submit a motivation letter and may be asked to do a skype interview in order to be selected to join the research minor.					
<b>Reactions from former students</b>					

<b>Name minor</b>	<b>Water Technology– Research &amp; Innovation</b>	<b>Possible notification diploma</b>			Yes
<b>Contact person</b>	Hans Cappon	<b>Number of ECTS</b>	30	<b>Work placement</b>	No
<b>Contact moments/weeks</b>	Two to three contact moments per week. Duration and nature vary				
<b>Remarks</b>					
<b>Short description of the content</b>					
<p>Current social developments and changes raise new questions and challenges. These challenges are often very complex. A professional bachelor student has to be able to investigate problems and act in a social responsible way. In this specializing minor of HZ you get the role of researcher and learn to deal with these complex challenges. You will learn how to do applied research. You do that partly by attending classes but mainly by carrying out research yourself for an organization. The research is offered by one of the research groups of HZ University of Applied Sciences. In addition, every bachelor student is expected to deal with these questions and challenges with an more integral approach and often in a multi-disciplinary team. You will have to cross the boundaries of your own discipline and act in disciplines where others are specialized in. The job market therefore requires not only specialists but also generalists with a critical eye and a proactive attitude. Your research can be part of a complex, comprehensive, multidisciplinary, multi-year study. It may be that you carry out research with students from other disciplines. You will be guided in your research by an experienced researcher and a process supervisor.</p> <p><b>Water Technology</b></p> <p>The research group water technology aims at development of applicable technologies for sustainable water (re)use in a combined fresh/saline delta. Current research three fields can be distinguished. One is recycling of surface and process water for industry, agriculture and aquaculture. Examples are reuse of cooling tower water, rainwater runoff and industrial wastewater. Another field is focused on recovery of valuable content in waste water. Examples are acoustic particle filtering and nutrient recovery. The last field is monitoring and control. Examples are monitoring and control of water filtration systems and control of biofouling in water systems with ultrasound.</p>					
<b>Relation to your later profession</b>					
In this minor you learn to setup, preform and present applied research. For more information read the short description of the content above.					
<b>Practical information</b>					
This minor always starts at the beginning of the semester (around September 1 or February 1). For the minor Research and Innovation application must be done before April 1 (fall semester) or October 1 (spring semester), there are a limited number of places available. Students have to submit a motivation letter and may be asked to do a skype interview in order to be selected to join the research minor.					
<b>Reactions from former students</b>					



<b>Name minor</b>	<b>Aquaculture– Research &amp; Innovation</b>	<b>Possible notification diploma</b>			Yes
<b>Contact person</b>	Jasper van Houcke	<b>Number of ECTS</b>	30	<b>Work placement</b>	No
<b>Contact moments/weeks</b>	Two to three contact moments per week. Duration and nature vary				
<b>Remarks</b>					
<b>Short description of the content</b>					
<p>Current social developments and changes raise new questions and challenges. These challenges are often very complex. A professional bachelor student has to be able to investigate problems and act in a social responsible way. In this specializing minor of HZ you get the role of researcher and learn to deal with these complex challenges. You will learn how to do applied research. You do that partly by attending classes but mainly by carrying out research yourself for an organization. The research is offered by one of the research groups of HZ University of Applied Sciences. In addition, every bachelor student is expected to deal with these questions and challenges with an more integral approach and often in a multi-disciplinary team. You will have to cross the boundaries of your own discipline and act in disciplines where others are specialized in. The job market therefore requires not only specialists but also generalists with a critical eye and a proactive attitude. Your research can be part of a complex, comprehensive, multidisciplinary, multi-year study. It may be that you carry out research with students from other disciplines. You will be guided in your research by an experienced researcher and a process supervisor.</p> <p><b>Aquaculture</b></p> <p>The research group Aquaculture in Delta Areas of the Delta Academy has its focus on sustainable saline aquaculture in and outside the region Zeeland. Aquaculture is the controlled production of saline crops, algae, seaweed, ragworms, shellfish and fish. Cultivation of these organisms can take place in several (intensive and extensive) ways. The research group Aquaculture has built up an extensive network of Small and Medium Enterprises (SME), consultancies and knowledge institutes involved in aquaculture in and outside the Netherlands. The main research topics are; Integrated Multi Trophic Aquaculture (IMTA), new species to the Dutch situation (such as lobster and abalone), improvement of cultivation environments, groundwater suitability, quality aspects in shellfish cultivation and algae cultivation. The research group Aquaculture uses a full-fledged research facility SEA Lab, in which many applied research (experiments) are carried out.</p>					
<b>Relation to your later profession</b>					
In this minor you learn to setup, preform and present applied research. For more information read the short description of the content above.					
<b>Practical information</b>					
This minor always starts at the beginning of the semester (around September 1 or February 1). For the minor Research and Innovation application must be done before April 1 (fall semester) or October 1 (spring semester), there are a limited number of places available. Students have to submit a motivation letter and may be asked to do a skype interview in order to be selected to join the research minor.					
<b>Reactions from former students</b>					

## Courses offered within the Water Management programme – Aquatic Ecotechnology

### Semester 3

#### Module 5 (AET): Ecological Water Quality

CU20590v1	<b>Title:</b> Concepts of ecological water quality <b>Contact hours:</b> 44				Number of ECs: 5.0	Mandatory	Teaching language: English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> You will deal with an important water issue: water quality. In this module you also learn how to monitor, analyze causes and effects of changes in water quality. And what the ecological principles (interaction between chemistry and biology) are behind it and how these are related to different water systems like rivers, lakes, estuaries and seas. In this course 'concepts', you also learn what policy tools, like European Water Framework Directive, are used to assess the quality of water bodies and the appropriate measures to be taken.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Exam (I)	1.1 (table 1) Ecological water quality	100%	5.5	Wk 43	Wk 44	Wk 45	Wk 47

CU20591v1	Title: Applied ecological water quality Contact hours: 44				Number of ECs: 5.0	Mandatory	Teaching language: Dutch / English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: You will deal with an important water issue: water quality. In this course 'applied' you will apply the knowledge and skills from the other two courses 'concepts' and 'in practice' in specific water systems. Meaning that you will prepare and carry out ecological water quality measurements in the field. Identify the organisms found and analyze physical, chemical and biological data. And based on prevailing policy instruments indicate the quality. Finally you are asked to evaluate what appropriate measures can be taken to improve the ecological water quality.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1	x	x		Project (I)	2.1, 3.1, 4.1, 8.1, 8.2, 8.4 (table 1)	100%	5.5	Wk 43	Wk 44	Wk 45	Wk 47

CU20592v1	Title: Ecological water quality in practice Contact hours: 22				Number of ECs: 2.5	Mandatory	Teaching language: Dutch / English				
Conditions of participation: <i>Agreement to laboratory instructions</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: You will deal with an important water issue: water quality. In this course 'in practice', you will learn specific tools to assess the water quality based on the presence of organisms and pigments. Apart from that you learn in an experimental setting how the role of specific organisms like filter feeders, in the food chain can be determined based on the processes measured. And you will work with a computer model, used in water management practice, to analyze causes and feasible measures to improve water quality in lakes.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Practicals (I)	6.1 (table 1)	100%	5.5	Wk 43	Wk 44	Wk 45	Wk 47

Module 6 (AET): Water Treatment

CU20593v1	Title: Concepts of water pollution and treatment Contact hours: 55				Number of ECs: 5.0	Mandatory	Teaching language: English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: In this module, you will investigate the possibilities of combatting poor water quality with various treatment techniques. During this module you will learn about the water system and how to monitor its status. You will use calculations to determine the effect of different discharges on a water system and how you can limit these effects through water treatment. Treatment types that will be investigated include biological, chemical and physical.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Exam (I)	1.1, 1.2, 1.3 (table 1)	100%	5.5	Wk 2	Wk 3	Wk 15	Wk 17

CU20595v1	Title: Applications of water pollution and treatment Contact hours: 50				Number of ECs: 5.0	Mandatory	Teaching language: English				
Conditions of participation: <i>Abiding by laboratory instructions and behaving safely in the lab</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: In the 'Applied' project, you will work on a problem for a local company to help them to try and solve a water quality issue that they have, by producing a design for a treatment technique. You will report your results and final design back to the company at the end of the project.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1	x	x		Project (I)	1.2, 1.3, 2.1, 4.1, 6.1, 7.1, 8.1, 8.2, (table 1)	100%	5.5	Wk 2	Wk 3	Wk 4	Wk 6

CU20594v1	Title: Water pollution and treatment in practice Contact hours: 22				Number of ECs: 2.5	Mandatory	Teaching language: English				
<b>Conditions of participation:</b> <i>Abiding by laboratory instructions and behaving safely in the lab</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> During the 'In practice' lab sessions you will learn how to perform water quality analysis of certain essential water quality parameters in the world of water treatment. Besides the lab skills you learn to use balances to analyze a water system. Water and mass balances will be applied to analyze both natural water systems and a waste water treatment system. You also learn to use some analysis tools in GIS.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Practicals (I)	6.1, (table 1)	100%	5.5	Wk 2	Wk 3	Wk 4	Wk 6

**SEMESTER 4**

**Module 7 (AET): Hydrology**

<b>CU20611v3</b>	<b>Title:</b> Concepts of hydrology <b>Contact hours:</b> 38				<b>Number of ECs:</b> 5.0	<b>Mandatory</b>	<b>Teaching language:</b> Dutch / English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> This course is explaining the theory about rural water requirements in polders; water in the saturated and unsaturated zone, managing the water levels, small hydraulic structures; wetlands.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1			x	Exam (I)	1.1 (table 1) Open channel hydraulics	20%	5.5	Wk 7	Wk 9	Wk 15	Wk 17
2		x		Exam (I)	1.1 (table 1) Polder hydrology	70%	5.5	Wk 13	Wk 14	Wk 15	Wk 17
3			x	Assignmnt (G)	1.1 (table 1) Polder hydraulics	10%	5.5	Wk 9	Wk 11	Wk 15	Wk 17

<b>CU20616v1</b>	<b>Title:</b> Applied hydrology <b>Contact hours:</b> 20				<b>Number of ECs:</b> 5.0	<b>Mandatory</b>	<b>Teaching language:</b> Dutch / English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> In this course the rural water problems of water excesses and fresh water shortages in the delta are explored. The course focusses on designing water solutions for stakeholders in agriculture.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1	x	x		Project (I)	1.2, 1.3, 2.2, 8.3, 9.1, 9.3 (table 1)	100%	5.5	Wk 14	Wk 14	Wk 15	Wk 17

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CU20615v1	Title: Hydrology in practice Contact hours: 22				Number of ECs: 2.5	Mandatory	Teaching language: Dutch / English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: In this course you will learn how to work with two software systems; a system to model hydraulic water systems 'Sobek' and a GIS system 'ARC GIS'.											
Test no.	Form			Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O	Form							
1		x		Practicals (I)	2.2, 6.1 (table 1)	100%	5.5	Wk 13	Wk 14	Wk 15	Wk 17

Module 8 (AET): Eco Engineering

<b>CU20617v3</b>		<b>Title:</b> Concepts of Eco Engineering <b>Contact hours:</b> 38						<b>Number of ECs:</b> 5.0	<b>Mandatory</b>	<b>Teaching language:</b> Dutch / English		
<b>Conditions of participation:</b> <i>not applicable</i>												
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>												
<b>Brief description of the course content:</b> In <i>concepts</i> you will get insight in coastal protection trough measures that are based on natural materials and processes, that also increase the landscape and natural values of the area. The focus is on the interactions and feedback loops between hydrology (waves, tides, currents), morphology (sediment transport, erosion, sedimentation) & ecology (adaptations of species to harsh environments, biodiversity, ecosystem engineers as oysters and mussels).												
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O	Form								
1			x	Exam (I)	1.1 (table 1) Ethics	20%	5.5	Wk 21	Wk 22	Wk 26	Wk 28	
2		x		Exam (I)	1.1 (table 1) Eco engineering	80%	5.5	Wk 24	Wk 25	Wk 26	Wk 28	

<b>CU20620v3</b>		<b>Title:</b> Applied Eco Engineering <b>Contact hours:</b> 20						<b>Number of ECs:</b> 5.0	<b>Mandatory</b>	<b>Teaching language:</b> Dutch / English		
<b>Conditions of participation:</b> <i>not applicable</i>												
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>												
<b>Brief description of the course content:</b> In <i>applied</i> you will come up with an own experimental design in a research setting to tackle coastal safety issues and to increase biodiversity in the Dutch delta. You will work in small groups to analyze maps and data and come up with new ideas for further research.												
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O	Form								
1	x	x		Project (G)	2.1, 6.1, 7.3, 8.2, 9.2 (table 1)	20%	5.5	Wk 20-25	Wk 20-22	Wk 23	Wk 28	
2		x		Project (G)	2.1, 6.1, 7.1, 7.3, 8.2, 8.3, 9.2 (table 1)	80%	5.5	Wk 20-25	Wk 20-25	Wk 26	Wk 28	

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CU20618v1	Title: Eco Engineering in practice Contact hours: 22				Number of ECs: 2.5	Mandatory	Teaching language: Dutch / English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: You will <i>practice</i> with several eco-engineering tools like the Coastal Hazard Wheel, building with eco-engineers and the hypsometric curve. You will apply this in several research cases.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Practicals (I)	2.1, 6.1 (table 1) Weekly assignments	100%	5.5	Wk 16 - 24	Wk 18 – 24	Wk 26	Wk 28

**SEMESTER 7 (AET)**

CU20700v1	<b>Title:</b> Advanced Water Technology <b>Contact hours:</b> 90				<b>Number of ECs:</b> 10.0	<b>Elective</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b>											
<ul style="list-style-type: none"> <li>• <i>The course will only be given if at least 8 students subscribe for this elective course</i></li> <li>• <i>Propedeutic exam passed</i></li> <li>• <i>At least 120 EC obtained (including provisional credits)</i></li> <li>• <i>Internship OR Minor passed</i></li> <li>• <i>Applicants should have completed AET course: Water Pollution and Treatment (CU20593) or CE: Sanitary Engineering (CU23880)</i></li> </ul>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> This course will build on the students' existing basic knowledge of wastewater treatment theory and technologies used. During this course the student will learn to determine what water quality measurements are needed for a specific water source and desired water product and they will be able to set up a water treatment scheme to treat the water from quality A (source) to quality B (product). Once they have set up a theoretical treatment scheme, they will also learn how to calculate the water balance, water recovery and how to monitor the system on main performance parameters, including statistical analysis and optimisation.											
Test no.	Form			Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O								Form
1		x		Concepts of Advanced Water Technology: Portfolio	1.1, 6.1 (Table 1)	25%	5.5	Wk 38 - 43	Wk 38 - 43	Wk 45 - 46	Wk 45 - 46
2		x		Applications of Advanced Water Technology: Portfolio	1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 6.1, 7.1 (Table 1)	50%	5.5	Wk 2	Wk 3	Wk 4	Wk 6
3		x		Advanced Water Technology in Practice: Portfolio	1.1 (Table 1)	25%	5.5	Wk 49	Wk 50	Wk 2	Wk 4

<b>CU79044v1</b>	<b>Title:</b> Ecological Risk Assessment <b>Contact hours:</b> 35 contact hours ecotoxicology theory, 15 contact hours for practicals ecotoxicology, 20 contact hours Environmental Impact Assessment.			<b>Number of ECs:</b> <b>10.0</b>	<b>Elective</b>	<b>Teaching language: ENG</b>					
<b>Conditions of participation:</b>											
<ul style="list-style-type: none"> <li>• <i>The course will only be given if at least 8 students subscribe for this elective course</i></li> <li>• <i>Propedeutic exam passed</i></li> <li>• <i>At least 120 EC obtained (including provisional credits)</i></li> <li>• <i>Internship</i></li> <li>• <i>OR Minor passed</i></li> </ul>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> During the course, you will make an ecological risk assessment on a project that is being carried out or planned and can have an environmental impact. Examples of these projects are dumping of polluted dredging sludge or the use of LD steel slag as substrate for dikes. For this, practical laboratory skills and theoretical knowledge about ecotoxicology is necessary in order to analyse and predict adverse effects of pollution on the aquatic environment. Effects will be studied at different levels, in particular from the level of molecules to the level of ecosystems. In order to come up with a well-founded conclusion on ecotoxicological effects, you need knowledge on the behaviour of chemical substances in the abiotic and biotic environment. The biotic environment can be studied at the level of the cell, tissue, organism, population, community or ecosystem. You will learn what guiding principles are in environmental policy on different levels (UN, EU, national, regional) and what legal policy instruments are, which are used in practise. For the legal instrument environmental impact assessment (EIA) you will go through the whole procedure of an impact assessment, in different roles by means of a case study. In such a way you learn the pro's and con's of EIA.											
Test no.	Form			Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O								
				<b>Form</b>							
1		X		mid-term exam: Ecotoxicology (I)	1.1, 1.3, 5.1, 7.2 (table 1)	30%	5.5	Wk 43	Wk 44	Wk 45	Wk 47
2		X		Practical: Ecotoxicology (G)	2.1, 3.1, 4.1 , 6.1, 7.3 (table 1)	25%	5.5	Wk 3	Wk 5	Wk 15	Wk 17
3		x		Report: Environmental Impact Assessment (G)	2.1, 2.2, 3.1, 6.1, 7.2, 8.2, 9.2 (table 1)	30%	5.5	Wk 3	Wk 5	Wk 15	Wk 17
4				Literature review (I)	1.1, 7.1, 7.2 (table 1)	15%	5.5	Wk 42	Wk 44	Wk 4	Wk 6

<b>CU79043v1</b>		<b>Title:</b> Aquaculture <b>Contact hours:</b> 88				<b>Number of ECs:</b> <b>10.0</b>	<b>Elective</b>	<b>Teaching language: English</b>			
<b>Conditions of participation:</b>											
<ul style="list-style-type: none"> <li>• <i>The course will only be given if at least 8 students subscribe for this elective course</i></li> <li>• <i>Propedeutic exam passed</i></li> <li>• <i>At least 120 EC obtained (including provisional credits)</i></li> <li>• <i>Internship OR Minor passed</i></li> </ul>											
<b>Special condition for awarding study points (tick-box test):</b>											
<ul style="list-style-type: none"> <li>• <i>Introductory case study (G): oral presentation about history, biology, cultivation practices, sustainability and pricing of a chosen aquaculture organism. Content: 1.1, 7.1, 7.2</i></li> <li>• <i>Excursions (I): participation mandatory</i></li> </ul>											
<b>Brief description of the course content:</b> This introductory course to aquaculture is an elective course, in which the focus primarily will be on the cultivation of saltwater organisms and the setup of an aquaculture business case. More and more shellfish and fish, crops like Salicornia, and also for instance ragworms are being cultivated under controlled circumstances. There is also a large sector still cultivating in natural areas, which brings its own challenges. The large amount of input from experts of the sector (guest lectures and excursions) in this course and the various case studies and current research mean you will get a good impression of all the different aspects of aquaculture, both in the Netherlands as well as globally. You will learn about the biology of cultured organisms, the technical aspects of culturing (reproduction), the cultivation systems, sustainability of aquaculture, legislation, animal welfare, health management and economic aspects. In addition you will get a taste for cost price calculations, how to make a financial business plan, and how to bring your chosen product to the market.											
Test no.	Form			Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O								Form
1		x		Final exam (I) Concepts of Aquaculture	1.1, 1.2, 7.2 (table 1)	25%	5.5	Wk 2	Wk 3	Wk 4	Wk 6
2		x		Business plan (G)	2.1, 2.2, 3.1, 7.3, 8.1, 8.2, 8.3, 9.5, 9.6 (table 1)	40%	5.5	Wk 2	Wk 3	Wk 4	Wk 6
3		x	x	Practical mini farm (I)	1.3, 2.2, 5.1, 8.2, 8.3 (table 1)	25%	5.5	Wk 48	Wk 49	Wk 3	Wk 5
4	x	x		Poster international – peer review (G)	1.1, 1.2, 1.3, 8.4 (table 1)	10%	5.5	Wk 50	Wk 51	Wk 3	Wk 5

CU79087V1	<b>Title: Urban Water Management</b> <b>Contact hours: 72</b>				<b>Number of ECs: 10.0</b>	<b>Elective</b>	<b>Teaching language: English</b>				
<b>Conditions of participation to the exam:</b>											
<ul style="list-style-type: none"> <li>• The course will only be given if there are sufficient applications for it.</li> <li>• Propedeutic exam passed</li> <li>• At least 120 EC obtained (including provisional credits)</li> <li>• Internship OR Minor passed</li> </ul>											
<b>Special condition for awarding study points (tick-box test): none</b>											
<b>Brief description of the course content:</b>											
<p>Sewer systems are critical infrastructures from technical, environmental and management viewpoints. The course takes advantage of this scenario to develop several cross-discipline and transferable skills. About 60% of the course focuses on sewer systems design, from the calculation of wastewater and rainwater input to the sizing of the ducts and the pumping stations. This requires applying the theory proactively and tailoring the solution to the particular case study, as the design cannot rely on comprehensive manuals such as the Eurocode.</p> <p>roper design, construction and functioning of sewer systems are crucial in order to avoid pollution of soil and water. The remaining 40% of the course deals with management and maintenance, which is complicated due to the infrastructure being underground and prone to deteriorating. You will learn how to apply Asset Management skills, from the underlying way of thinking to technical in-depth knowledge on how to recover aging infrastructures. The best Engineers have knowledge about all aspects of the complete life cycle of infrastructure.</p> <p>This course has been developed in cooperation with the asset management research group of HZ and external experts from the professional field.</p>											
Test no.	Form			Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work (< 10 working days after receiving grade)	Resit planned in week	Inspection of resits in week	
	V	W	O								Form
1		X		Portfolio sewer systems design	1.1, 2.1, 2.2, 3.1, 7.2, 8.1 (table 1)	30%	5.5	Wk 43	Wk 44	Wk 45	Wk 46
2		X		Portfolio asset management	1.1, 1.3, 4.1, 5.1, 8.2, 9.2 (table 1)	30%	5.5	Wk 2	Wk 3	Wk 4	Wk 6
3		X		Final exam	1.1, 1.3, 2.1, 2.2, 3.1, 4.1, 5.1 (table 1)	40%	5.5	Wk 2	Wk 3	Wk 4	Wk 6

CU79085V1	<b>Title: Integrated coastal challenge</b> <b>Contact hours: 100</b>				<b>Number of ECs: 10.0</b>	<b>Mandatory</b>	<b>Teaching language: English</b>				
<b>Conditions of participation to the exam:</b> <ul style="list-style-type: none"> <li>• Propedeutic exam passed</li> <li>• At least 120 EC obtained (including provisional credits)</li> <li>• Internship OR Minor passed</li> </ul>											
<b>Special condition for awarding study points (tick-box test):</b> <i>none</i>											
<b>Brief description of the course content:</b> In this course, you will develop abilities to work in a multidisciplinary environment. You will work in a group with colleagues from different study programs. The coastal challenge is based on the principles of ICZM which will be applied in a real-life case project. You will initiate and design the project as well as learn and apply tools for communication, collaboration, management and innovation.											
Test no.	Form			Competence/subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work (< 10 working days after receiving grade)	Resit planned in week	Inspection of resits in week	
	V	W	O								
1	X		X	Professional development (individual)	8; 9 (table 3)	40%	5.5	Wk 3	Wk 3	Wk 4	Wk 6
2		X	X	Final product(s) (group)	1; 2; 3; 7.1; 8 (table 3)	40%	5.5	Wk 1	Wk 2	Wk 3	Wk 4
3	X		X	Presentation (group)	1; 8; 9 (table 3)	20%	5.5	Wk 2	Wk 3	Wk 4	Wk 6

## Courses offered within Water Management programme – Delta Management

### Module 5 (DM): Vision Development

CU79025v1	Title: Vision development theory Contact hours: 26				Number of ECs: 3.0	Mandatory	Teaching language: English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: This course covers theories about vision development. You will learn how to formulate a vision by using scenarios based on different uncertainties and driving forces. Furthermore you learn about the management of these processes (embedded within the Environmental and Development Act), stakeholder participation and communication with different target groups.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Exam (I)	1.1, 1.2, 2.2, 8.4 (table 2)	100%	5.5	Wk 42	Wk 43	Wk 44	Wk 46

CU79026v1	Title: Research methodology I Contact hours: 22				Number of ECs: 2.5	Mandatory	Teaching language: English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>not applicable</i>											
Brief description of the course content: This course covers the first steps of the research cycle till the research proposal. Research cycle; 1] Basics (background information, problem statement, objective and research questions, planning), 2] Data collection methods, 3] Theoretic Framework. You will conduct a research proposal by assignments (practical's) which you have to hand in a portfolio. The research proposal will be assessed by an assessment form.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Portfolio(I)	6.1, 7.1, 7.2, 7.3 (table 2)	30%	5.5	Wk 42	Wk 43	Wk 44	Wk 46
2		x		Research proposal (I)	6.1, 7.1, 7.2, 7.3 (table 2)	70%	5.5	Wk 41	Wk 43	Wk 44	Wk 46

CU79027v1	<b>Title:</b> Statistics for Climate Change <b>Contact hours:</b> 9				<b>Number of ECs:</b> 1.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>for this course MS Excel is required</i>											
<b>Brief description of the course content:</b> In this course you will learn how to gather reliable data for statistical analysis, how to setup an applicable dataset in MS Excel and to conduct a statistical significant trendline graph out of these data, to apply in your (area) vision. Course will be assessed by a portfolio of assignments of each week and a computer assignment											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1			x	Portfolio (I)	6.1, 6.2 (table 2)	30%	5.5	Wk 41	Wk 43	Wk 44	Wk 46
2			x	Computer assignment (I)	6.1, 6.2 (table 2)	70%	5.5	Wk 41	Wk 43	Wk 44	Wk 46

CU79028v1	<b>Title:</b> GIS-advanced <b>Contact hours:</b> 18				<b>Number of ECs:</b> 2.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>for this course (open source) Qgis is required</i>											
<b>Brief description of the course content:</b> In this course you will learn the basics of cartography, how to gather reliable data for mapping analysis, the basics of the open source GIS software Qgis, by realizing an GIS analysis of your project area. Course will be assessed by a portfolio of assignments of each week and a computer assignment.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1			x	Portfolio (I)	1.1, 8.1 (table 2)	30%	5.5	Wk 41	Wk 43	Wk 44	Wk 46
2			x	Computer assignment (I)	1.1, 8.1 (table 2)	70%	5.5	Wk 41	Wk 43	Wk 44	Wk 46

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CU79029v1	<b>Title:</b> Project vision for Climate Change <b>Contact hours:</b> 36				Number of ECs: 4.0	Mandatory	Teaching language: English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>participation in stress test (SG) ; participation in EU project week</i>											
<b>Brief description of the course content:</b> In this project you will develop a vision for an European flood prone region. This vision will be based on area analysis, desk research and scenarios. The vision will be displayed in a rapport, a group product, and underpinned by the products of the courses 'Research methodology I', 'Statistics for Climate Change' and 'GIS-advanced' and knowledge of the course 'Vision development theory '. The summary of the vision will be presented in a poster as individual product, assessed by oral examination.											
Mandatory is the participation in climate stress test ( <i>a serious game</i> ) in the first week of the course and the participation in EU project week. The EU project week is a field trip/excursion to the project areas of module 5 and 6.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1	x		x	Poster (I)	1.1, 1.2, 2.2, 3.2, 6.1, 7.1, 8.1, 8.2, 8.3, 8.4, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6 (table 2)	50%	5.5	Wk 41	Wk 43	Wk 44	Wk 46
2		x		Report (G)	1.1, 1.2, 2.2, 3.2, 6.1, 7.1, 8.1, 8.2, 8.3, 8.4, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6 (table 2)	50%	5.5	Wk 41	Wk 43	Wk 44	Wk 46

**Module 6 (DM): Adaptive Planning for Climate Change**

<b>CU79030v1</b>	<b>Title:</b> Adaptive planning for climate change theory <b>Contact hours:</b> 26				<b>Number of ECs:</b> 3.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> This course covers theories for planning and management for adaptation and mitigation. This will be explained via the application in the Dutch Delta programme, taking into consideration the different socio-economic and cultural dimensions and the European context. This course prepares for the adaptive Climate Change Tender.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Exam (I)	1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 6.1, 7.1, 8.1, 8.2, 8.3, 8.4, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6 (table 2)	100%	5.5	Wk 2	Wk 3	Wk 4	Wk 6

<b>CU79031v1</b>	<b>Title:</b> Research methodology II <b>Contact hours:</b> 18				<b>Number of ECs:</b> 2.5	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> This course covers the steps of the research cycle from the research proposal till writing your report. Research cyclus 1] Conceptual model -> Theoretic Framework-> Background info 2] References (Referring in MS Word) 3] basics ( evaluating problem statement - R. questions).You will conduct a report of your research by assignments (practical's) which you have to hand in a portfolio. The report will be assessed by an assessment form.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Portfolio (I)	6.1, 6.2, 6.3, 7.1, 7.2, 7.3, 8.2 (table 2)	30%	1	Wk 51	Wk 3	Wk 4	Wk 6
2		x		Research proposal (I)	6.1, 6.2, 6.3, 7.1, 7.2, 7.3, 8.2 (table 2)	70%	2	Wk 51	Wk 3	Wk 4	Wk 6

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CU79032v1	Title: Forecasting Statistics Contact hours: 9				Number of ECs: 1.0	Mandatory	Teaching language: English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>for this course MS Excel is required</i>											
Brief description of the course content: In this course you will learn how to conduct a statistically significant trendline graph in MS Excel out of your reliable data and to conduct a statistically significant forecasting ( <i>Two variable statistics based</i> ) out of these data, to apply in your adaptive area planning. Course will be assessed by a portfolio of assignments of each week and a computer assignment											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1			x	Portfolio (I)	6.1, 6.2 (table 2)	30%	5.5	Wk 51	Wk 3	Wk 4	Wk 6
2			x	Computer assignment (I)	6.1, 6.2 (table 2)	70%	5.5	Wk 51	Wk 3	Wk 4	Wk 6

CU79033v1	Title: GIS for climate change Contact hours: 18				Number of ECs: 2.0	Mandatory	Teaching language: English				
Conditions of participation: <i>not applicable</i>											
Special condition for awarding study points (tick-box test): <i>for this course (open source) Qgis is required</i>											
Brief description of the course content: In this GIS course you will learn the basics of how to use Geo databases, the advanced skills of the open source GIS software Qgis, by realizing an GIS analysis of your project area. Course will be assessed by a portfolio of assignments of each week and a computer assignment.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1			x	Portfolio (I)	1.1, 8.1 (table 2)	30%	5.5	Wk 51	Wk 3	Wk 4	Wk 6
2			x	Computer assignment (I)	1.1, 8.1 (table 2)	70%	5.5	Wk 51	Wk 3	Wk 4	Wk 6

CU79034v1	<b>Title:</b> The adaptive Climate Change Tender <b>Contact hours:</b> 36				<b>Number of ECs:</b> 4.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> In this project you will enrol as team (your group) for a 'climate adaptive area planning' tender. This tender will be based on area analysis, desk research and theories for planning and management for adaptation and mitigation. The vision will be displayed in a tender-report, a group product, which is underpinned by the products of the courses 'Research methodology II', 'Forecasting Statistics' and 'GIS for climate change' and knowledge of the course 'Adaptive planning for climate change theory'. The summary of the vision will be presented as a group product, assessed in by the other groups and the lecturers according to the EMVI (QPR) standards and individual oral examination.											
Test no.	Form			Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O								Form
1		x	x	Group project report (G)	1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 6.1, 7.1, 8.1, 8.2, 8.3, 8.4, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6 (table 2)	40%	5.5	Wk 51	Wk 3	Wk 4	Wk 6
2	x		x	Individual defence (I)	2.1, 2.2, 3.1, 8 (table 2)	60%	5.5	Wk 51	Wk 3	Wk 4	Wk 6

**Module 7 (DM) : Risk and Disaster Management**

<b>CU79035v1</b>	<b>Title:</b> Integrated risk assessment for delta areas – Spatial planning for deltaic risks <b>Contact hours:</b> 22				<b>Number of ECs:</b> 3.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> Within this module you will focus on environmental and spatial risks present in delta areas in general and the Mississippi delta, USA in particular. You will learn which environmental, ecological, spatial and risks are present and how they relate to each other and social-economic risks. You will learn theories about planning for risks and disaster management.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Written Exam (I)	1.1, 1.2 (table 2)	100%	5.5	Wk 13	Wk 14	Wk 15	Wk 17

<b>CU79036v1</b>	<b>Title:</b> Integrated risk assessment for delta areas – Delta Economics 2 <b>Contact hours:</b> 22				<b>Number of ECs:</b> 3.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> : Within this module you will learn about risk analysis of delta areas. We will focus on the case of the Mississippi delta in Louisiana, USA. You will learn which social and economic risks are present within deltas. You will learn theories about hazards and disaster management, design, actor- and stakeholder analysis, spatial and disaster economics.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Written Exam (I)	1.1, 1.2 (table 2)	100%	5.5	Wk 13	Wk 14	Wk 15	Wk 17

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CU79037v1	<b>Title:</b> Integrated risk assessment for delta areas – Project & process <b>Contact hours:</b> 22				<b>Number of ECs:</b> 3.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> Within this module you will learn about risk analysis of delta areas. We will focus on the case of the Mississippi delta in Louisiana, USA. You will learn which social and institutional risks are present within deltas. You will learn theories about process management and design, actor- and stakeholder analysis, governance.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Written Exam: Project & process (I)	1.1, 3.1 (table 2)	100%	5.5	Wk 13	Wk 14	Wk 15	Wk 17

CU79038v1	<b>Title:</b> Integrated risk assessment for the Mississippi Delta (project) <b>Contact hours:</b> 30				<b>Number of ECs:</b> 3.5	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> : In this project you will execute a risk assessment of a certain area in the Mississippi delta. You will apply theories of risk and disaster management, ecosystem services, spatial analysis, process management and design, actor- and stakeholder analysis, governance, spatial economics and disaster economics. You will apply this knowledge in a group project. In this project you also have to apply the statistics, GIS and visualisation skills you have obtained in previous modules and will further develop in this module . You will also reflect on your performance and development within a group and will be assessed on this.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Report (G)	1.1, 1.2, 3.2, 7.1, 7.2, 8.2 (table 2)	75%	5.5	Wk 12	Wk 13	Wk 15	Wk 17
2	x	x	x	Performance Assessment (I)	7.1, 7.2, 8.3, 8.4, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6 (table 2)	25%	5.5	Wk 5 - 13	Wk 14	Wk 15	Wk 17

**Module 8 (DM): Strategic Planning for Resilient Deltas**

<b>CU79039v1</b>	<b>Title:</b> Strategic planning for resilient deltas - Spatial planning for resilience <b>Contact hours:</b> 22				<b>Number of ECs:</b> 1.5	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> Within this course you will learn about strategic planning for resilient deltas. We will focus on the case of the Mississippi delta in Louisiana, USA. You will learn theories on broad concepts of spatial resilience, spatial planning in the US context and strategy development for resilient deltas.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Portfolio Spatial and Environmental Planning (I)	1.1, 1.2, 2.1, 2.2 (table 2)	100%	5.5	Wk 16 - 24	Wk 25	Wk 26	Wk 28

<b>CU79040v1</b>	<b>Title:</b> Strategic planning for resilient deltas – Economic Resilience <b>Contact hours:</b> 22				<b>Number of ECs:</b> 1.5	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> Within this course you will learn about strategic planning for resilient deltas. We will focus on the case of the Mississippi delta in Louisiana, USA. You will learn theories on concepts of resilience, strategy development, economic thinking and system thinking, cost estimation and social cost and benefit analysis.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
2		x		Portfolio (I)	1.1, 1.2, 2.1, 3.1, 3.2 (table 2)	100%	5.5	Wk 16 - 24	Wk 25	Wk 26	Wk 28

Since the curriculum and course descriptions are subject to alterations, no rights may be derived from this document.



CU79041v1	<b>Title:</b> Strategic planning for resilient deltas – Delta Management <b>Contact hours:</b> 22				<b>Number of ECs:</b> 1.5	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> Within this course you will learn about strategic planning for resilient deltas. We will focus on the case of the Mississippi delta in Louisiana, USA. You will learn theories on concepts of strategy development and project planning including stakeholder plan, maintenance plan and implementation plan.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
3		x		Portfolio (I)	3.1, 3.2, 3.3, 4.1, 5.1 (table 2)	100%	5.5	Wk 16 - 24	Wk 25	Wk 26	Wk 28

CU79042v1	<b>Title:</b> Strategic planning for resilient deltas - Project <b>Contact hours:</b> 66				<b>Number of ECs:</b> 8.0	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b> <i>not applicable</i>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> Within this module you will learn about strategic planning for resilient deltas. We will focus on a case within the Mississippi delta in Louisiana, USA. You will learn theories on resilience, spatial planning in the US context, strategy development, economic thinking and system thinking, cost estimation and social cost and benefit analysis. You will apply this knowledge within an individual project where you work on a proposal for a competition to make a New Orleans more resilient. You will apply your visualisation, GIS and statistics skills in the project. You will develop your presentation skills to give a pitch for the proposal.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Report Strategy Proposal (I)	2.2, 3.1, 3.2, 8.2, 8.4 (table 2)	75%	5.5	Wk 23	Wk 24	Wk 25	Wk 27
2	x			Pitch Strategy Proposal (I)	2.2, 8.1, 8.4 (table 2)	25%	5.5	Wk 23	Wk 24	Wk 25	Wk 27



**SEMESTER 7 (DM)**

<b>CU79047v1</b>	<b>Title:</b> Mekong area and system analysis <i>Contact hours: 22</i>				<b>Number of ECs:</b> 2.5	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b>											
<ul style="list-style-type: none"> <li>• <i>Propedeutic exam passed</i></li> <li>• <i>At least 120 EC obtained (including provisional credits)</i></li> <li>• <i>Internship OR Minor passed</i></li> </ul>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> In this course an integrated area and system analysis of an area in the Mekong Delta will be conducted. This analysis will be used to develop relevant scenarios.											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		X		Report Mekong area and system analysis (G)	1.1, 1.2, 1.3, 2.1, 7.3, 8.3, 8.4, 9.3, 9.5, 9.6 (table 2)	100%	5.5	Wk 39	Wk 41	Wk 42	Wk 44

<b>CU79048v1</b>	<b>Title:</b> Spatial planning for circularity <i>Contact hours: 22</i>				<b>Number of ECs:</b> 2.5	<b>Mandatory</b>	<b>Teaching language:</b> English				
<b>Conditions of participation:</b>											
<ul style="list-style-type: none"> <li>• <i>Propedeutic exam passed</i></li> <li>• <i>At least 120 EC obtained (including provisional credits)</i></li> <li>• <i>Internship OR Minor passed</i></li> </ul>											
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>											
<b>Brief description of the course content:</b> The course Spatial planning for circularity consists of three mayor components and has its focus on the Mekong delta:											
<ul style="list-style-type: none"> <li>• Planning with ecosystem services (mangroves, sedimentation, wetlands, etc.;</li> <li>• Planning for resilience: community resilience vs individual resilience, methods the Vietnamese society has developed for planning and managing the Mekong delta conditions and how to adapt the delta to the challenges of climate change;</li> <li>• Planning for circularity: flow charts, landscape as force for organising circular processes.</li> </ul>											
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week
	V	W	O	Form							
1		x		Exam (I)	1.1, 1.2, 1.3, 2.1, 3.3 (table 2)	100%	5.5	Wk 42	Wk 43	Wk 44	Wk 46

CU79049v1		Title: Delta Economics 3 Contact hours: 22				Number of ECs: 2.5		Mandatory		Teaching language: English		
<b>Conditions of participation:</b> <ul style="list-style-type: none"> <li>• Propedeutic exam passed</li> <li>• At least 120 EC obtained (including provisional credits)</li> <li>• Internship OR Minor passed</li> </ul>												
<b>Special condition for awarding study points (tick-box test):</b> not applicable												
<b>Brief description of the course content:</b> In the course Delta Economics 3, you learn to analyse the economic system of the Mekong delta, Vietnam. We will look at value chains, economic systems and forces, economic policies and global trends in economic development and thinking. Concepts of circular economy will be discussed. Latest debate on how to shift towards sustainable solutions for climate resilience and green/blue and circular development. Attention will be given as well to empowering the student on improving communication through basic notions of infographic and data representation, as well as slogan and branding concepts.												
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resit in week	
	V	W	O	form								
1		x		Exam (I)	1.2, 1.3, 2.2, 3.1, 6.1 (table 2)	100%	5.5	Wk 42	Wk 43	Wk 44	Wk 46	

CU79050v1		Title: Delta Management Contact hours: 22				Number of ECs: 2.5		Mandatory		Teaching language: English		
<b>Conditions of participation:</b> <ul style="list-style-type: none"> <li>• Propedeutic exam passed</li> <li>• At least 120 EC obtained (including provisional credits)</li> <li>• Internship OR Minor passed</li> </ul>												
<b>Special condition for awarding study points (tick-box test):</b> not applicable												
<b>Brief description of the course content:</b> As a Delta Manager you are able to create your environment! You work on different kinds of projects in delta regions all over the world, principally managing the development of delta areas. All these projects typically deal with a broad scope of contemporary questions. Like, how to prepare areas to cope with the effects of global climate change? How to realize future-proof strategies for living and working with water in a safe way? How to secure the availability of fresh water within the increasing salinization of delta regions? Or, how to create a balance between the spatial needs for different functions within a delta region? As a Delta Manager you give answers to these questions, by organizing all kinds of developments to create the sustainable delta areas of the future.												
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week	
	V	W	O	Form								
1		X		Exam (I)	1.1, 1.2, 1.3, 2.2, 3.2 (table 2)	100%	5.5	Wk 42	Wk 43	Wk 44	Wk 46	

CU79051v1				Title: <i>Mekong project</i> Contact hours: 95				Number of ECs: 10.0		Mandatory		Teaching language: English	
<b>Conditions of participation:</b> <ul style="list-style-type: none"> <li>• <i>Propedeutic exam passed</i></li> <li>• <i>At least 120 EC obtained (including provisional credits)</i></li> <li>• <i>Internship OR Minor passed</i></li> </ul>													
<b>Special condition for awarding study points (tick-box test):</b> <i>not applicable</i>													
<b>Brief description of the course content:</b> Based on the analysis of the Mekong Delta area in module 13 an integral spatial adaptive intervention will be developed that will contribute to climate resilience and circular economy. You will learn about using the landscape as driving force for flow optimisation, economic development in delta areas and you will learn how to manage the realization, maintenance and monitoring and evaluation of projects and programmes. You will also learn to specify feasibility, practicability and sustainability. Therefore you will look at social cost and benefits and funding options.													
Test no.	Form				Subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work	Resit planned in week	Inspection of resits in week		
	V	W	O	Form									
1		x		Project (I)	2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 5.1, 6.1, 7.1, 7.2, 8.4, 9.6 (table 2)	75%	5.5	Wk 51	Wk 2	Wk 4	Wk 6		
2	x	x		Presentation (I)	8.1, 8.2, 8.4, 9.2 (table 2)	25%	5.5	Wk 2	Wk 3	Wk 4	Wk 6		

CU79085V1	<b>Title: Integrated coastal challenge</b> <b>Contact hours: 100</b>				<b>Number of ECs: 10.0</b>	<b>Mandatory</b>	<b>Teaching language: English</b>				
<b>Conditions of participation to the exam:</b>											
<ul style="list-style-type: none"> <li>• Propedeutic exam passed</li> <li>• At least 120 EC obtained (including provisional credits)</li> <li>• Internship OR Minor passed</li> </ul>											
<b>Special condition for awarding study points (tick-box test):</b> <i>none</i>											
<b>Brief description of the course content:</b> In this course, you will develop abilities to work in a multidisciplinary environment. You will work in a group with colleagues from different study programs. The coastal challenge is based on the principles of ICZM which will be applied in a real-life case project. You will initiate and design the project as well as learn and apply tools for communication, collaboration, management and innovation.											
Test no.	Form			Competence/subtask	Weighting factor	Minimum score	Planned test in week	Inspection of work (< 10 working days after receiving grade)	Resit planned in week	Inspection of resits in week	
	V	W	O								
1	X		X	Professional development (individual)	8; 9 (table 3)	40%	5.5	Wk 3	Wk 3	Wk 4	Wk 6
2		X	X	Final product(s) (group)	1; 2; 3; 7.1; 8 (table 3)	40%	5.5	Wk 1	Wk 2	Wk 3	Wk 4
3	X		X	Presentation (group)	1; 8; 9 (table 3)	20%	5.5	Wk 2	Wk 3	Wk 4	Wk 6