Implementation Regulations CER HZ

Bachelor

Water Management

Full-time

CROHO 34074

2023-2024

UNIVERSITY OF APPLIED SCIENCES

INDEX

SUMMARY OF CHANGES

This is the Implementation Regulation 2023-2024 of the Water Management study programme (Croho 34074). The Water Management (WM) programme consists of three study tracks: Aquatic Eco Technology (AET), Delta Management (DM) and Spatial Planning and Design (SPD). The first six months WM students follow a joint programme and after that they choose one of these three study tracks. Spatial Planning and Design (SPD) is newly developed and started in 2020-2021, therefore this will be the first time students enter the fourth year and will graduate from this track. Just like the other study tracks the main phase of SPD consists of 180 EC.

With the introduction of Spatial Planning & Design the coverage matrix was redesigned over the past years. Now that SPD has entered the fourth year we are glad to announce that the entire Water Management study program is subject to the same national set of competences, subtasks and learning goals which was introduced in 2022 for the Domain Build Environment.

Except for the courses provided for training in the English language which have been adapted for the whole of HZ University of Applied Sciences, there are hardly changes made in the first three years of our study program. The new language courses caused only some minor changes in the first year since the EC's for the language courses stayed unchanged.

Year 4
The most significant changes are made in year 4. The course Coastal Challenge is for all Water management students and organized together with 'Civil Engineering' and (starting September 2023) with 'Architecture and Construction Engineering'. It's been optimized further based on evaluation with students and lecturers.
No major changes have been made to the courses of AET in semester 7. But semesters 7 of DM and SPD have seen important changes. With SPD entering the fourth year Delta Management and Spatial Planning and Design have made a complete overhaul of their courses. Instead of several small content courses of each 2,5EC, new blocks of 10EC are introduced where concepts and application lead to an area analysis and professional products specific to either the field of Delta Management or that of Spatial Planning and Design. The new set up is an opportunity for more integration, connection and efficiency within the programme. Graduation takes place during semester 8, for all 3 tracks. During graduation students carry out an individual project and deliver one or more professional products. Many hours of preparation have gone into a renewed Graduation format which is equal for all three tracks within Water Management. The graduation follows the set-up of "Bijdetijds Afstuderen" (conform HZ policy) and consists of two tests: a portfolio with proof of competence and skills and a criterion referenced interview. Students starting graduation in February 2024 are subject to this renewed graduation format. Students starting graduation in September 2023 follow the graduation program from 2022-2023.

Erata:

- Test deleted in course CU11025v1 Being a Water Manager, as the portfolio is integrated in the Criterium-referenced Interview Approved by the Program Committee on 23 November 2023. Approved by the Executive Board on 8 April 2024.

CHAPTER 1 GENERAL PROVISIONS

1.1 General

1.1.1 The HZ Course and Examination Regulations Bachelor programme full-time (hereinafter: CER HZ) cover the core of education within the HZ. This document provides a general overview of all programmes taught at the HZ. The CER HZ contains institution-specific provisions, i.e. those that apply to the entire HZ. A programme-specific CER HZ Implementation Regulation (hereinafter: Implementation Regulation) is determined for each programme by the executive board each year.

1.1.2 The HZ Course and Examination Regulations Bachelor programme full-time applies to this CER HZ Implementation Regulation Bachelor programme full-time.

1.1.3 The Dutch Higher Education and Research Act (WHW) as well as the CER HZ mention study credits. These Implementation Regulations, in addition to the term credits, also refer to ECTS (European Credits Transfer System), where 1 ECTS is equal to 1 credit and thus a study load of 28 hours (article 7.4 paragraph 1 of WHW).

1.2 Establishment and evaluation

1.2.1 The process of establishment and evaluation of this Implementation Regulation is described in article 1.3.4 CER HZ.

1.2.2 The programme committee evaluates the manner of implementation of the education and examination regulations and the Implementation Regulations in question every year (article 1.3.4 CER HZ).

CHAPTER 2 IMPLEMENTATION REGULATIONS HZ CER

2.1 Registration, prior educational requirements, and admission policy

2.1.1 Overview of additional prior educational requirements (article 2.3 and 2.3 HZ CER)

Students with a havo diploma				
Havo profiles:	**NT**	**NG**	**EM**	**CM**
Admissible:	*yes*	*yes*	*yes*	*no*

Students with a vwo diploma				
Vwo profiles:	**NT**	**NG**	**EM**	**CM**
Admissible:	*yes*	*yes*	*yes*	*no*

Students with a MBO level 4 diploma have right to access with all profiles.

2.1.1a Selection criteria Special programme (article 2.2b HZ CER)

Not applicable.

2.1.1b Enrolment 180 ECTS track for VWO students (article 2.2a CER HZ)

For AET and DM students a three year 180 EC programme is offered; for SPD there is no 180 EC programme, because the drawing and design skills that are required and trained throughout the four years of education are not part of the VWO curriculum and need the full practice and training hours to be developed.

Students that wish to follow the 180 EC programme start in the second year of the 240 EC programme and therefore make their choice for a study track (AET or DM) before they start their studies. A SKC (Study Keuze Check/ Study Choice Check) meeting is required before admission to the 180 EC program to check motivation, requirements and advice on the choice for one of the two study routes.

Anyone who wishes to be admitted to the 180 EC programme must comply with one of the following educational entry requirements:

a. a pre-university education diploma (Dutch: VWO), with the following additional requirements:

- AET: VWO students are admissible to the 180 EC programme only when their curriculum covers Mathematics A or B and English and at least two of the following subjects: Mathematics B, Chemistry, Physics, Biology, provided all are finished with a final mark of at least 5.5.
  DM: VWO students with NT/NG/EM profile are admissible to the 180 EC programme only if English is finished with a final mark of at least 5.5.
- International students are admissible to the 180 EC VWO program only if Nuffic has determined that their diploma is equal to the Dutch VWO diploma. The diploma must, at a minimum, contain the topics chemistry, biology, physics and mathematics to study AET 180 EC.

b. a diploma deemed by ministerial decree to be at least equivalent, or at least equivalent to it in the opinion of the Executive Board. The Executive Board may also decide to admit another person to a three-year Degree programme than the one meant in the first paragraph if, in the opinion of the Executive Board, they have shown they are suitable for that programme.

Furthermore, students will have to obtain at least 12,5 EC in module 5 in order to continue in the 180 EC program. If students have obtained less than 12,5 EC, they get the chance to switch to the 240 EC program and join in module 2.

2.1.2 ***Deficiency investigation*** (article 2.4 CER HZ)
Enrolment: there are no deficiencies for HAVO and VWO students.
For students with a MBO level 4 diploma there is special attention for their motivation and guidance as part of the SKC (Studie Keuze Check).

2.1.3 ***Additional requirements*** (article 2.5 CER HZ)
Not applicable.

2.2 Programme and education structure

2.2.1 ***Programme profile*** (article 3.2 CER HZ)

The Water Management program is a broad and international study program with three study tracks: Aquatic Eco Technology, Delta Management and Spatial Planning & Design. It is practically orientated, which means that students work on various real-life cases during their studies, supported by lectures and practical assignments. Subjects and cases are being offered on a regional, national and international scale. Furthermore, education in the program is closely related to applied research. In various courses, research groups involve students in performing applied research. After finishing the Water Management program students have the knowledge and expertise to tackle a wide range of water-related problems in a critical, innovative and sustainable way. The international orientation of the study program means that the practical and theoretical skills students have gained can be applied anywhere in the world.

Year one, Semester one

During the first semester students are introduced to Deltas and their challenges: how they are formed, what makes them unique, how they are affected by climate change and why they are important both socially and ecologically. Students work on individual assignments as well as in teams and develop skills in research, presentation, communication and English. Through courses, practical assignments and field trips students gain information on the differences between the study tracks. Before the start of the second semester students choose to specialize in either Aquatic Eco Technology or Delta Management or Spatial Planning & Design.

Aquatic Eco Technology (AET)

In the AET program students focus on problem solving in the use of water systems and water chains. The emphasis is on coastal areas and the program combines ecological and technological knowledge. Special fields of study are ecological water quality, water treatment, hydrology, ecological engineering, integrated coastal zone management, aquaculture. The scope is to work in an interdisciplinary and international context.

Delta Management (DM)

Within Delta Management, students focus on spatial, ecological, social, institutional and economic issues of living in and around a delta. This includes sustainable area development, community resilience to disastrous events, integrated coastal zone management, climate adaptation and/or mitigation, circular economy, governance and communication. Students develop general knowledge of water management and learn to steer complex processes and projects in various delta areas worldwide. Visioning, strategic developments and project management are key in the study track.

Spatial Planning & Design (SPD)

Within Spatial Planning & Design students focus on the design of sustainable spatial solutions in delta areas and in water systems. The mitigative and/or adaptive spatial proposals and designs will contribute to reduce the effects of climate change. There is special attention for the legal and spatial boundaries and requirements in which the solutions are made. The development of drawing and presentation skills (by hand and with use of 2D/3D software) and research by design are key in this study track.

Year one, semester 2 and Year two

After choosing a study track students start with a more in-depth approach of the subjects that are relevant for their specific specialization. Knowledge, professional skills and personal development are being trained and educated during 1,5 years at the HZ through theory lessons and practical assignments, and in external projects, where students work on real life cases from governments, companies and research groups. Where possible and relevant the three study tracks work together on developing general Water Management skills (e.g. Data analysis, GIS and Law) and on multi- and interdisciplinary projects to enhance teamwork from different points of view.

Year three

During the third year students will further develop professional skills during an internship and a minor. For either one, students can choose to gain skills and experience in ongoing applied research by doing a research minor or an internship at one of the research groups: Building with Nature, Aquaculture in Delta Areas, Water Technology, Resilient Deltas or Asset Management. For the minor, students can also decide to follow two modules at one of our partner universities in the Netherlands or abroad. The internship can be carried out at a relevant NGO, company or a governmental organization in the Netherlands or abroad.

Year four

In the final study year students will further develop skills in communication and collaboration and apply their expertise in complex and interdisciplinary projects in international situations. Next to that students will elaborate their skills in managing professional and personal processes during the first two modules to prepare for the final thesis project. Students will finalize their studies with a graduation internship at a company or an organization in the Netherlands or abroad. Within five months, students carry out an individual project resulting in one or more professional products to prove that they have become a competent professional in the chosen field.

2.2.2 ***Learning outcomes*** (article 3.2 CER HZ)

The competences in table 1 are given according the new domain profile of 2022 and will be used from now onwards. The previous formulation of the competences used in the years before (<2022) is given as well for the sake of being complete.

Table 1: Competences and subtasks complete study program Water Management

Competences (BBE, national standards) domain profile 2022	**Subtasks**	**Learning Goals**
1. Initiate 2022 / Initiate and direct <2022	1.1 Analysing a system	1.1.1 You define and analyse relevant physical systems in an area
		1.1.2 You define and analyse relevant social systems in an area
		1.1.3 You explain how relevant physical and social systems are related.
	1.2 Defining the task	1.2.1. You identify present and future risks and challenges for an area or water system
		1.2.2. You determine a vision statement for an area or water system.
	1.3 Setting the goals	1.3.1 You develop goals based on the vision statement
		1.3.2. You define conditions and requirements for the goals.
2. Design 2022 / Design <2022	2.1 Translating a program of requirements into design options	2.1.1. You propose different approaches to reach the goals
		2.1.2. You make a well-founded choice for an approach
	2.2 Designing a plan, advice or process	2.2.1.You develop the chosen approach into a plan, advice or process
		2.2.2. You show that your design is sustainable.
		2.2.3. You show that your design takes into account the relevant stakes, interests.
3. Specify 2022 / Specify <2022	3.1 Specifying the feasibility	3.1.1 You assess the societal, technical, financial and legal feasibility of the design
	3.2 Specifying the implementation process	3.2.1 You make a detailed planning
4. Implement 2022 / Realise <2022	4.1 Implementing a plan, advice or process	4.1.1 You make sure that the plan, policy or process can be put in practice, anticipating changes in the system.
5. Manage assets and data 2022 / Operate and maintain <2022	5.1 Making an operation and maintenance plan	5.1.1 You make an operation and maintenance plan and indicate the short and long term actions.
6. Manage projects and processes 2022 / Monitor, assess and evaluate <2022	6.1 Monitoring, assessing and evaluating the results of a policy, advice or process	6.1.1. You develop a relevant method for monitoring the results
		6.1.2 You test and evaluate whether the results meet the goals.

7. Research 2022 / Research <2022	7.1 Researching	7.1.1. You identify the question
		7.1.2 You collect, select and process information from sources on relevance and reliability
		7.1.3 You set up a research according to an accepted method
		7.1.4 You conduct research according to an accepted method
8. Communicate 2022 / Communicate and collaborate <2022	8.1 Communicating effectively and appropriately	8.1.1. You present, report and interact in a professional context
		8.1.2. You communicate in intercultural situations, based on intercultural knowledge, skills and attitude.
	8.2 Collaborating effectively and appropriately	8.2.1 You organise and participate in collaboration processes
		8.2.2 You give and receive constructive feedback
		8.2.3 You collaborate in an international professional context
9. Professionalize 2022 / Manage and innovate <2022	9.1 Managing professional and personal processes	9.1.1 You direct professional and personal processes
		9.1.2 You reflect on professional and personal processes
		9.1.3 You take initiative in professional and personal processes
		9.1.4 You take into account global challenges in professional and personal processes
	9.2 Bringing new perspective into an established situation	9.2.1 You are aware of key global challenges
		9.2.2 You propose improvements to established situations

2.2.3 ***Programme structure*** (article 3.3 CER HZ)

National name:	B Watermanagement
International name:	B Water Management
Orientation:	Bachelor
Title conferred:	Bachelor of Science
Programme duration:	240 study credits (ECTS)
Course workload 'propaedeutic' phase:	60 study credits (ECTS)
Conclusion with 'propaedeutic' examination:	Yes
Course workload main phase:	180 study credits (ECTS)
Variant:	Full-time
ISAT code:	34074
Location:	Middelburg
Language:	Dutch/English (see specification below)
Effective date:	12-07-2022
Submission date:	01-05-2027
Joint degree programme:	Not applicable
180 ECTS fast track:	Yes

Language

Study year	**WM-AET**	**WM-DM**	**WM-SPD**
Year 1	Dutch / English*	Dutch / English*	Dutch / English*
Year 2	English	English	English
Year 3	English**	English**	English**
Year 4	English**	English**	English**

* The first semester of the first year is offered both in Dutch and in English.

** The internship in the 3rd and 4th year of the program can take place either in the Netherlands or abroad. The portfolio and criterion referenced interview (in case of a graduation internship), where students prove their competencies, need to be in English. If the internship company demands professional product(s) to be in Dutch, that is allowed.

Water Management semester 1 and Aquatic Ecotechnology semester 2

Semester 1						Semester 2					
Module 1: Introduction to the Delta			**Module 2: Challenges in the Delta**			**Module 3: AET**			**Module 4: AET**		
CU79056v1	Professional Development	2,5 EC	CU79062v1	Professional Development	2,5 EC	CU79067v2	Marine Water Systems Analysis	2,5 EC	CU79072v2	Fresh Water Systems Analysis	2,5 EC
CU79057v1	Geology	2,5 EC	CU79063v1	Integrated Water Management	2,5 EC	CU79068v2	Hydrology	2,5 EC	CU79073v1	Fluid mechanics	2,5 EC
CU79058v1	Introduction to Ecology	2,5 EC	CU79064v1	Sustainable Developments	2,5 EC	CU79069v1	Biology & Ecology	2,5 EC	CU79074v1	Environmental Chemistry	2,5 EC
CU79059v1	Water Governance	2,5 EC	CU79065v1	Climate Change	2,5 EC	CU79070v1	Risk Management	2,5 EC	CU79075v2	Water & Law	2,5 EC
CU79060v1	Land and Water use in the Delta	2,5 EC	CU79066v1	Spatial Analysis I	2,5 EC	CU79071v1	Introduction to GIS	2,5 EC	CU79076v3	Project Management	2,5 EC
CU79061v1	Desk Research	2,5 EC	CU20676v1	HZ Personality I	2,5 EC				EN39001-4	Foundation Course English	5,0 EC
		15,0 EC			15,0 EC			12,5 EC			17,5 EC

Water Management semester 1 and Delta Management semester 2

Semester 1						Semester 2					
Module 1: Introduction to the Delta			**Module 2: Challenges in the Delta**			**Module 3: DM + SP&D**			**Module 4: DM**		
CU79056v1	Professional Development	2,5 EC	CU79062v1	Professional Development	2,5 EC	CU79077v1	Visualization Techniques I	5,0 EC	CU79080v1	Process Management	5,0 EC
CU79057v1	Geology	2,5 EC	CU79063v1	Integrated Water Management	2,5 EC	CU79078v2	Spatial Analysis II	2,5 EC	CU79075v2	Water & Law	2,5 EC
CU79058v1	Introduction to Ecology	2,5 EC	CU79064v1	Sustainable Developments	2,5 EC	CU79067v2	Marine Water Systems Analysis	2,5 EC	CU79076v3	Project Management	2,5 EC
CU79059v1	Water Governance	2,5 EC	CU79065v1	Climate Change	2,5 EC	CU79070v1	Risk Management	2,5 EC	EN39001-4	Foundation course English	5,0 EC
CU79060v1	Land and Water use in the Delta	2,5 EC	CU79066v1	Spatial Analysis I	2,5 EC	CU79071v1	Introduction to GIS	2,5 EC			
CU79061v1	Desk Research	2,5 EC	CU20676v1	HZ Personality I	2,5 EC						
		15,0 EC			15,0 EC			15,0 EC			15,0 EC

Water Management semester 1 and Spatial Planning & Design semester 2

Semester 1						Semester 2					
Module 1: Introduction to the Delta			**Module 2: Challenges in the Delta**			**Module 3: DM + SP&D**			**Module 4: DM + SP&D**		
CU79056v1	Professional Development	2,5 EC	CU79062v1	Professional Development	2,5 EC	CU79077v1	Visualization Techniques	5,0 EC	CU79081v1	Spatial Planning & Design I	5,0 EC
CU79057v1	Geology	2,5 EC	CU79063v1	Integrated Water Management	2,5 EC	CU79078v2	Spatial Analysis II	2,5 EC	CU79075v2	Water & Law	2,5 EC
CU79058v1	Introduction to Ecology	2,5 EC	CU79064v1	Sustainable Developments	2,5 EC	CU79067v2	Marine Water Systems Analysis	2,5 EC	CU79076v3	Project Management	2,5 EC
CU79059v1	Water Governance	2,5 EC	CU79065v1	Climate Change	2,5 EC	CU79070v1	Risk Management	2,5 EC	EN39001-4	Foundation course English	5,0 EC
CU79060v1	Land and Water use in the Delta	2,5 EC	CU79066v1	Spatial Analysis I	2,5 EC	CU79071v1	Introduction to GIS	2,5 EC			
CU79061v1	Desk Research	2,5 EC	CU20676v1	HZ Personality I	2,5 EC						
		15,0 EC			15,0 EC			15,0 EC			15,0 EC

Water Management - AET year 2

Semester 3						Semester 4					
Module 5: Ecological Water Quality			Module 6: Water Treatment			Module 7: Hydrology			Module 8: Eco Engineering		
Ecological water quality			Water Technology			Water quantity			Buildig with Nature		
Water quality analysis			Water treatment processes			Water quantity analysis			Application of ecological processes		
CU20590v1	Concepts of ecological water quality	5,0 EC	CU20593v1	Concepts of water pollution and treatment	5,0 EC	CU20611v4	Concepts of hydrology	5,0 EC	CU20617v4	Concepts of Eco Engineering	5,0 EC
CU20591v2	Applied ecological water quality	5,0 EC	CU20595v2	Applications of water pollution and treatment	5,0 EC	CU20616v1	Applied hydrology	5,0 EC	CU20620v5	Applied Eco Engineering	5,0 EC
CU20592v1	Ecological water quality in practice	2,5 EC	CU20594v2	Water pollution and treatment in practice	2,5 EC	CU20615v1	Hydrology in practice	2,5 EC	CU20618v1	Eco Engineering in practice	2,5 EC
CU79103v3	Principles of Data Analysis	2,5 EC	CU20679v1	HZ Personality II	2,5 EC	CU20636v1	HZ Personality III	2,5 EC	CU20673v1	HZ Personality IV	2,5 EC
		15,0 EC			15,0 EC			15,0 EC			15,0 EC

Water Management - DM year 2

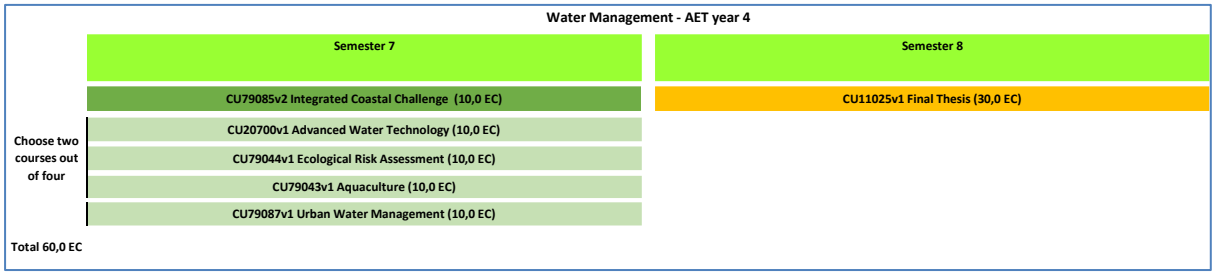
Semester 3						Semester 4					
Module 5: Vision Development			Module 6: Adaptive Planning for Climate Change			Module 7: Risk and Disaster management			Module 8: Strategic Planning for Resilient Deltas		
Vision development in European deltas			Climate adaptive planning in European deltas			Integrated Risk Assessment Mississippi Delta			Strategic planning for Mississippi Delta		
Initating and directing skills			Adaptations in planning			Integrated Systems			Design		
			Monitoring skills			Communication and Collaboration			Presentation skills		
CU79025v1	Vision development theory	3,0 EC	CU79030v1	Adaptive planning theory	3,0 EC	CU79035v1	Spatial planning for deltaic risks	3,0 EC	CU79097v1	Spatial planning for Resilience	2 EC
CU79103v3	Principles of Data Analysis	2,5 EC	CU79105v1	Research methodology	2,0 EC	CU79036v1	Social and Economic Risks	3,0 EC	CU79098v1	Socioeconomic Resilience	2 EC
CU79055v3	Climate change physics & effects	2,5 EC	CU79033v4	Data Visualization	2,5 EC	CU79037v1	Project & Process I	3,0 EC	CU79100v1	Project & Process II	2 EC
CU79028v3	Advanced GIS	2,0 EC	CU79106v1	Climate Adaptive Area request for proposal	5,0 EC	CU79038v1	Integrated risk assessment for Delta areas	3,5 EC	CU79099v1	Strategic planning for resilient deltas	6,5 EC
CU79107v2	Climate Proof Area Vision	5,0 EC	CU20679	HZ Personality II	2,5 EC	CU20636v1	HZ Personality III	2,5 EC	CU20673v1	HZ Personality IV	2,5 EC
		15,0 EC			15,0 EC			15,0 EC			15,0 EC

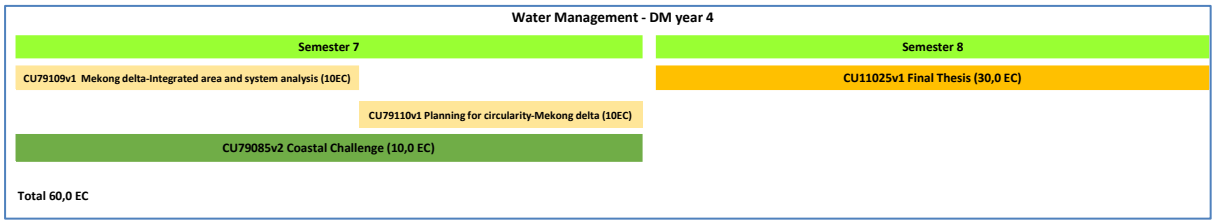
Water Management - SPD year 2

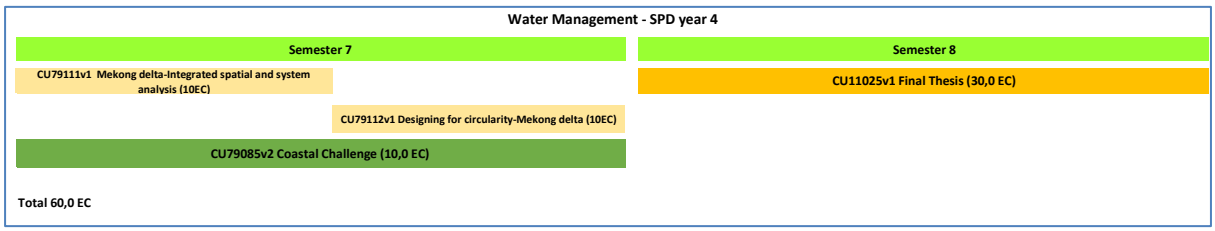
Semester 3						Semester 4					
Module 5: Vision Development			Module 6: Adaptive Planning for Climate Change			Module 7: Risk and Disaster management			Module 8: Strategic Planning for Resilient Deltas		
Vision development in European deltas			Climate adaptive planning in European deltas			Integrated Risk Assessment Mississippi Delta			Strategic planning for Mississippi Delta		
Initating and directing skills			Adaptations in planning			Integrated Systems			Design		
			Monitoring skills			Communication and Collaboration			Presentation skills		
CU79025v1	Vision development theory	3,0 EC	CU79030v1	Adaptive planning theory	3,0 EC	CU79035v1	Spatial planning for deltaic risks	3,0 EC			
CU79103v3	Principles of Data Analysis	2,5 EC	CU79105v1	Research methodology	2,0 EC	CU79095v1	Social systems risks	3,0 EC	CU79097v1	Spatial planning for Resilience	2 EC
CU79055v3	Climate change physics & effects	2,5 EC	CU79033v4	Data Visualization	2,5 EC	CU79096v1	Design methodologies I	3,0 EC	CU79102v1	Design methodologies II	3 EC
CU79028v3	Advanced GIS	2,0 EC	CU79108v1	Strategic spatial interventions	5,0 EC	CU79038v1	Integrated risk assessment for Delta areas	3,5 EC	CU79101v1	Integrated Spatial Water plan	7,5 EC
CU79104v2	Climate Proof Spatial Vision	5,0 EC	CU20679	HZ Personality II	2,5 EC	CU20636v1	HZ Personality III	2,5 EC	CU20673v1	HZ Personality IV	2,5 EC
		15,0 EC			15,0 EC			15,0 EC			15,0 EC

Water Management year 3

Semester 5	Semester 6
CU11024v1 Orienting work placement / internship (30,0 EC)	Minor (30,0 EC)
OR	
Minor (30,0 EC)	CU11024v1 Orienting work placement / Internship (30,0 EC)


Water Management - AET year 4
Semester 7
Semester 8
CU79085v2 Integrated Coastal Challenge (10,0 EC)
CU11025v1 Final Thesis (30,0 EC)
Choose two courses out of four
CU20700v1 Advanced Water Technology (10,0 EC)
CU79044v1 Ecological Risk Assessment (10,0 EC)
CU79043v1 Aquaculture (10,0 EC)
CU79087v1 Urban Water Management (10,0 EC)
Total 60,0 EC

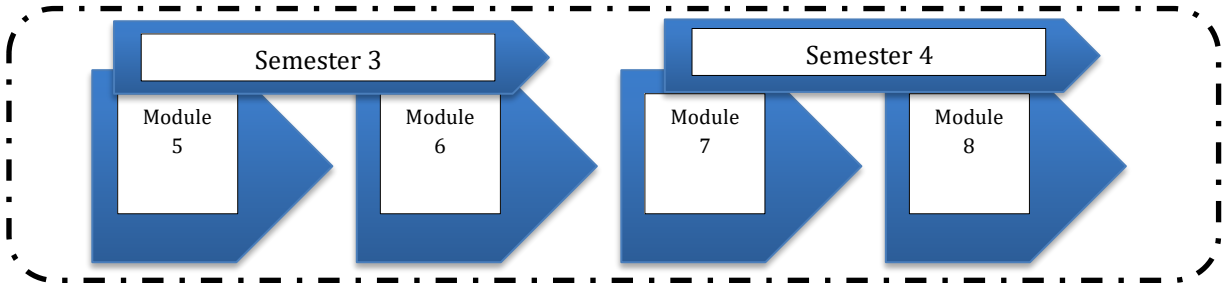

Water Management - DM year 4
Semester 7
Semester 8
CU79109v1 Mekong delta-Integrated area and system analysis (10EC)
CU11025v1 Final Thesis (30,0 EC)
CU79110v1 Planning for circularity-Mekong delta (10EC)
CU79085v2 Coastal Challenge (10,0 EC)
Total 60,0 EC


Water Management - SPD year 4
Semester 7
Semester 8
CU79111v1 Mekong delta-Integrated spatial and system analysis (10EC)
CU11025v1 Final Thesis (30,0 EC)
CU79112v1 Designing for circularity-Mekong delta (10EC)
CU79085v2 Coastal Challenge (10,0 EC)
Total 60,0 EC

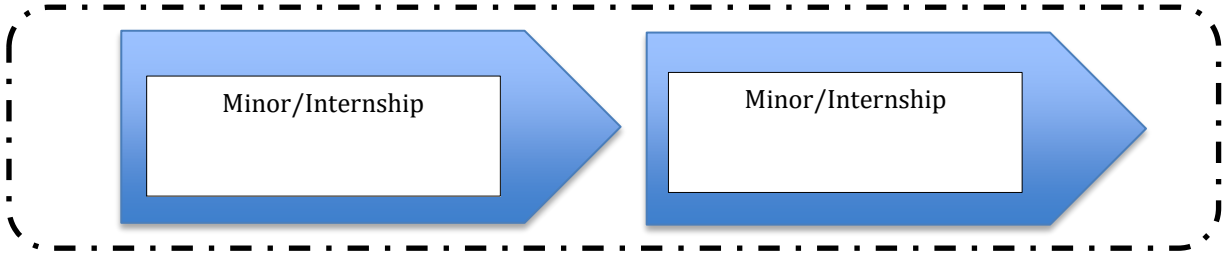
180 EC program Water Management (CROHO 34074) AET and DM:

Propaedeutic phase

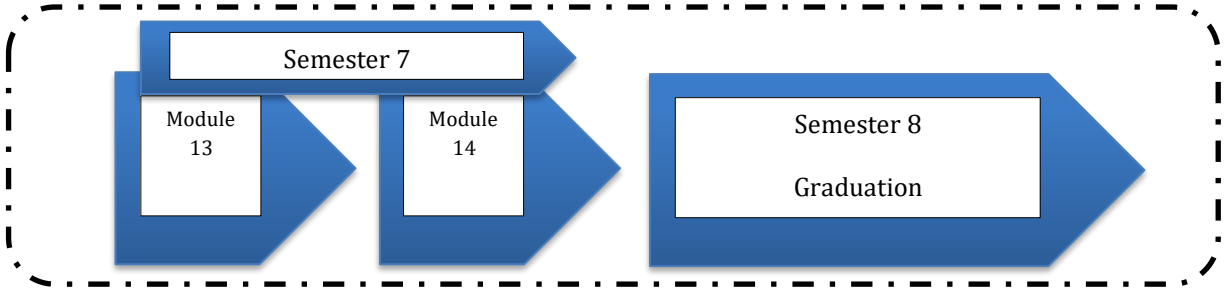
180 EC year 1 (= 240 EC program year 2)
This is the Propaedeutic phase



180 EC year 2 (= 240 EC program year 3)



180 EC year 3 (= 240 EC program year 4)



Note DM: next to module 5 a home studying program on GIS basics will be offered that is highly recommended in preparation of the GIS Advanced courses.
Note AET: it is recommended to follow a home study program for fluid mechanics during module 5.
Note SPD: there is no 180 EC program for Spatial Planning & Design, because the design skills that are required to be learned need the full four years to be practiced and developed (see also 2.1.1b admission requirements).

SOU program Water Management (CROHO 34074) direction Water Management - AET 180 EC program

In previous years the HZ, Water Management – AET had a structural long term cooperation relation with the Bsc Programs Environmental Sciences and the Program Aquaculture from Shanghai Ocean University (SOU), China. For students presently with us we will uphold this cooperation as described below, but for future years (starting September 2023) HZ intends to phase out this cooperation.

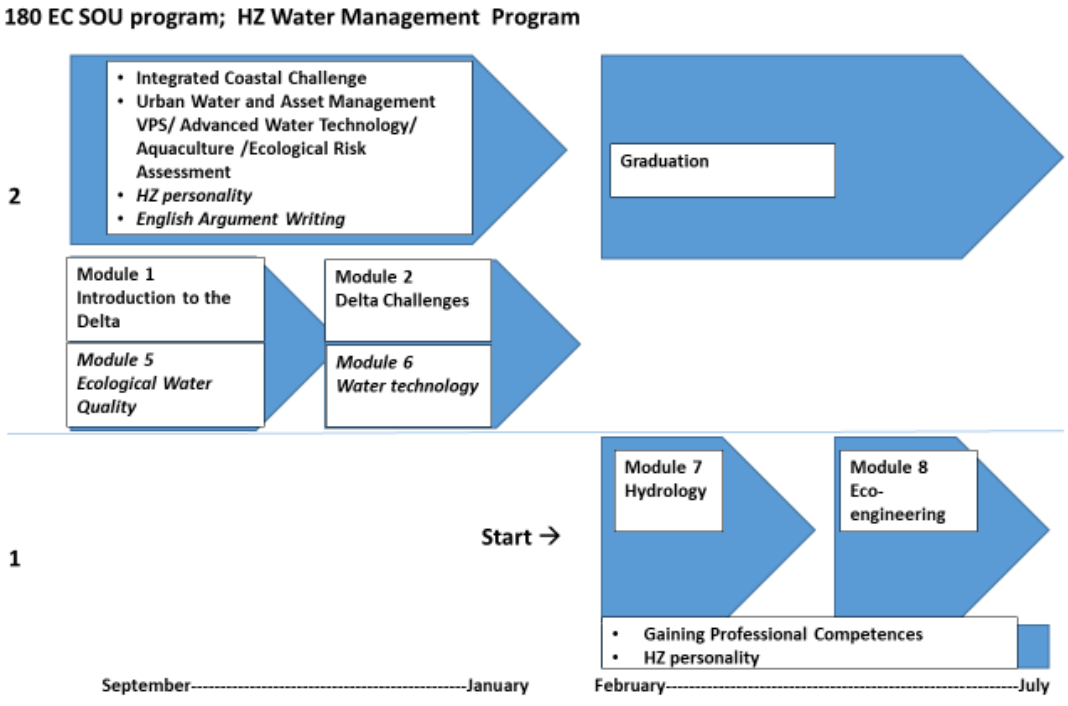
The program WM has an extended intake procedure in which information, requirements and the method of intake, admission requirements and application are described. For admission of SOU students to the HZ -WM program the following requirements are valid:

a. English at least IELTS 6.0 (academic level); (speaking preferably at least 6.0)

b. intake interview positively (motivation, outgoing personality, perfect oral communication)

c. GPA of at least 3.0 (when an applicant does not meet this GPA level an interview is still possible to show extra qualities on motivation, practical experience, oral English etc.)

The basis for the program is an extensive comparison, carried out by HZ lecturers, of the SOU program Environmental Sciences and program Aquaculture with HZ Water Management program, based on course descriptions and a so-called confrontation matrix. In this SOU program Water Management no propaedeutic phase is included. Request for exemptions are done by individual students and assessed by examiners of the WM program. Granting of the exemptions is done and the responsibility of the exam board.



The SOU 180 EC program WM-AET contains:

Feb - Jul (57,5 EC)	Module 7, Hydrology (12,5 EC) CU20611+ CU20616 + CU20615 Module 8, Eco Engineering (12,5 EC) CU20617+ CU20620+ CU20618 Gaining professional competences (30 EC) CU22551 HZ Personality (2,5 EC) CU20679
Sept -Jan (92,5 EC)	*Module 5 Ecological Water Quality (12,5 EC) CU20590+ CU20591+ CU20592* *Module 6 Water Treatment (12,5 EC) CU20593+ CU20595+ CU20594* Integrated Coastal Challenge AET (10 EC) CU79085 Introduction to the Delta Geology (2.5 EC) CU79057 Water Governance (2.5 EC) CU79059 Land and Water Use (2.5 EC) CU79060 *Introduction to Ecology (2.5 EC) CU79058* *Becoming a Water Manager 1 (2.5 EC) CU79056* *Desk Research (2,5 EC) CU79061* Delta Challenges: Sustainable Development (2.5 EC) CU79064 Integrated Water Management (2,5 EC) CU79063 Climate Change (2.5 EC) CU79065 *English Academic Reading (2.5 EC) CU04206* *Becoming a Water Manager 2 (2.5 EC) CU79062* Space, time and Scale *(2.5 EC) CU79066* *HZ Personality (5 EC) CU20676+ CU20636* *English Argument Writing (2.5 EC) CU04207* Two out the following: Advanced Water Technology (10 EC) CU20700 / Aquaculture (10 EC) CU79043 (compulsory for SOU Aquac) / Urban Water and Asset Management (10 EC) CU79087/ Ecological Risk Assessment (10 EC) CU79044 (compulsory for SOU-ES)
Feb – Jul (30 EC)	Final thesis (30 EC) CU11025

2.2.3a Transfer with an Associate Degree certificate (article 3.3 CER HZ)

Not applicable.

2.2.4 Courses propaedeutic phase (article 3.5 CER HZ)

During the first year all Water management students follow a Concept Foundation Course for the English language provided by HZ's Language and Culture Centre. Based on an individual intake test the level and any of the four courses below is determined.

Explanation of the terms used in the tables below:

Learning outcomes: See table 1 in par. 2.2.2 of this document. In the tables below the numbers refer in general to learning goals (f.e. 1.1.1). However, if all learning goals belonging to the same subtask are being assessed, the reference is made to the number of the subtask only (f.e. 1.1).

(VT): stands for "Voltijds", the Dutch term for Full time study program

PRACEX: the practical exercise of the course which needs be fulfilled during this course

Semester 1 and 2 English Language courses (Language and Culture Centre)

Semester: S1- S2	
EN39001	**Title: Foundation Course B1**
Course information	
Number of study credits: 5	**Language:** Engels
Conditions for course participation: -	
Conditions for test participation: -	
Brief description of course content: Students can take the placement test and/or consult the LCC teacher before they decide for which English foundation course they will register. Course Level: A2/low B1 aiming at strong B1. Learning Outcomes: ▪ ***Reading***. Ability to: understand emails/letters giving routine information or personal opinion; understand factual newspaper articles; understand the gist of theoretical academic articles on familiar topics. ▪ ***Writing***. Ability to: write emails/letters based on personal experience or familiar matters; make reasonably accurate notes from meetings and seminars on familiar topics; make basic notes in lectures. ▪ ***Listening***. Ability to: understand clear basic instructions; identify the main topic of a basic broadcast or lecture with some guidance; understand instructions on classes and assignments by lecturers. ▪ ***Speaking***. Ability to: express opinions on simple matters; ask for basic information; offer basic advice on familiar topics; take part in a seminar or meeting using simple language. Based on CEFR. For more details see: https://learn.hz.nl/pluginfile.php/289968/mod_resource/content/0/CEFR-all-scales-and-all-skills.pdf	
Learning outcomes: Strong B-1 level	
Compulsory literature: Open World Preliminary: Student's Book with Answers with Online Practice, Niamh Humphreys; Susan Kingsley, 1e version, ISBN: 9783125405967, Costs: €37,00, Open World Preliminary: Student's Book with Answers with Online Practice	

Assessment information					
Tests code	**Assessment type**	**Content**	**Weighting Factor** (%)	**Minimum score**	**Test opportunities**
TEST01 (VT)	Written knowledge test	Reading	25%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST02 (VT)	Written knowledge test	Writing	25%	5,5	B3.8; B4.8; B3.10; B4.10
TEST03 (VT)	Written knowledge test	Listening	25%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST04 (VT)	Assignment (group)	Speaking	25%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Semester: S1 - S2	
EN39002	**Title: Foundation Course B2**
Course information	
Number of study credits: 5	**Language:** Engels
Conditions for course participation: -	
Conditions for test participation: -	

Brief description of course content:

Students can take the placement test and/or consult the LCC teacher before they decide for which English foundation course they will register. Course level: B1/low B2 aiming at strong B2.

Learning Outcomes:

- ***Reading/ Use of English.*** Ability to: scan texts for relevant information; understand the gist of information and articles on nonfamiliar topics and understand most of the content; apply and adapt language suitable for B2.
- ***Writing***. Ability to: express opinions and give reasons; write a simple piece of academic writing (e.g. a report) giving some evaluation, advice etc.; present arguments using a limited range of vocabulary and grammatical structures.
- ***Listening***. Ability to: follow a talk or lecture on a familiar topic; keep up with conversations on a wide range of topics; understand the answers to factual questions asked.
- ***Speaking***. Ability to: ask for clarification and further information; check for understanding; express opinions and arguments to a limited extent; answer predictable and factual questions.

Based on CEFR. For more details see: https://learn.hz.nl/pluginfile.php/289968/mod_resource/content/0/CEFR-all-scales-and-all-skills.pdf

Learning outcomes:

Strong B2 Level

Compulsory literature:

Open World B2, Anthony Cosgrove and Deborah Hobbs, 1e version, ISBN: 9783125406070, Costs: €40,80, Open World First: Student's Book with Answers with Online Practice

Assessment information

Tests code	**Assessment type**	**Content**	**Weighting Factor** (%)	**Minimum score**	**Test opportunities**
TEST01 (VT)	Written knowledge test	Reading and Use of English	40%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST02 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10
TEST03 (VT)	Written knowledge test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST04 (VT)	Assignment (group)	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Semester: S1 - S2	
EN39003	**Title: Foundation Course C1**
Course information	
Number of study credits: 5	**Language:** Engels
Conditions for course participation: -	
Conditions for test participation: -	

Brief description of course content:

Students can take the placement test and/or consult the LCC teacher before they decide for which English foundation course they will register. Course Level: B2/low C1 aiming at strong C1

Learning Outcomes:

- ***Reading/Use of English.*** Ability to: read quickly enough to cope with an academic course delivered in English; understand complex and arguments in lectures without serious misunderstandings; scan texts for relevant information and understand the gist of the text; apply and adapt language suitable for C1.
- ***Writing***. Ability to: make reasonable accurate notes in meetings and lectures; write a piece of work whose message can be followed throughout; write a piece of work showing the ability to communicate with no serious errors.
- ***Listening and speaking***. Ability to: contribute effectively in meetings and seminars in own field of study, probing for more information if required; maintain a casual conversation with a good degree of fluency; take part in an abstract conversation with a good degree of fluency; follow discussions and arguments with only occasional need for clarification; employ good compensation strategies to overcome linguistic inadequacies; deal with unpredictable questions; give critical feedback in a non-offensive manner.

Based on CEFR. For more details see: https://learn.hz.nl/pluginfile.php/289968/mod_resource/content/0/CEFR-all-scales-and-all-skills.pdf

Learning outcomes:
Strong C-1 level

Compulsory literature:
Open World First Student's Book with Answers with Online Practice, Anthony Cosgrove Deborah Hobbs, 1e version, ISBN: 9781108759052, Costs: €36,99, Open World First Student's Book with Answers with Online Practice

Assessment information

Tests code	**Assessment type**	**Content**	**Weighting Factor** (%)	**Minimum score**	**Test opportunities**
TEST01 (VT)	Written knowledge test	Reading and Use of English	40%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST02 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10
TEST03 (VT)	Written knowledge test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST04 (VT)	Assignment (group)	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Semester: S1 - S2	
EN39004	**Title: Foundation Course C2**
Course information	
Number of study credits: 5	**Language:** Engels
Conditions for course participation: -	
Conditions for test participation: -	
Brief description of course content: Students can take the placement test and/or consult the LCC teacher before they decide for which English foundation course they will register. Course level: C1/low C2 aiming at strong C2. Learning Outcomes: ▪ ***Reading/Use of English***. Ability to: understand complex documents and reports; understand academic articles in a relevant field including complex ideas expressed in complex language; access all sources of information quickly and reliably; apply and adapt language suitable for C2. ▪ ***Writing***. Ability to: make full notes of meetings and seminars with good expression and accuracy; make full notes of meetings and seminars while continuing to participate; make accurate and complete notes of a lecture. ▪ ***Listening and speaking***. Ability to: advise on or talk about sensitive or complex issues (within field of knowledge) with ease; deal confidently with hostile questions; speak fluently and express/understand nuances of language; present a clear, smooth-flowing description or argument in a style appropriate to the context with an effective logical structure. Based on CEFR. For more details see: https://learn.hz.nl/pluginfile.php/289968/mod_resource/content/0/CEFR-all-scales-and-all-skills.pdf	
Learning outcomes: Strong C-2 level	
Compulsory literature: Objective Proficiency Student's Book with Answers with Downloadable Software Annette Capel and Wendy Sharp, Annette Capel and Wendy Sharp, ISBN: 9781107646377, Costs: €35,99, Objective Proficiency Student's Book with Answers with Downloadable Software Annette Capel and Wendy Sharp	

Assessment information					
Tests code	**Assessment type**	**Content**	**Weighting Factor** (%)	**Minimum score**	**Test opportunities**
TEST01 (VT)	Written knowledge test	Reading and Use of English	40%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST02 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10
TEST03 (VT)	Written knowledge test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST04 (VT)	Assignment (group)	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Explanation of the terms used in the tables below:

Learning outcomes: See table 1 in par. 2.2.2 of this document. In the tables below the numbers refer in general to learning goals (f.e. 1.1.1). However, if all learning goals belonging to the same subtask are being assessed, the reference is made to the number of the subtask only (f.e. 1.1).

(VT): stands for “Voltijds”, the Dutch term for Full time study program

PRACEX: the practical exercise of the course which needs be fulfilled during this course

SEMESTER 1

Module 1: Introduction to the Delta

Block 1 / Semester 1								
CU79056V1	**Title: Professional Development: Becoming a Water Manager 1**	**Number of study credits:2.5**	**Number of contact hours:14**	**Mandatory**	**Teaching language: Dutch/English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In module 1, the subject of the course professional development will be 'Becoming a Water Manager'. To become a Water Manager you already succeeded in the first step: beginning this study. But why did you started this study? How do you see yourself as a Water Manager and how do your friends and family see you? What are your skills and talents and which competences and skills do you need to learn to become a professional Water Manager? These are all questions we will ask you during the first semester and we will find out what kind of Water Manager you want to become.								
Learning outcomes: 8.1.1, 8.2.2, 9.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Personal reflection on the Water Managers' profession	100%	5.5	B1. 9		B2.10	

Block 1 / Semester 1								
CU79057V1	**Title: Geology**	**Number of study credits:2.5**	**Number of contact hours:30**		**Mandatory**	**Teaching language: Dutch/English**		
Conditions for course participation: not applicable.								
Conditions for test participation: not applicable.								
Brief description of course content: The basis of our environment consists of abiotic and biotic matter; soil, biota and water systems. In this course you will learn how the behaviour of water, substances and sediments is interconnected and crucial in the formation of Delta Landscapes. During the practical you will train in observation skills, while determining landscape features and soil profile in the field.								
Learning outcomes: 1.1.1								
Compulsory literature: Joseph Holden (ed.), An introduction to Physical Geography and the Environment, 3rd or 4th edition								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Geology and formation of Delta's	100%	5.5	B1.9		B2.10	

Block 1 / Semester 1								
CU79058V1	**Title: Introduction to Ecology**	**Number of study credits:2.5**	**Number of contact hours:15**		**Mandatory**	**Teaching language: Dutch/English**		
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In this course you will learn the basic ecological concepts from the scale of a population to an ecosystem, and how these concepts are interconnected. You will learn how groups of organisms interact with each other, with their physical environment, and how changes in the environment can affect them.								
Learning outcomes: 1.1, 7.1.1, 8.2.1, 9.2.1,								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Basic ecological concepts	80%	5.5	B1.9		B2.10	
TEST02 (VT)	Portfolio (individual)	Habitats & biodiversity	20%	5.5	B1.1 -B1.7		B2.10	

Block 1 / Semester 1									
CU79059V1	**Title: Water Governance**	**Number of study credits: 2.5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**				
Conditions for course participation: not applicable.									
Conditions for test participation: not applicable									
Brief description of course content: As a water manager you are going to operate in very dynamic environment. Many organizations are involved in water issues. Together they make sure that clean and fresh water supply is guaranteed, while flood risk is reduced to a minimum. This environment is going to be the framework that sets the rules and conditions you will need to work with. Dynamics can however make it difficult to get things realized. Therefore it is important that you understand this framework and that you know how you can use it and how you can influence it. You will have to know how things are organized. The way we organize things is also called governance. It concerns structures and processes for decision making, accountability and control and behaviour at the top of an entity. In the course Water governance, you will learn how the political- and governance systems function and which organizations are responsible for certain tasks. You will study how policy is made and how stakeholders are involved in the process.									
Learning outcomes: 1.1.2, 1.2, 1.3									
Compulsory literature: not applicable**.**									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Written knowledge test	Institutions and responsibilities	75%	5.5	B1.9		B2.10		
TEST02 (VT)	Portfolio (group)	Analysis of policy system and strategy development	25%	5.5	B1.7		B1.10		

Block 1 / Semester 1									
CU79060V1	**Title: Land and Water Use in the Delta**	**Number of study credits: 2.5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**				
Conditions for course participation: not applicable.									
Conditions for test participation: not applicable.									
Brief description of course content: This course will focus on the network and occupation layer of the layer approach. Deltas and their natural resources and ecosystems have value for many people and organisations. Different stakeholders make use of land and water in the delta. Sometimes these different interests support each other, other times these different interests can lead to conflicts. In this course you will analyse how the delta influences the land and water use and the other way around. This includes the historical land uses and the development towards spatial planning. Furthermore the political, economic, social, technological, environmental and legal context of the delta will be studied..									
Learning outcomes: 1.1.2, 1.1.3									
Compulsory literature: not applicable.									
Test code	**Assessment type**	**Content**		**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Area description following the layer approach		100%	5.5	B1.7		B1.10	

Block 1 / Semester 1									
CU79061V1	**Title: Desk Research**	**Number of study credits: 2.5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**				
Conditions for course participation: not applicable.									
Conditions for test participation: not applicable.									
Brief description of course content: in this semester course you will learn to set up and conduct a desk research and report about it according to international academic standards.									
Learning outcomes: 7.1, 8.1.1									
Compulsory literature: not applicable.									
Test code	**Assessment type**	**Content**		**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (individual)	Problem analysis and literature research		100%	5.5	B2.2		B2.10	

Module 2: Challenges in the Delta

Block 2 / Semester 1					
CU79062V1	**Title: Professional Development: Becoming a Water Manager 2**	**Number of study credits: 2.5**	**Number of contact hours: 14**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: not applicable.					
Conditions for test participation: not applicable.					
Brief description of course content: In block 2, the subject of the course professional development will be 'Becoming a Water Manager'. To become a Water Manager you already succeeded in the first step: beginning this study. But why did you started this study? How do you see yourself as a Water Manager and how do your friends and family see you? What are your skills and talents and which competences and skills do you need to learn to become a professional Water Manager? These are all questions we will ask you during the first semester and we will find out what kind of Water Manager you want to become.					
Learning outcomes: 8.1.1, 8.2.2, 9.1.1					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Portfolio (individual)	Personal reflection on the Water Managers' profession	100%	5.5	B2.8		B2.10	

Block 2 / Semester 1						
CU79063V1	**Title: Integrated Water Management**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: Dutch/English**	
Conditions for course participation: not applicable.						
Conditions for test participation: not applicable.						
Brief description of course content: In this course you will learn an approach to analyse cause-effect relationships, responses and solutions in integrated water management.						
Learning outcomes: 1.1, 1.2.1, 8.1, 9.2						
Compulsory literature: not applicable						

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Portfolio (individual)	DPSIR, River basins and Water Management in the Netherlands	100%	5.5	B2.1 - 7		B2.10	

Block 2 / Semester 1								
CU79064V1	**Title: Sustainable Development**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: Dutch/English**			
Conditions for course participation: not applicable.								
Conditions for test participation: not applicable.								
Brief description of course content: In this course the concept of sustainable development will be discussed. You will learn what sustainable development is about and how economic models are related to sustainable development. You will look at the UN Sustainable Development Goals and how they are implemented in practice. Furthermore organisational strategies, including communication and marketing strategies, for sustainable development are discussed. You will take your first steps into (social) system innovation. You will learn how you and your organisation are part of a system and how you can influence the system. At the end of the course you can formulate your own opinion on and position towards sustainable development.								
Learning outcomes: 1.1.2, 1.2, 1.3								
Compulsory literature: not applicable.								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Concepts of SDG's applied in a case	100%	5.5	B2.8		B2.10	

Block 2 / Semester 1								
CU79065V1	**Title: Climate Change**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: Dutch/English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: Climate change has a great effect on delta areas. In this course you will study the causes of climate change and it's effect on our planet in general and the economic and ecological functions and biodiversity in delta areas in particular. Also you will study strategies to prevent climate change (mitigation) and to adapt to climate change (adaptation).								
Learning outcomes: 1.1, 1.2, 1.3, 2.1, 2.2								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Cause, impact, mitigation and adaptation of climate change	100%	5.5	B2.8		B2.10	

Block 2 / Semester 1									
CU79066V1	**Title: Spatial analysis I: delta landscapes**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: Dutch/English**				
Conditions for course participation: not applicable.									
Conditions for test participation: not applicable									
Brief description of course content: In this course you will learn how spatial planning and water management define the (cultural) landscapes of the Southwest Delta in the past and the future. Analysing large scale spatial transformations and landscape typologies will help you understand the unique relation between spatial planning and the benefits and challenges regarding water through time and space.									
Learning outcomes: 1.1									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test In week**		**Resit scheduled in week**		
TEST01 (VT)	Portfolio (individual)		100%	5.5	B2.8		B2.10		

Block 2 / Semester 1									
CU20676V1	**Title: HZ Personality I**	**Number of study credits: 2.5**	**Number of contact hours: -**	**Mandatory**	**Teaching language: English**				
Conditions for course participation: not applicable									
Conditions for test participation: Complete PRACEX									
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market. For more information, see: • Learn page HZ personality Water Management: https://learn.hz.nl/course/view.php?id=17773&sectionid=198652#section-0									
Learning outcomes: 8.1, 8.2**,** 9.1.1 + various									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test In week**		**Resit scheduled in week**		
TEST01 (VT)	Portfolio (individual)	Accountability for study load hours [70]	100%	5.5	Variable		Variable		

SEMESTER 2

Module 3 AET

Block 3/ Semester 2								
CU79067V2	**Title: Marine Water Systems Analysis**	**Number of study credits: 2.5**	**Number of contact hours:30**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: To be able to analyse and later on monitor and assess water systems you will study many elements of their biotic and abiotic aspects, use different methods of field inventory to gain information, apply this information in describing the habitat and communities of water systems. In this course the focus will be on several marine water systems for which you will prepare field observations to carry out during field visits.								
Learning outcomes: 1.1, 1.2.1, 7.1, 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Field inventory and observations of habitat and communities in marine water systems	100%	5.5	B3.7		B3.10	

Block 3 / Semester 2									
CU79068V2	**Title: Hydrology**	**Number of study credits:2.5**		**Number of contact hours:30**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable									
Conditions for test participation: complete PRACEX									
Brief description of course content: This course consists of an introduction into climate and weather systems, the (global) hydrological cycle, the methods to determine the elements of it and an introduction into calculating water balances.									
Learning outcomes: 1.1.1									
Compulsory literature: SOWISO package via HZ Web shop									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Written knowledge test	Theory and calculation of water balances	100%	5.5	B3.8		B3.10		
PRACEX (VT)	Practical exercise	Acquiring mathematical skills through class and homework assignments organised in SOWISO package							

Block 3 / Semester 2									
CU79069V1	**Title: Biology and Ecology**	**Number of study credits:2.5**		**Number of contact hours:45**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable									
Conditions for test participation: not applicable									
Brief description of course content: In this semester course you will cover basic biological and ecological concepts from the scale of a cell to an entire organism and ecosystems, and how these concepts are connected. You will learn how living things gain energy, reproduce and change within their environment. You will also learn how groups of organisms interact with each other, with their physical environment, and how changes in the environment can affect them and how to analyse these systems. Laboratory skills are obtained in practical activities in a research lab.									
Learning outcomes: 1.1., 6.1, 7.1.1, 7.1.4, 8.1.1									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Written knowledge test	Biology	30%	5.5	B3.8		B3.10		
TEST02 (VT)	Portfolio (individual)	Lab classes	40%	5.5	B3.1-B4.7		B4.10		
TEST03 (VT)	Written knowledge test	Ecology	30%	5.5	B4.8		B4.10		

Block 3 / Semester 2					
CU79070V1	**Title: Risk Management**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: In this course you will learn the main concepts of risk management in relation to water management and climate change. In a group you will apply these concepts to analyse relevant physical and social systems of an urban area. By conducting a climate stress test you identify present and future risks. You will individually develop an advice for this urban area based on a green/blue measure.					
Learning outcomes: 1.1, 1.2, 2.1, 2.2					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Paper Assignment (group)	Area analysis report	60%	5.5	B3.6		B3.10	
TEST02 (VT)	Paper Assignment (individual)	Advice report	40%	5.5	B3.8		B3.10	

Block 3 / Semester 2					
CU79071V1	**Title: Introduction to GIS**	**Number of study credits: 2.5**	**Number of contact hours: 12**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: As a water manager you need to be able to deal with geo-data. You have to know where to get relevant geo data, how to put it into a geodatabase, process and interpreted the data and show it in a proper map. You will learn the basic concepts of GIS and learn the basic skills in the needed software					
Learning outcomes: 8.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Basic skills and concepts of GIS	100%	5.5	B3.8		B3.10	

Module 4 AET

Block 4 / Semester 2									
CU79072V2	**Title: Fresh Water Systems Analysis**	**Number of study credits: 2.5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: English**				
Conditions for course participation: not applicable									
Conditions for test participation: not applicable									
Brief description of course content: To be able to analyse and later on monitor and assess water systems you will study many elements of their biotic and abiotic aspects, use different methods of field inventory to gain information, apply this information in describing the habitat and communities of water systems. Themes considered are acidification, eutrofication, salinization, pollution and fragmentation. In this course the focus will be on several fresh water systems for which you will prepare field observations to carry out during field visits.									
Learning outcomes: 1.1, 1.2.1, 7.1, 9.1									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Portfolio (individual)	Field inventory and observations of habitat and communities in marine water systems	100%	5.5	B4.7		B4.10		

Block 4 / Semester 2									
CU79073V1	**Title: Fluid Mechanics**	**Number of study credits: 2.5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: English**				
Conditions for course participation: not applicable									
Conditions for test participation: not applicable									
Brief description of course content: Fluid mechanics is the science of hydrostatics and flowing water. You learn how to calculate pressures, velocities, water levels and energy losses in channels, pipes and small hydraulic structures.									
Learning outcomes: 1.1.1									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Written knowledge test	Basics of fluid mechanics applied in calculations	100%	5.5	B4.8		B4.10		

Block 4 / Semester 2					
CU79074V1	**Title: Environmental Chemistry**	**Number of study credits: 2.5**	**Number of contact hours: 42**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: A delta area is constantly in transition due to autonomous developments. The focus of this module is on challenges in the delta area. In this semester course you will focus on chemistry in the environment; chemical reactions and relationships and their impact on water quality, aquatic life, air, soil and human health.					
Learning outcomes: 1.1, 6.1, 7.1, 8.1.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Chemical reactions & relationships – impact on environment	60%	5.5	B4.8		B4.10	
TEST02 (VT)	Portfolio (individual)	Environmental chemistry in practice – basic lab skills	40%	5.5	B3.1 – B4.7		B4.10	

Block 4 / Semester 2					
CU79075V2	**Title: Water and Law**	**Number of study credits: 2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: In this course you will study the most relevant legal frameworks concerning water: European law, general administrative law, environmental law and spatial planning law. On the basis of theory and legal cases you'll gain insight in the goals and the functioning of the laws and regulations concerning water. On the one hand there are rules limiting water related activities but on the other hand the law is an instrument that offers the opportunity to work with water as well.					
Learning outcomes: 1.1.2, 1.1.3, 2.2.3, 3.1.1, 4.1.1, 8.1.1, 8.2					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written Knowledge test	Legal frameworks	50%	5.5	B4.8		B4.10	
TEST02 (VT)	Workplace assessment (individual)	Hearing simulation	50%	5.5	B4.4		B4.10	

Block 4 / Semester 2								
CU79076V3	**Title: Project Management**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: complete PRACEX								
Brief description of course content: This course offers a comprehensive overview of project management aspects as methodology, tools and project management topics as planning, cost estimation, and evaluation methods. The theory of the course will be applied in a project management case.								
Learning outcomes: 1.2, 1.3, 2.1.2, 6.1, 8.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Oral assessment (individual)	Concepts of project management applied in a case	100%	5.5	B4.5		B4.7	
PRACEX (VT)	Practical exercise	Acquire management skills through coaching lessons and the course “Become a Project Manager”						

Module 3 DM

Block 3/ Semester 2								
CU79077V1	**Title: Visualization techniques I**	**Number of study credits: 5**	**Number of contact hours: 45**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In this course you will explore and learn visualization techniques spatial planners and designers use to communicate an analysis and a vision. This first visualization techniques course will mainly focus on 2D drawing and mapping, and we will give you a first insight in some of the Adobe Software often used by designers. Your creativity and skills will be tested with a criterion referenced interview.								
Learning outcomes: 1.1.1, 8.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Criterion referenced interview (individual)	Based on collection of weekly assignments	100%	5.5	B3.8		B3.10	

Block 3 / Semester 2								
CU79078V2	**Title: Spatial analysis II: delta cities**	**Number of study credits: 2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: As a follow up of the course Spatial Analysis I, this course focusses on understanding and analysing the urban realm, by focussing on urban networks within the Southwest Delta landscape. Based on a realistic case you formulate and visualize a vision for sustainable redevelopment of urban networks. You learn how to apply basic methods of analysis and indicators for sustainable urbanism. You will communicate your findings through different types of visualization techniques.								
Learning outcomes: 1.1, 1.2.1, 2.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Proof of competences and skills	80%	5.5	B3.8		B3.10	
TEST02 (VT)	Presentation (individual)	Explanation and reflection on spatial plan	20%	5.5	B3.8		B3.10	

Block 3/ Semester 2									
CU79067V2	**Title: Marine Water Systems Analysis**	**Number of study credits: 2.5**	**Number of contact hours:30**		**Mandatory**		**Teaching language: English**		
Conditions for course participation: not applicable									
Conditions for test participation: not applicable									
Brief description of course content: To be able to analyse and later on monitor and assess water systems you will study many elements of their biotic and abiotic aspects, use different methods of field inventory to gain information, apply this information in describing the habitat and communities of water systems. In this course the focus will be on several marine water systems for which you will prepare field observations to carry out during field visits.									
Learning outcomes: 1.1, 1.2.1, 7.1, 9.1									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Portfolio (individual)	Field inventory and observations of habitat and communities in marine water systems	100%	5.5	B3.7		B3.10		

Block 3 / Semester 2									
CU79070V1	**Title: Risk Management**	**Number of study credits:2.5**	**Number of contact hours:30**		**Mandatory**		**Teaching language: English**		
Conditions for course participation: not applicable									
Conditions for test participation: not applicable									
Brief description of course content: In this course you will learn the main concepts of risk management in relation to water management and climate change. In a group you will apply these concepts to analyse relevant physical and social systems of an urban area. By conducting a climate stress test you identify present and future risks. You will individually develop an advice for this urban area based on a green/blue measure.									
Learning outcomes: 1.1, 1.2, 2.1, 2.2									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Paper Assignment (group)	Area analysis report	60%	5.5	B3.6		B3.10		
TEST02 (VT)	Paper Assignment (individual)	Advice report	40%	5.5	B3.8		B3.10		

Block 3 / Semester 2								
CU79071V1	**Title: Introduction to GIS**	**Number of study credits: 2.5**	**Number of contact hours: 12**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: As a water manager you need to be able to deal with geo-data. You have to know where to get relevant geo data, how to put it into a geodatabase, process and interpreted the data and show it in a proper map. You will learn the basic concepts of GIS and learn the basic skills in the needed software								
Learning outcomes: 8.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Basic skills and concepts of GIS	100%	5.5	B3.8		B3.10	

Module 4 DM

Block 4 / Semester 2					
CU79080V1	**Title: Process management in spatial planning: local scale spatial transitions**	**Number of study credits: 5**	**Number of contact hours: 45**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: This course is an introduction in spatial planning and design on the local scale focusing on spatial transitions of collective and public spaces. Based on analysing and understanding reference projects and a case study in the Southwest Delta you will learn the basic aspects of a small-scale spatial planning process and particularly the added value of communication within this process. In a challenging case study, you will explore future possibilities to achieve the required transition of an area by making a participation plan. You will learn how to enforce and communicate planning decisions in a convincing manner.					
Learning outcomes: 1.1, 2.1.2, 2.2., 3.1.1, 3.2.1, 7.1, 8.1.1, 9.2.					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Presentation (individual)		20%	5.5	B4.8		B4.10	
TEST02 (VT)	Portfolio (individual)	Participation plan	80%	5.5	B4.8		B4.10	

Block 4 / Semester 2					
CU79075V2	**Title: Water and Law**	**Number of study credits: 2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: In this course you will study the most relevant legal frameworks concerning water: European law, general administrative law, environmental law and spatial planning law. On the basis of theory and legal cases you'll gain insight in the goals and the functioning of the laws and regulations concerning water. On the one hand there are rules limiting water related activities but on the other hand the law is an instrument that offers the opportunity to work with water as well.					
Learning outcomes: 1.1.2, 1.1.3, 2.2.3, 3.1.1, 4.1.1, 8.1.1, 8.2					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Written Knowledge test	Legal frameworks	50%	5.5	B4.8		B4.10	
TEST02 (VT)	Workplace assessment (individual)	Hearing simulation	50%	5.5	B4.4		B4.10	

Block 4 / Semester 2								
CU79076V3	**Title: Project Management**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: complete PRACEX								
Brief description of course content: This course offers a comprehensive overview of project management aspects as methodology, tools and project management topics as planning, cost estimation, and evaluation methods. The theory of the course will be applied in a project management case.								
Learning outcomes: 1.2, 1.3, 2.1.2, 6.1, 8.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Oral assessment (individual)	Concepts of project management applied in a case	100%	5.5	B4.5		B4.7	
PRACEX (VT)	Practical exercise	Acquire management skills through coaching lessons and the course “Become a Project Manager”						

Module 3 SPD

Block 3/ Semester 2								
CU79077V1	**Title: Visualization techniques I**	**Number of study credits: 5**	**Number of contact hours: 45**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In this course you will explore and learn visualization techniques spatial planners and designers use to communicate an analysis and a vision. This first visualization techniques course will mainly focus on 2D drawing and mapping, and we will give you a first insight in some of the Adobe Software often used by designers. Your creativity and skills will be tested with a criterion referenced interview.								
Learning outcomes: 1.1.1, 8.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Criterion referenced interview (individual)	Based on collection of weekly assignments	100%	5.5	B3.8		B3.10	

Block 3 / Semester 2								
CU79078V2	**Title: Spatial analysis II: delta cities**	**Number of study credits: 2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: As a follow up of the course Spatial Analysis I, this course focusses on understanding and analysing the urban realm, by focussing on urban networks within the Southwest Delta landscape. Based on a realistic case you formulate and visualize a vision for sustainable redevelopment of urban networks. You learn how to apply basic methods of analysis and indicators for sustainable urbanism. You will communicate your findings through different types of visualization techniques.								
Learning outcomes: 1.1, 1.2.1, 2.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Proof of competences and skills	80%	5.5	B3.8		B3.10	
TEST02 (VT)	Presentation (individual)	Explanation and reflection on spatial plan	20%	5.5	B3.8		B3.10	

Block 3/ Semester 2								
CU79067V2	**Title: Marine Water Systems Analysis**	**Number of study credits: 2.5**	**Number of contact hours:30**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: To be able to analyse and later on monitor and assess water systems you will study many elements of their biotic and abiotic aspects, use different methods of field inventory to gain information, apply this information in describing the habitat and communities of water systems. In this course the focus will be on several marine water systems for which you will prepare field observations to carry out during field visits.								
Learning outcomes: 1.1, 1.2.1, 7.1, 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Field inventory and observations of habitat and communities in marine water systems	100%	5.5	B3.7		B3.10	

Block 3 / Semester 2								
CU79070V1	**Title: Risk Management**	**Number of study credits:2.5**	**Number of contact hours:30**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In this course you will learn the main concepts of risk management in relation to water management and climate change. In a group you will apply these concepts to analyse relevant physical and social systems of an urban area. By conducting a climate stress test you identify present and future risks. You will individually develop an advice for this urban area based on a green/blue measure.								
Learning outcomes: 1.1, 1.2, 2.1, 2.2								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Paper Assignment (group)	Area analysis report	60%	5.5	B3.6		B3.10	
TEST02 (VT)	Paper Assignment (individual)	Advice report	40%	5.5	B3.8		B3.10	

Block 3 / Semester 2								
CU79071V1	**Title: Introduction to GIS**	**Number of study credits: 2.5**	**Number of contact hours: 12**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: As a water manager you need to be able to deal with geo-data. You have to know where to get relevant geo data, how to put it into a geodatabase, process and interpreted the data and show it in a proper map. You will learn the basic concepts of GIS and learn the basic skills in the needed software								
Learning outcomes: 8.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Basic skills and concepts of GIS	100%	5.5	B3.8		B3.10	

Module 4 SPD

Block 4 / Semester 2					
CU79081V1	**Title: Spatial planning & Design 1: the local scale**	**Number of study credits: 5**	**Number of contact hours: 45**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: This course is an introduction in spatial planning and design on the local scale focusing on spatial transitions of collective and public spaces. Based on analyzing and understanding reference projects and a case study in the Southwest Delta you will learn the basic aspects of a small-scale spatial planning process and particularly the added value of communication within this process. You will explore future possibilities to achieve the required transition of an area by making a climate adaptive design. You will learn how to enforce and communicate design decisions in a convincing manner.					
Learning outcomes: 1.1, 2.1.2, 2.2., 3.1.1, 3.2.1, 7.1, 8.1.1, 9.2.1					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Presentation (individual)	Explanation and reflection on spatial plan	20%	5.5	B4.8		B4.10	
TEST02 (VT)	Portfolio (individual)	Proof of competences and skills	80%	5.5	B4.8		B4.10	

Block 4 / Semester 2					
CU79075V2	**Title: Water and Law**	**Number of study credits: 2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: In this course you will study the most relevant legal frameworks concerning water: European law, general administrative law, environmental law and spatial planning law. On the basis of theory and legal cases you'll gain insight in the goals and the functioning of the laws and regulations concerning water. On the one hand there are rules limiting water related activities but on the other hand the law is an instrument that offers the opportunity to work with water as well.					
Learning outcomes: 1.1.2, 1.1.3, 2.2.3, 3.1.1, 4.1.1, 8.1.1, 8.2					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Written Knowledge test	Legal frameworks	50%	5.5	B4.8		B4.10	
TEST02 (VT)	Workplace assessment (individual)	Hearing simulation	50%	5.5	B4.4		B4.10	

Block 4 / Semester 2									
CU79076V3	**Title: Project Management**	**Number of study credits:2.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**				
Conditions for course participation: not applicable									
Conditions for test participation: complete PRACEX									
Brief description of course content: This course offers a comprehensive overview of project management aspects as methodology, tools and project management topics as planning, cost estimation, and evaluation methods. The theory of the course will be applied in a project management case.									
Learning outcomes: 1.2, 1.3, 2.1.2, 6.1, 8.1.1									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Oral assessment (individual)	Concepts of project management applied in a case	100%	5.5	B4.5		B4.7		
PRACEX (VT)	Practical exercise	Acquire management skills through coaching lessons and the course “Become a Project Manager”							

2.2.4 ***Main phase courses*** (article 3.6 CER HZ)

SEMESTER 3 & 4 AET

Block 5/ Semester 3

Block 5 / Semester 3								
CU79103V3	**Title: Principles of Data Analysis**	**Number of study credits: 2.5**	**Number of contact hours: 24**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable.								
Conditions for test participation: not applicable.								
Brief description of course content: Student will learn to prepare data sets for analysis (data management), methods to summarize and describe a data set (descriptive analysis), basic methods to test for statistical significance, to visualise the data in a clear and concise way, and to answer research questions based on data. This course is shared between AET, DM and SPD.								
Learning outcomes: 7.1.2, 6.1								
Compulsory literature: Excel 2007 or higher								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Data analysis skills	100%	5.5	B1.9		B2.10	

Module 5 (AET): Ecological Water Quality

Block 5 / Semester 3					
CU20590V1	**Title: Concepts of Ecological Water Quality**	**Number of study credits: 5.0**	**Number of contact hours: 44**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable.					
Conditions for test participation: not applicable.					
Brief description of course content: 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 access the quality of water bodies and the appropriate measures to be taken.					
Learning outcomes: 1.1 , 1.2, 2.1					
Compulsory literature: *Ecology of Aquatic Systems*, Dobson & Frid, second edition					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Concepts of water quality	100%	5.5	B1.9		B2.10	

Block 5 / Semester 3					
CU20591V2	**Title: Applied Ecological Water Quality**	**Number of study credits: 5.0**	**Number of contact hours: 44**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable.					
Conditions for test participation: complete attendance to PRACEX field week					
Brief description of 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.					
Learning outcomes: 2.2, 3.2, 4.1, 6.1, 7.1, 8.1, 8.2					
Compulsory literature: *Ecology of Aquatic Systems*, Dobson & Frid, second edition					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Water quality assessment	100%	5.5	B1.9		B2.10	
PRACEX (VT)	Practical exercise	Field week						

Block 5 / Semester 3								
CU20592V1	**Title: Ecological Water Quality in Practice**	**Number of study credits: 2.5**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of 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.								
Learning outcomes: 6.1, 7.1								
Compulsory literature: Lab kit and lab coat								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (group)	Filter feeders and PC Lake	100%	5.5	B1.7		B1.10	

Module 6 (AET): Water Pollution & Treatment

Block 6 / Semester 3								
CU20593v1	**Title: Concepts of water pollution and treatment**	**Number of study credits: 5.0**	**Number of contact hours: 55**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of 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.								
Learning outcomes: 1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Water pollution and treatment concepts	100%	5.5	B2.8		B2.10	

Block 6 / Semester 3								
CU20595V2	**Title: Applications of water pollution and treatment**	**Number of study credits: 5.0**	**Number of contact hours: 50**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: complete PRACEX								
Brief description of 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.								
Learning outcomes: 2.1, 2.2, 3.2, 4.1, 6.1, 7.1, 8.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Water treatment	100%	5.5	B2.8		B2.10	
PRACEX (VT)	Practical exercise	Complete lab work to obtain analytical skills						

Block 6 / Semester 3					
CU20594V2	**Title: Water pollution and treatment in practice**	**Number of study credits: 2.5**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: complete PRACEX					
Brief description of course content: 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 wastewater treatment system. You also learn to use some analysis tools in GIS.					
Learning outcomes: 6.1, 7.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test week**		**Resit scheduled in week**	
TEST 01 (VT)	Portfolio (group)	Water quality analysis	100%	5.5	B2.8		B2.10	
PRACEX (VT)	Practical exercise	Complete lab work to obtain analytical skills						

Block 6 / Semester 3					
CU20679v1	**Title: HZ Personality II**	**Number of study credits: 2.5**	**Number of contact hours: -**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.					
Learning outcomes: 9.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

Module 7 (AET): Hydrology

Block 7 / Semester 4								
CU20611v4	**Title: Concepts of hydrology**	**Number of study credits: 5.0**	**Number of contact hours: 38**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: This course is explaining the theory about concepts of water systems; water in the saturated and unsaturated zone, managing the water levels, small hydraulic structures, wetlands, regional and global issues. You apply the knowledge in calculations.								
Learning outcomes: 1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Concepts of hydrology	70%	5.5	B3.8		B3.10	
TEST02 (VT)	Portfolio (individual)	Open channel hydraulics	20%	5.5	B3.3		B3.10	
TEST03 (VT)	Portfolio (group)	Hydraulic calculations	10%	5.5	B3.4		B3.10	

Block 7 / Semester 4							
CU20616v1	**Title: Applied hydrology**	**Number of study credits: 5.0**	**Number of contact hours: 20**	**Mandatory**	**Teaching language: English**		
Conditions for course participation: Not applicable							
Conditions for test participation: Not applicable							
Brief description of course content: In this course the rural problems of water excesses and fresh water shortages in the delta are explored. The course focusses on designing water solutions for stakeholders.							
Learning outcomes: 1.2.1, 2.2.2, 2.2.3, 5.1.1, 8.1, 8.2, 9.1, 9.2.1							
Compulsory literature: not applicable							
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**
TEST01 (VT)	Portfolio (individual)	Water system analysis	100%	5.5	B3.8		B3.10

Block 7 / Semester 4								
CU20615v1	**Title: Hydrology in practice**	**Number of study credits: 2.5**	**Number of contact hours: 22**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: In this course you will learn how to work with a software system: a system to model hydraulic water systems 'Sobek'.								
Learning outcome: 2.1, 3.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assessment (individual)	Conducting a hydraulic water system model	100%	5.5	B3.8		B3.10	

Block 7 / Semester 4								
CU20636v1	**Title: HZ Personality III**	**Number of study credits: 2.5**	**Number of contact hours: -**		**Mandatory**		**Teaching language: Dutch/English**	
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.								
Learning outcomes: 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

Module 8 (AET): Eco Engineering

Block 8 / Semester 2								
CU20617V4	**Title: Concepts of Eco Engineering**	**Number of study credits: 5.0**	**Number of contact hours: 24**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: Eco engineering is the design of sustainable ecosystems that integrate human society with its natural environment for the benefit of both. Threats like loss in biodiversity and habitats, climate change and sea level rise make eco engineering necessary. In this module the focus is on things like building with nature, nature-based solutions and working with nature in delta areas. In concepts you will get insight into coastal protection through 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) and ecology (adaptations of species to harsh environments, biodiversity, ecosystem engineers as oysters and mussels).								
Learning outcomes: 1.1, 1.2.2								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Eco Engineering	80%	5.5	B4.8		B4.10	
TEST02 (VT)	Written knowledge test	Ethics	20%	5.5	B4.5		B4.10	

Block 8 / Semester 2								
CU20620V5	**Title: Applied Eco Engineering**	**Number of study credits: 5.0**	**Number of contact hours: 47**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: complete PRACEX								
Brief description of course content: Eco engineering is the design of sustainable ecosystems that integrate human society with its natural environment for the benefit of both. Threats like loss in biodiversity and habitats, climate change and sea level rise make eco engineering necessary. In this module the focus is on things like building with nature, nature-based solutions and working with nature in delta areas. In *applied* you will produce your own experimental design in 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 produce innovative ideas for further research.								
Learning outcomes: 1.2.2, 1.3, 2.2.1, 6.1, 7.1.3, 7.1.4, 8.2.1, 9.1.4, 9.2.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Proposal future research	30%	5.5	B4.9		B4.10	
TEST02 (VT)	Assignment (group)	Research report of project	60%	5.5	B4.7		B4.10	
TEST03 (VT)	Assignment (individual)	Opiniated essay	10%	5.5	B4.4		B4.7	
PRACEX (VT)	Practical exercise	Complete lab and field work to obtain analytical skills						

Block 8/ Semester 2								
CU20618V1	**Title: Eco Engineering in practice**	**Number of study credits: 2.5**	**Number of contact hours: 24**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: Eco engineering is the design of sustainable ecosystems that integrate human society with its natural environment for the benefit of both. Threats like loss in biodiversity and habitats, climate change and sea level rise make eco engineering necessary. In this module the focus is on things like building with nature, nature-based solutions and working with nature in delta areas. You will *practice* with several eco-engineering tools and software. Concepts and how to apply them will be explained for ecotope maps, suitability maps and hypsometric curves. You will apply them in several research cases.								
Learning outcomes: 2.2.2, 2.2.3, 6.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Eco Engineering tools	100%	5.5	B4.8		B4.10	

Block 8 / Semester 3					
CU20673v1	**Title: HZ Personality IV**	**Number of study credits: 2.5**	**Number of contact hours: -**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.					
Learning outcomes: 9.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

SEMESTER 3 & 4 DM

Module 5 (DM): Vision Development

Block 5 / Semester 3					
CU79025v1	**Title: Vision development theory**	**Number of study credits: 3.0**	**Number of contact hours: 26**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of 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.					
Learning outcomes: 1.1.3					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Written knowledge test	Vision development theories	100%	5.5	B1.9		B2.10	

Block 5 / Semester 3					
CU79103V3	**Title: Principles of Data Analysis**	**Number of study credits: 2.5**	**Number of contact hours: 24**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable.					
Conditions for test participation: not applicable.					
Brief description of course content: Student will learn to prepare data sets for analysis (data management), methods to summarize and describe a data set (descriptive analysis), basic methods to test for statistical significance, to visualise the data in a clear and concise way, and to answer research questions based on data . This course is shared between AET, DM and SPD.					
Learning outcomes: 7.1.2, 6.1.2					
Compulsory literature: Excel 2007 or higher					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Written knowledge test	Data analysis skills	100%	5.5	B1.9		B2.10	

Block 5 / Semester 3								
CU79055v3	**Title: Climate change physics & effects**	**Number of study credits: 2.5**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: This course covers the theories about the climate change physics and effects. You will learn the basic physics and calculations behind the climate change effects (drought, heat stress, floods and extreme precipitation) in Europe and their social and economic impact. Complementary to the aforementioned content you will learn and practice basic hydrology calculations.								
Learning outcomes: 9.2.1.								
Compulsory literature: climate change physics & effects reader								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Climate change physics	100%	5.5	B1.9		B2.10	

Block 5 / Semester 3								
CU79028v3	**Title: Advanced GIS**	**Number of study credits: 2.0**	**Number of contact hours: 18**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: In this course is the follow up of the 'introduction into GIS course'. You will learn how to conduct a raster, vector and a DEM analysis, with the uses ARC GIS Pro software. By realizing a flood impact analysis of a flood prone area. Course will be assessed by a portfolio test in week 7 of semester 1.								
Learning outcomes: 1.1.1, 6.1.1								
Compulsory literature: ARC GIS Pro, running under HZ licence at MacOS or Microsoft Windows, and the use of a non-desktop computer is required.								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Arc GIS Pro	100%	5.5	B1.7		B1.10	

Block 5 / Semester 3								
CU79107V2	**Title: Climate Proof Area Vision**	**Number of study credits: 5.0**	**Number of contact hours: 44**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In this project you will develop a vision for an European flood prone region. This policy document will be based on area analysis, desk research and scenarios. The course will be assessed on behalf of a report of your vision performed on the basis of the research circle, a digital presentation of your vision as group product and a supporting water balance.								
Learning outcomes: 1.1.1, 1.1.3, 1.2.1, 2.1, 2.2.3, 7.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Area vision	30%	5.5	B1.7		B1.10	
TEST02 (VT)	Presentation (group)	Area vision	40%	5.5	B1.9		B2.02	
TEST03 (VT)	Portfolio (individual)	Water balance	30%	5.5	B1.4- B1.7		B1.10	

Module 6 (DM): Adaptive Planning for Climate Change

Block 6 / Semester 3								
CU79030v1	**Title: Adaptive Planning Theory**	**Number of study credits: 3.0**	**Number of contact hours: 26**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: This course covers theories for planning and management for adaptation and mitigation. This will be explained via the application in the Dutch Delta program, taking into consideration the different socio-economic and cultural dimensions and the European context. This course prepares for the adaptive Climate Change Tender.								
Learning outcomes:2.1.1, 2.1.2, 4.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Concepts of planning and management for adaptation and mitigation	100%	5.5	B2.8		B2.10	

Block 6 / Semester 3								
CU79105V1	**Title: Research Methodology**	**Number of study credits: 2.0**	**Number of contact hours: 18**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: This course covers the steps of the research cycle from the research proposal till writing your report. The report will be assessed with an assessment form and a peer assessment of your individual contribution to the group work.								
Learning outcomes: 7.1.2, 7.1.3, 7.1.4								
Compulsory literature:								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Paper	100%	5.5	B2.7		B2.10	

Block 6 / Semester 3					
CU79033v4	**Title: Data Visualisation**	**Number of study credits: 2.5**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of course content: In this course you will learn how to visualize data in a professional way. You will learn how to upgrade GIS maps into professional visuals by the use of Adobe Illustrator and display them in the digital environment of ArcGis storymaps . The course will be assessed by an digital portfolio					
Learning outcomes:6.1.2, 8.1.1					
Compulsory literature: For this course is ArcGIS Pro and Adobe Illustrator, running at macOS or Microsoft Windows, and the use of a non-desktop computer required.					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Arc GIS storymap	50%	5.5	B2.8		B2.10	
TEST02 (VT)	Portfolio (individual)	Adobe illustrator	50%	5.5	B2.8		B2.10	

Block 6 / Semester 3					
CU79106V1	**Title: Climate Adaptive area request for proposal**	**Number of study credits: 5.0**	**Number of contact hours: 36**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of course content: In this project you will enrol as team (your group) for a 'climate adaptive area request for proposal'. This request for proposal will be based on area analysis, desk research and theories for planning and management for adaptation and mitigation. The vision will be displayed in an request for proposal, a group product, which is supported by a calculated water system design. The request for proposal of the vision will be presented as a group product, assessed by the lecturers according to the completion criteria and individual oral examination.					
Learning outcomes: 2.2.1, 3.1.1, 3.2.1, 5.1.1, 6.1.1, 8.1.1, 8.2, 9.2.2					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Request for proposal	30%	5.5	B2.7		B2.10	
TEST02 (VT)	Presentation (individual)	Request for proposal	40%	5.5	B2.8		B2.10	
TEST03 (VT)	Portfolio (individual)	Water system design	30%	5.5	B2.2 - B2.5		B2.10	

Block 6 / Semester 3					
CU20679v1	**Title: HZ Personality II**	**Number of study credits: 2.5**	**Number of contact hours: -**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.					
Learning outcomes: 9.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

Module 7 (DM): Risk and Disaster Management

Block 7 / Semester 4								
CU79035v1	**Title: Spatial Planning for Deltaic Risks**	**Number of study credits: 3**	**Number of contact hours:22**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: Within this module you will focus on vulnerabilities and risks present in delta areas in general and the Mississippi delta, USA specifically. You will learn which environmental, ecological, spatial and climate risks are present and how they relate to each other and to the social-economic and institutional risks. Furthermore, you will learn theories about planning for risks and disaster management.								
Learning outcomes: 1.1.1, 1.1.3, 1.2.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test		100%	5.5	B3.8		B3.10	

Block 7 / Semester 4								
CU79036v1	**Title: Social and Economic Risks**	**Number of study credits: 3**	**Number of contact hours: 22**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: Within this module you will learn about economic and social risks of climate change in particular for delta areas. You will learn about the economic and social risks of climate change. You will learn theories about disaster economics, economic value of ecosystem services and you will also get an introduction in systems thinking. You will learn to look at these topics from different perspectives and apply your knowledge on cases, in particular the case of the Mississippi delta in Louisiana, USA.								
Learning outcomes: 1.1.1, 1.1.3, 1.2.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Social and economic risks of climate change and disasters	100%	5.5	B3.8		B3.10	

Block 7 / Semester 4								
CU79037v1	**Title: Project & Process I**	**Number of study credits: 3**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: 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 relevant theories about project and process management, design, actor- and stakeholder analysis and governance.								
Learning outcomes: 1.1.1, 1.1.3, 1.2.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Project and process risks	100%	5.5	B3.8		B3.10	

Block 7 / Semester 4								
CU79038v1	**Title: Integrated Risk Assessment for Delta Areas**	**Number of study credits: 3.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: 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 have to apply the statistics, GIS and visualization 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.								
Learning outcomes: 1.1, 1.2.1, 2.2.3, 7.1.2, 8.1.1, 8.2.1, 8.2.2, 9.1.1, 9.1.2, 9.1.3								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Integrated risk assessment	75%	5.5	B3.7		B3.10	
TEST02 (VT)	Criterion-referenced interview (individual)	Performance in group work	25%	5.5	B3.8		B3.10	

Block 7 / Semester 4								
CU20636v1	**Title: HZ Personality III**	**Number of study credits: 2.5**	**Number of contact hours: -**		**Mandatory**		**Teaching language: Dutch/English**	
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.								
Learning outcomes: 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

Module 8 (DM): Strategic Planning for Resilient Deltas

Block 8 / Semester 4								
CU79097v1	**Title: Spatial Planning for Resilience**	**Number of study credits: 2**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: Within this course you will learn theories on resilience building, the different types of resilience (spatial, technical, ecological, etc.), levels of resilience as well as design qualities contributing to resilience. Next to that, spatial planning in the US context and strategy development for resilient deltas will be further explored.								
Learn outcomes: 1.2.2, 1.3								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)		100%	5.5	B4.8		B4.10	

Block 8 / Semester 4								
CU79098v1	**Title: Socioeconomic Resilience**	**Number of study credits: 2**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: 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 socioeconomic resilience, strategy development, economic thinking and systems thinking, and social cost and benefit analysis. You will have to apply your knowledge in the project and in a portfolio with a practical assignment/ small research.								
Learning outcomes: 1.1.2, 1.2.2, 2.1.1, 3.1.1, 9.2								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Socioeconomic resilience	100%	5.5	B4.8		B4.10	

Block 8 / Semester 4					
CU79100v1	**Title: Project & Process II**	**Number of study credits: 2**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: 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 to apply theories, project and process management and strategic stakeholder management in projects.					
Learning outcomes: 1.3, 3.1.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Process management	100%	5.5	B4.8		B4.10	

Block 8 / Semester 4					
CU79099v1	**Title: Strategic Planning for Resilient Deltas**	**Number of study credits: 6.5**	**Number of contact hours: 66**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: 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 to apply theories on resilience, spatial planning in the US context, strategy development, economic thinking and system thinking, project/process management 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.					
Learning outcomes: 1.2.2, 1.3, 2.1, 2.2, 3.1, 3.2, 4.1, 5.1, 6.1.1, 7.1.2, 8.1, 8.2.3					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (individual)	Resilience proposal	75%	5.5	B4.7		B4.10	
TEST02 (VT)	Presentation (individual)	Pitch resilience proposal	25%	5.5	B4.8		B4.10	

Block 8 / Semester 3					
CU20673v1	**Title: HZ Personality IV**	**Number of study credits: 2.5**	**Number of contact hours: -**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.					
Learning outcomes: 9.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

SEMESTER 3 & 4 SPD

Module 5 (SPD): Vision Development

Block 5 / Semester 3					
CU79025v1	**Title: Vision development theory**	**Number of study credits: 3.0**	**Number of contact hours: 26**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of 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.					
Learning outcomes: 1.1.3					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Written knowledge test	Vision development theories	100%	5.5	B1.9		B2.10	

Block 5 / Semester 3					
CU79103V3	**Title: Principles of Data Analysis**	**Number of study credits: 2.5**	**Number of contact hours: 24**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable.					
Conditions for test participation: not applicable.					
Brief description of course content: Student will learn to prepare data sets for analysis (data management), methods to summarize and describe a data set (descriptive analysis), basic methods to test for statistical significance, to visualise the data in a clear and concise way, and to answer research questions based on data. This course is shared between AET, DM and SPD.					
Learning outcomes: 7.1.2, 6.1.2					
Compulsory literature: Excel 2007 or higher					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Written knowledge test	Data analysis skills	100%	5.5	B1.9		B2.10	

Block 5 / Semester 3								
CU79055v3	**Title: Climate change physics & effects**	**Number of study credits: 2.5**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: This course covers the theories about the climate change physics and effects. You will learn the basic physics and calculations behind the climate change effects (drought, heat stress, floods and extreme precipitation) in Europe and their social and economic impact. Complementary to the aforementioned content you will learn and practice basic hydrology calculations.								
Learning outcomes: 9.2.1.								
Compulsory literature: climate change physics & effects reader								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Climate change physics	100%	5.5	B1.9		B2.10	

Block 5 / Semester 3								
CU79028v3	**Title: Advanced GIS**	**Number of study credits: 2.0**	**Number of contact hours: 18**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: In this course is the follow up of the 'introduction into GIS course'. You will learn how to conduct a raster, vector and a DEM analysis, with the uses ARC GIS Pro software. By realizing a flood impact analysis of a flood prone area. Course will be assessed by a portfolio test in week 7 of semester 1.								
Learning outcomes: 1.1.1, 6.1.1								
Compulsory literature: ARC GIS Pro, running under HZ licence at MacOS or Microsoft Windows, and the use of a non-desktop computer is required.								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Arc GIS Pro	100%	5.5	B1.7		B1.10	

Block 5 / Semester 3					
CU79104V2	**Title: Climate Proof Spatial Vision**	**Number of study credits: 5.0**	**Number of contact hours: 44**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Not applicable					
Conditions for test participation: not applicable					
Brief description of course content: In this project you will develop as a design team a vision for an urbanized European flood prone region. This distinctive vision will be based on site visit, area analysis, desk research and spatial scenarios. The vision will be developed by the use of a multilayer based approach. The maps will be elaborated by use of GIS, visualization. The vision will be displayed in a paper, a group product, and underpinned by the knowledge of the courses of the previous modules. The course will be assessed on behalf of a paper of your vision performed on the basis on research, a digital presentation of your vision as group product and a supporting water balance.					
Learning outcomes: 1.1.1, 1.1.3, 1.2.1, 2.1, 2.2.3,7.1.					
Compulsory literature:					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Paper Assignment (group)	Spatial area vision	30%	5.5	B1.7		B1.10	
TEST02 (VT)	Presentation (group)	Spatial area vision	40%	5.5	B1.9		B2.02	
TEST03 (VT)	Portfolio (individual)	Water balance	30%	5.5	B1.4- B1.7		B1.10	

Module 6 (SPD): Adaptive Planning for Climate Change

Block 6 / Semester 3								
CU79030v1	**Title: Adaptive Planning Theory**	**Number of study credits: 3.0**	**Number of contact hours: 26**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: This course covers theories for planning and management for adaptation and mitigation. This will be explained via the application in the Dutch Delta program, taking into consideration the different socio-economic and cultural dimensions and the European context. This course prepares for the adaptive Climate Change Tender.								
Learning outcomes:2.1.1, 2.1.2, 4.1.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Concepts of planning and management for adaptation and mitigation	100%	5.5	B2.8		B2.10	

Block 6 / Semester 3								
CU79105V1	**Title: Research Methodology**	**Number of study credits: 2.0**	**Number of contact hours: 18**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: This course covers the steps of the research cycle from the research proposal till writing your report. The report will be assessed with an assessment form and a peer assessment of your individual contribution to the group work.								
Learning outcomes: 7.1.2, 7.1.3, 7.1.4								
Compulsory literature:								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Paper	100%	5.5	B2.7		B2.10	

Block 6 / Semester 3					
CU79033v4	**Title: Data Visualisation**	**Number of study credits: 2.5**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of course content: In this course you will learn how to visualize data in a professional way. You will learn how to upgrade GIS maps into professional visuals by the use of Adobe Illustrator and display them in the digital environment of ArcGis storymaps . The course will be assessed by an digital portfolio					
Learning outcomes:6.1.2, 8.1.1					
Compulsory literature: For this course is ArcGIS Pro and Adobe Illustrator, running at macOS or Microsoft Windows, and the use of a non-desktop computer required.					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Arc GIS storymap	50%	5.5	B2.8		B2.10	
TEST02 (VT)	Portfolio (individual)	Adobe illustrator	50%	5.5	B2.8		B2.10	

Block 6 / Semester 3					
CU79108V1	**Title: Strategic spatial interventions**	**Number of study credits: 5.0**	**Number of contact hours: 36**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Not applicable					
Conditions for test participation: not applicable					
Brief description of course content: In this project you will individually elaborate your vision for an urbanized European flood prone region. You will elaborate your intervention within the framework of your Climate Proof Spatial Vision into an integrated spatial proposal with impact on different themes and scale levels. The interventions shows how the area will be more climate adaptive and biodiverse in combination with relevant spatial challenges. The vision will be displayed in a design, an individual product, which is underpinned by the knowledge of the previous courses.					
Learning outcomes: 2.2.1, 3.1.1, 3.2.1, 5.1.1, 6.1.1, 8.1.1, 8.2, 9.2.2					
Compulsory literature:					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Presentation (individual)	Spatial intervention design	70%	5.5	B2.8		B2.10	
TEST02 (VT)	Portfolio (individual)	Spatial intervention design	30%	5.5	B2.2 – B2.5		B2.10	

Block 6 / Semester 3					
CU20679v1	**Title: HZ Personality II**	**Number of study credits: 2.5**	**Number of contact hours: -**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: Not applicable					
Conditions for test participation: Not applicable					
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.					
Learning outcomes: 9.1					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

Module 7 (SPD) : Risk and Disaster Management

Block 7 / Semester 4									
CU79035v1	**Title: Spatial Planning for Deltaic Risks**	**Number of study credits: 3**	**Number of contact hours:22**		**Mandatory**		**Teaching language: English**		
Conditions for course participation: not applicable									
Conditions for test participation: not applicable									
Brief description of course content: Within this module you will focus on vulnerabilities and risks present in delta areas in general and the Mississippi delta, USA specifically. You will learn which environmental, ecological, spatial and climate risks are present and how they relate to each other and to the social-economic and institutional risks. Furthermore, you will learn theories about planning for risks and disaster management.									
Learning outcomes: 1.1.1, 1.1.3, 1.2.1									
Compulsory literature: not applicable									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Written knowledge test		100%	5.5	B3.8		B3.10		

Block 7 / Semester 4									
CU79095v1	**Title: Social Systems Risks**	**Number of study credits: 3**	**Number of contact hours: 22**		**Mandatory**		**Teaching language: English**		
Conditions for course participation: not applicable									
Conditions for test participation: not applicable									
Brief description of course content: Within this course you will learn the basics about economic and socioeconomic risks in delta areas. You will learn about the economic and social risks of climate change. You will learn to identify process related risks that have impact on the feasibility of your project in the Mississippi delta.									
Learning outcomes: 1.1.1, 1.1.3, 1.2.1									
Compulsory literature: literature in the form of articles, policy documents and book chapters will be handed out during the lectures									
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**		
TEST01 (VT)	Written knowledge test	Social, economic and process risks of climate change and disasters	100%	5.5	B3.8		B3.10		

Block 7 / Semester 4								
CU79096v1	**Title: Design Methodologies I**	**Number of study credits: 3**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In this course you will explore a variety of design methodologies and you will learn for what design assignments you can apply the different methodologies. During the lessons we will explain the pros and cons of diverse design methodologies. You will practice the different methodologies and will be assessed with a portfolio, in which you demonstrate your ability to apply the different methodologies.								
Learning outcomes: 7.1.1, 7.1.3								
Compulsory literature: literature in the form of articles, policy documents and book chapters will be handed out during the lectures								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Proof of competence and skills	100%	5.5	B3.8		B3.10	

Block 7 / Semester 4								
CU79038v1	**Title: Integrated Risk Assessment for Delta Areas**	**Number of study credits: 3.5**	**Number of contact hours:30**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: 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 have to apply the statistics, GIS and visualization 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.								
Learning outcomes: 1.1, 1.2.1, 2.2.3, 7.1.2, 8.1.1, 8.2.1, 8.2.2, 9.1.1, 9.1.2, 9.1.3								
Compulsory literature: literature in the form of articles, policy documents and book chapters will be handed out during the lectures								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (group)	Integrated risk assessment	75%	5.5	B3.7		B3.10	
TEST02 (VT)	Criterion-referenced interview (individual)	Performance in group work	25%	5.5	B3.8		B3.10	

Block 7 / Semester 4								
CU20636v1	**Title: HZ Personality III**	**Number of study credits: 2.5**	**Number of contact hours: -**		**Mandatory**		**Teaching language: Dutch/English**	
Conditions for course participation: Not applicable								
Conditions for test participation: Not applicable								
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.								
Learning outcomes: 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

Module 8 SPD: Strategic planning for resilient Deltas

Block 8 / Semester 4					
CU79097v1	**Title: Spatial Planning for Resilience**	**Number of study credits: 2**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: Within this course you will learn theories on resilience building, the different types of resilience (spatial, technical, ecological, etc.), levels of resilience as well as design qualities contributing to resilience. Next to that, spatial planning in the US context and strategy development for resilient deltas will be further explored.					
Learn outcomes: 1.2.2, 1.3.1, 1.3.2					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Portfolio (individual)		100%	5.5	B4.8		B4.10	

Block 8 / Semester 4					
CU79102v1	**Title: Design Methodologies II**	**Number of study credits: 3**	**Number of contact hours: 22**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: This course is an elaboration of the previous methodology course, in which you have explored different design methodologies. In this course we will analyze the variety of methodology in depth. You will learn how scales of interventions and the phase in which the design is affect which methodology is the most suitable. You will practice with designing your own methodology. This course will be assessed with a portfolio.					
Learning outcomes: 7.1.4					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Portfolio (individual)		100%	5.5	B4.8		B4.10	

Block 8 / Semester 4								
CU79101V1	**Title: Integrated Spatial Water Plan**	**Number of study credits: 7.5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: With a (strategic) spatial plan for an urbanized delta region, you propose concrete water-related design solutions as part of an integrated approach for resilient, liveable and attractive delta regions in the future.								
Learning outcomes: 1.1.3, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 4.1, 8.1, 8.2, 9.2								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Assignment (individual)	Paper	75%	5.5	B4.7		B4.10	
TEST02 (VT)	Presentation (individual)	Explanation and reflection on spatial water plan	25%	5.5	B4.8		B4.10	

Block 8 / Semester 3								
CU20673v1	**Title: HZ Personality IV**	**Number of study credits: 2.5**	**Number of contact hours: -**	**Mandatory**	**Teaching language: Dutch/English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: Being able to self-direct your own development is a crucial skill that the future field of work and rapidly changing society demands from you. Moreover, it is important that you have the opportunity to work on your personal goals, so you can personalize your study Water Management. In this way we want to give you the opportunity to gain experiences, so that you can learn about your identity, can form new relationships with others and to learn about ways you would like to add value to the world. You can also work with HZ Personality on skills that will allow you to distinguish yourself in the labour market.								
Learning outcomes: 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Accountability of study load (70hrs)	100%	5.5	Variable		Variable	

SEMESTER 5 or 6 (AET & DM & SPD)

Semester 5 or 6					
CU11024v1	**Title: Orienting work placement / internship**	**Number of study credits: 30**	**Number of contact hours:10**	**Mandatory**	**Teaching language: English**
Conditions for course participation: See article 2.2.8 in this document for the rules of admission to the internship.					
Conditions for test participation: Not applicable					
Brief description of course content: During this orienting internship you will practise work related skills. You will work on an assignment that you design together with your internship company. Your work placement gives you a look at how work goes in real life, either inside or outside the Netherlands. You get the opportunity to explore which activities you like or do not like, to improve skills and competencies of your choice and to prepare for graduation project and professional life. Your end product of the internship is proof of competence and may include a research report or other products.					
Learning outcomes: 8, 9 and 2 times a choice out of 1-6					
Compulsory literature: internship manual					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Portfolio (individual)		100%	5.5	B2.10 B4.10		B3.3 – B3.10 B1.3 – B1.10	

SEMESTER 5 or 6 (AET & DM & SPD)

Semester 5 or 6		
Title: Minor	**Number of study credits: 30EC**	**Mandatory: Yes**
Conditions for course participation: See article 2.2.9 in this document for the rules of admission to the minor.		
Brief description of course content: For information on available minors and application process see the HZ Learn Page: Minor Offer and Registration		

SEMESTER 7 (AET)

Block 13 & 14 / Semester 7								
CU79085V2	**Title: Coastal challenge**	**Number of study credits: 10**	**Number of contact hours: 60**	**Mandatory**	**Teaching language: English**			
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: 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 a complex real-life case of a client. It uses the principles of integrated coastal zone management as a framework. You will initiate and design the project and also learn and apply tools for communication, collaboration, management, and innovation.								
Learning outcomes: 1, 2, 3, 7, 8, 9								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Assessment professional development	50%	5.5	B2.7		B2.10	
TEST02 (VT)	Portfolio (group)	End products	50%	5.5	B2.7		B2.10	

Block 13 & 14 / Semester 7					
The course will only be given if at least 8 students subscribe for this elective course					
CU20700v1	**Title: Advanced Water Technology**	**Number of study credits: 10.0**	**Number of contact hours: 90**	**Elective**	**Teaching language: English**

Conditions for course participation:

- Propedeutic exam passed
- At least 120 EC obtained (including provisional credits)
- Internship OR Minor passed
- AET applicants should have completed and passed AET course: Water Pollution and Treatment (CU20593)
- Civil Engineering applicants should have a biology and chemistry profile from high school and should have completed CE course: Sanitary Engineering (CU23880) with a pass grade of 7.5 or higher.

Conditions for test participation: not applicable

Brief description of course content:

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.

Learning outcomes: 1.1, 2.1, 2.2, 3.1, 6.1, 9.1

Compulsory literature: not applicable

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Concepts of Advanced Water Technology	25%	5.5	B1.4 – B1.9		B2.3	
TEST02 (VT)	Portfolio (individual)	Creating a water treatment train	50%	5.5	B2.5 – B2.7		B2.10	
TEST03 (VT)	Portfolio (group)	Flow operation in a water treatment proces	25%	5.5	B1.2 – B2.2		B2.10	

Block 13 & 14 / Semester 7					
The course will only be given if at least 8 students subscribe for this elective course					
CU79044v1	**Title: Ecological Risk Assessment**	**Number of study credits: 10**	**Number of contact hours: 70**	**Elective**	**Teaching language: English**

Conditions for course participation:

- Propaedeutic exam passed
- At least 120 EC obtained (including provisionary credits)
- Internship OR Minor passed

Conditions for test participation: To be allowed to participate in TEST04 (VT) approval of the preparatory literature review is required

Brief description of course content:

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. In several practicals you will learn how to use and apply eco-toxicological tests.

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.

Learning outcomes: 1.1, 1.2, 3.1, 4.1, 6.1, 7.1, 8.1, 8.2, 9.1, 9.2

Compulsory literature: *Ecotoxicology Essentials Environmental Contaminants and Their Biological Effects on Animals and Plants*, 1st Edition - April 15, 2016

- Author: Donald Sparling
- Paperback ISBN: 9780128019474
- eBook ISBN: 9780128019610

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Concepts of Ecotoxicology	30%	5.5	B1.9		B2.10	
TEST02 (VT)	Portfolio (group)	Practical Ecotoxicology	25%	5.5	B2.7		B2.9	
TEST03 (VT)	Assignment (individual)	Environmental Impact Assessment	30%	5.5	B2.7		B2.10	
TEST04 (VT)	Presentation (group)	Poster Ecological Risks	15%	5.5	B1.7		B1.9	

Block 13 & 14 / Semester 7					
The course will be given only if at least 8 students subscribe to this elective course					
CU79043V1	**Title: Aquaculture**	**Number of study credits:10**	**Number of contact hours:88**	**Elective**	**Teaching language: English**

Conditions for course participation:

- Propaedeutic exam passed
- At least 120 EC obtained (including provisionary credits)
- Internship or minor passed
- Excursions: participation is mandatory

Conditions for test participation: Not applicable

Brief description of course content:

This introductory course to aquaculture is an elective course, in which the focus will primarily be on the cultivation of saltwater organisms and the setup of an aquaculture business case. Shellfish, fish, and various low trophic species are increasingly cultivated under controlled circumstances. During the course, a large proportion of input will be provided by experts in the sector (through guest lectures and excursions) and various case studies. As a result, you will get a good impression of various aspects of ((inter)national) aquaculture.
You will learn about the biology of the organisms, the technical aspects of culturing (reproduction), the cultivation systems, the sustainability of aquaculture, the legislation, animal welfare, health management and economic aspects. In addition, you will get a taste of cost-price calculations, how to make a financial business plan, and how to bring your chosen product to the market.

Learning outcomes: 1.1, 1.2, 1.3,2.1, 2.2,3.1, 3.2, 5.1, 7.1 8.1, 8.2, 9.1

Compulsory literature: not applicable

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Written knowledge test	Concepts of Aquaculture	25%	5.5	B2.8		B2.10	
TEST02 (VT)	Assignment (group)	Paper: an aquaculture business plan	40%	5.5	B2.9		B2.10	
TEST03 (VT)	Assignment (group)	Paper about a case study	25%	5.5	B2.3		B2.9	
TEST04 (VT)	Presentation (group)	Poster about aquaculture practices	10%	5.5	B2.5		B2.9	

Block 13 & 14 / Semester 7					
CU79087V1	**Title: Urban Water Management**	**Number of study credits: 10**	**Number of contact hours: 70**	**Elective**	**Teaching language: English**

Conditions for course participation:

- The course will only be given if at least 10 students register for this elective course.
- Propedeutic phase passed.
- For the 4-year track: at least 60 ECs obtained in the major phase.
- For the 3-year track: at least 30 ECs obtained in the major phase.
- Minor or internship passed.

Conditions for test participation: not applicable

Brief description of course content: 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. Proper 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. This course has been developed in cooperation with the asset management research group of HZ and external experts from the professional field.

Learning outcomes: 1.1, 1.3, 2.1, 2.2, 3.1, 4.1, 5.1, 7.2, 8.1, 8.2, 9.2

Compulsory literature: not applicable

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (group)	Sewer systems design	30%	5.5	B1.9		B1.10	
TEST02 (VT)	Portfolio (group)	Asset management	30%	5.5	B2.8		B2.10	
TEST03 (VT)	Written knowledge test		40%	5.5	B2.8		B2.10	

SEMESTER 7 (DM)

Block 13 & 14 / Semester 7					
CU79085V2	**Title: Coastal challenge**	**Number of study credits: 10**	**Number of contact hours: 60**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: 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 a complex real-life case of a client. It uses the principles of integrated coastal zone management as a framework. You will initiate and design the project and also learn and apply tools for communication, collaboration, management, and innovation.					
Learning outcomes: 1, 2, 3, 7, 8, 9					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (individual)	Assessment professional development	50%	5.5	B2.7		B2.10	
TEST02 (VT)	Portfolio (group)	End products	50%	5.5	B2.7		B2.10	

Block 13 / Semester 7					
CU79109v1	**Title: Mekong delta-Integrated area and system analysis**	**Number of study credits: 10**	**Number of contact hours: -**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: In this course an integrated area and (water) system analysis of an area in the Vietnamese Mekong Delta will be conducted. The outcome of this analysis will be used to develop relevant scenarios for a more circular development of this delta.					
Learning outcomes: 1.1, 1.2, 1.3, 2.1, 7.1, 8.2					
Compulsory literature: not applicable					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio (Individual)	Analysis and scenario's	100%	5.5	B1.9		B2.2	

Block 14 / Semester 7								
CU79110v1	**Title: Planning for circularity-Mekong delta**	**Number of study credits: 10**	**Number of contact hours: -**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: In this course a circular project needs to be developed for an area in the Vietnamese Mekong delta, based on the system analysis in module 13. Your solution should fit within the Vietnamese/Mekong delta policies and culture. You will also learn to specify feasibility, practicability and sustainability, social costs and benefits and funding options.								
Learning outcomes: 2.1, 2.2, 3.1, 3.2, 4.1, 5.1, 6.1, 8.1, 8.2, 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio	International tender and assignments	50%	5.5	B2.7		B2.10	
TEST02 (VT)	Criterion referenced interview		50%	5.5	B2.8		B2.10	

Semester 7 SPD

Block 13 & 14 / Semester 7					
CU79085V2	**Title: Coastal challenge**	**Number of study credits: 10**	**Number of contact hours: 60**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: 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 a complex real-life case of a client. It uses the principles of integrated coastal zone management as a framework. You will initiate and design the project and also learn and apply tools for communication, collaboration, management, and innovation.					
Learning outcomes: 1, 2, 3, 7, 8, 9					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Portfolio (individual)	Assessment professional development	50%	5.5	B2.7		B2.10	
TEST02 (VT)	Portfolio (group)	End products	50%	5.5	B2.7		B2.10	

Block 13 / Semester 7					
CU79111v1	**Title: Mekong delta-Integrated spatial and system analysis**	**Number of study credits: 10**	**Number of contact hours: -**	**Mandatory**	**Teaching language: English**
Conditions for course participation: not applicable					
Conditions for test participation: not applicable					
Brief description of course content: You will analyse a specific region in the delta and develop relevant scenarios**.** The analysis and the scenario's will be used to design a water plan to make a regenerative landscape.					
Learning outcomes: 1.1, 1.2, 1.3, 2.1, 7.1, 8.2					
Compulsory literature: not applicable					

Test code	Assessment type	Content	Weighting Factor (%)	Minimum score	Planning test in week		Resit scheduled in week	
TEST01 (VT)	Portfolio	Analysis and spatial scenarios	100%	5.5	B1.9		B2.2	

Block 14 / Semester 7								
CU79112v1	**Title: Designing for circularity-Mekong delta**	**Number of study credits: 10**	**Number of contact hours: -**		**Mandatory**		**Teaching language: English**	
Conditions for course participation: not applicable								
Conditions for test participation: not applicable								
Brief description of course content: You will design a water plan to make a regenerative landscape.								
Learning outcomes: 2.1, 2.2, 3.1, 3.2, 4.1, 5.1, 6.1, 8.1, 8.2, 9.1								
Compulsory literature: not applicable								
Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST01 (VT)	Portfolio	International tender and assignments	50%	5.5	B2.7		B2.10	
TEST02 (VT)	Criterion referenced interview		50%	5.5	B2.8		B2.10	

SEMESTER 8 (AET & DM & SPD)

Block 1,2,3,4 / Semester 1,2					
CU11025v1	**Title: Being a Water Manager**	**Number of study credits: 30**	**Number of contact hours:**	**Mandatory**	**Teaching language: English**

Conditions for course participation:

- have obtained at least 175 EC (150 EC for 180 EC programme) at the start of the graduation;
- have obtained 210 EC (150 EC for 180 EC programme), before Test01 is submitted for assessment
- carry out the graduation project at an organisation within the Water Managers' field of expertise (either AET, DM or SPD)

Conditions for test participation: not applicable

Brief description of course content: Students will finalize their studies with a graduation internship at a company or an organization in the Netherlands or abroad. Within five months, students carry out an individual project resulting in one or more professional products to prove that they have become a competent professional Water Manager. The graduation follows the set-up of "Bijdetijds Afstuderen" (conform HZ policy) and consists of one test: a criterium referenced interview

Learning outcomes: AET: 1, 2, 6, 7, 8, 9; DM: 1, 2, 3, 7, 8, 9; SPD: 1, 2, 3, 7, 8, 9

Compulsory literature: not applicable

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST 01 (VT)	Criterium referenced interview (individual)		100%	5.5	B4.9-B4.10		Calendar week 28-29 of HZ Year plan	

SOU PROGRAM (AET)

SOU program Feb-Jul Year 1 + Aug – Feb Year 2					
CU22551V1	**Title: Gaining professional competences**	**Number of study credits: 30**	**Number of contact hours: 200**	**Mandatory**	**Teaching language: English**
Conditions for course participation: Admitted to the SOU WM Track					
Conditions for test participation: see 2.1.6 Admission of students coming from SOU					
Brief description of course content: In this part of your study you will gain professional competences as a water manager. You always have to deal with real practical assignments as part of your study, these are very different from most of the study assignments, however context-rich they sometimes may be. The course 'Gaining professional competences' gives a look at how things go in practice. You will work on building a relevant network and act representative for the water management sector. During this course you will gain competences vital for your graduation internship. You will be given assignments that you have to carry out for (or at) an organisation; they will fit in with your choice of study, require you to make clear why you have or have not done things, and yield a portfolio. You will be assessed on the basis of your portfolio which tracks your learning process and progress.					
Learning outcomes: 8, 9 and 2 times a choice out of 1-6					
Compulsory literature: *Aquatic Systems*					

Test code	**Assessment type**	**Content**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Resit scheduled in week**	
TEST 01 (VT)	Portfolio (individual)		100%	5.5	B2.4		B2.8	

2.2.6 ***HZ Personality*** (article 3.11 CER HZ)

The curriculum reserves 10 study credits (ECTS) for HZ Personality. HZ Personality is spread over the curriculum as much as possible. With this learning pathway, HZ gives students space to personalize their own development during their studies, increases the possibilities for domain-transcending exploration and stimulates broad social engagement. See for a description of the HZ Personality courses within the Water Management program the tables above: CU20676 (2,5 EC), CU20679 (2,5 EC), CU20636 (2,5 EC) and CU20673 (2,5 EC).

2.2.7 ***Specialisations*** (article 3.9 CER HZ)

At the end of semester 1 of the study program students have to choose between the graduation study track Aquatic Eco Technology (AET) or Delta Management (DM) or Spatial Planning & Design (SPD). The study career coach supports in the decision making process as does the course Professional Development. The choice for either AET, DM or SPD must be submitted to the study career coach, latest 15th of December. During the 2nd semester it is still possible to switch between study tracks, if necessary. After the 1st year it is not possible anymore to change study tracks, unless there are compelling reasons which are discussed with and approved by the study program coordinator. In exceptional cases and only with excellent results it is allowed to follow two study tracks. Consultation and approval by the study program coordinator and study career coach are necessary.

2.2.8 ***Internship*** (article 3.8 CER HZ)

Students that want to take part in the orienting work placement course CU11024 (internship) of the study program must meet the following conditions:

- The student must have an approved and signed work placement contract before the start of the internship.
- Students who need to enter a construction site are strongly advised to have a valid VCA-certificate. If you do not have a VCA-certificate you are not allowed access to a construction site in the Netherlands, this can be essential to acquire the competencies linked to the work placement.

The maximum period in which students are allowed to work on the same internship project:

- The period in which a specific internship project is worked out is 1 semester, with a maximum extension of 1 semester.

Additional conditions for work placements (internships) abroad (outside the Netherlands):

- A maximum amount of 15 EC of resits in the modules of internship is allowed. If the student has more than 15 EC of resits in the simultaneous running modules of the internship, the student is not allowed to attend the internship abroad since this will cause difficulties in attending the resits.

The internship manual 2023-2024, with the content of the internship, the internship process and evaluation of the internship, can be found on Learn.

2.2.9 ***Minor*** (article 3.7 CER HZ)

Students who want to take part in the minor of the study program must meet the following conditions:

- The propaedeutic exam has to be passed and at least 30 EC of the main phase have to be obtained.
- Students are obliged to choose a minor that is offered by the HZ. The list of minors and further explanation about admission can be found on the HZ Learn page: Minor offer and registration.
- Students have the possibility to participate in a minor at another institution in the Netherlands if the minor is on the list www.kiesopmaat.nl, or students can study abroad. In both cases students need to ask permission from the DEX and they need to do that beforehand.
- The goal of the minor is to broaden and deepen the knowledge and skills of the students. Therefore the minor has to fit in the study program and has to add to the study career of the students.
- The language of the minor is depending on the choice the student makes and can differ from the table in 2.2.3.

Additional conditions for a minor abroad (outside the Netherlands):

- A maximum amount of 15 EC of resits in the semester of the minor is allowed. If the student has more than 15EC of resits in the simultaneous running semester of the minor, the student is not allowed to attend the minor abroad since this will cause difficulties in attending the resits.

2.2.10 ***Participation in international exchange programme*** (article 4.5 CER HZ)
There are no additional conditions of participation besides the conditions stated in article 4.5 of the CER HZ.

2.2.11 ***Graduation*** (article 3.8 CER HZ)

In order to participate in the Water Management program graduation phase, students must:

- have obtained at least 175 EC (including the propaedeutic exam and provisional credits) from the first-year phase and main phase when starting the graduation study period;
- have obtained 210 EC (including provisional credits) from the first year phase and main phase, before the graduation defence takes place for assessment, as defined in the course program;
- carry out the graduation project at an organization within the Water Management field of expertise.

More information (dates, deadlines, acquiring an internship, evaluation, etc.) is provided on Learn: Graduation Water Management 2023-2024 (the graduation manual of the study year you started your graduation is applicable; if it is not on Learn, ask your Study Career Coach).

The period in which a specific graduation project is worked out is 1 semester, with an extension of 1 semester.

2.2.12 ***Assessments and inspection of results*** (article 6.1-6.7 CER HZ)

HZ uses seven assessment types that are defined in the HZ Assessment Policy, namely:

- *Written knowledge test*; set of questions focused on knowledge reproduction and/or knowledge application, which are answered in writing.
- *Oral assessment*; set of questions about knowledge (application), which are answered orally.
- *Assignment*; representation of a performed (professional) task.
- *Presentation*; explanation or explanation before an audience of a performed (professional) task.
- *Portfolio*; collection of evidence of competence provided by the student.
- *Criterion-referenced interview*; discussion between assessor and student based on evidence provided in advance, using predefined criteria.
- *(Workplace) Assessment*; performance of (professional) tasks and/or skills (in an authentic context).

The Examination Board's fraud regulations and testing protocols apply to the taking of tests, see MyHZ.

The examiner ensures that the result of a test is registered in Osiris student (article 6.6 of the CER HZ) within 10 working days after the student has taken the test and at least 5 working days before the next possibility for resit.

The student has the right to inspect the assignments/questions, their elaborations and the assessment criteria of the test taken by the student within 10 working days after the date on which the result of the test was announced, or as much earlier as is necessary in connection with the next possibility of resitting the test (article 6.4 and article 6.6 of the CER HZ).

2.2.13 Transition arrangement (Article 6.2 HZ CER)

The study program is being optimized each year and as a result new courses are being developed and other courses are being discontinued.

The following rules are in play:

1. In general students have the right to take exams in courses no longer offered in the study program, during the study year following the year in which the course still was part of the study program. The exams and resits will be planned in the exam and resit weeks of the program Water Management in the study year 2023-2024, unless agreed differently with the students.
2. Without taking away from point 1, the result of such an exam taken in 2023-2024 will be registered with the exams of the study year in which the student took the exam in the first place.
3. Compared to 2022-2023 changes have been made in the exam matrixes of some courses. This entails weight, sum and/or format of exams, and placement of exams in other courses. Without taking away from point 1, the responsible examiners determine which exams students need to take during 2023-2024 to be able to meet the requirements for the exams from the year 2022-2023. As a result students cannot request to take the exact same exam as the one taken in the year 2022-2023.

4. In cases that these rules do not suffice, study career coaches, study program coordinator and Exam Board together determine the effective alternative to be able to meet all requirements. In case it is necessary to resort to an extra attempt to pass an exam, the Exam Board needs to officially approve.

Conversion table 2023-2024 (continues on next page)

2022-2023			2023-2024			Remarks
Block 1						
Introduction to Ecology	CU79058v2		Introduction to Ecology	CU79058v1		0% test ommitted
Water Governance	CU79059v2		Water Governance	CU79059v1		0% test ommitted
Block 2						
Academic Reading for Delta	CU04206V14	2,5	Foundation course English	EN39001-4	5,0	Course included in new language courses via LCC
Block 3						
HZ Personality I	CU20676v1	2,5				In block 2 format 2023-2024
Spatial Analysis II: delta cities	CU79078v1	2,5		CU79078v2		Change of test format
Block 4						
Academic writing for Delta		2,5	Foundation course English	EN39001-4	5,0	Course included in new language courses via LCC
Block 5						
Principles of Data Analysis	CU79103V2	2,5		CU79103V3		Change of test format
Climate proof area vision	CU79107v1	5,0		CU79107v2		Change of test format
Climate proof spatial vision	CU79104v1	5,0		CU79104v2		Change of test format
Block 6						
Data visualisation	CU79033v3	2,5		CU79033v4		Change of test format
Block 8						
Applied Eco Engineering	CU20620v4	5,0		CU206204v5		Change of test format

Block 9-12						
Orienting work placement / internship	CU11022v14	30		CU11024v1		
Block 13 + 14						
Integrated Coastal Challenge	CU79085v1	10	Coastal Challenge	CU79085v2		Change of test format
Mekong delta – integrated area and system analysis	CU79047v1	2,5				No longer in standard program, only available as resit from previous years
Spatial planning for circularity	CU79048v1	2,5				
Delta Economics III	CU79049v1	2,5				
Delta Management	CU79050v1	2,5				
			Mekong delta – integrated area and system analysis	CU79109v1	10	New courses with SPD joining the fourth year
			Planning for circularity – Mekong Delta	CU79110v1	10	
			Mekong delta – integrated spatial area and system analysis	CU79111v1	10	
			Designing for circularity – Mekong Delta	CU79112v1	10	
Block 15 + 16						
Final thesis Water Management	CU11020v12	30	Being a Water Manager	CU11025v1		Change in test format according to “Bijdetijds Afstuderen”

2.3 Study recommendation

2.3.1. Conditions for registration for the study program after NBSA (article 8.1, paragraph 9 HZ CER)

Students with a formal negative study advice from the HZ Examination Board are not allowed for any new enrolment in the Water Management program of the HZ (CROHO 34074) within three years after the negative study advice.

2.4 Registering for courses and tests

2.4.1 The student registers for **courses** through OSIRIS Student (CER HZ article 4.4 paragraph 3).

- The student will be informed about course registration by email no later than 2 weeks before the start of the study year.
- New students will be registered by the study programme for the courses of block 1 in their first year at HZ.
- To participate in the course, you must be enrolled no later than one week before the start.
- Once the student is enrolled, the student will also see this in the timetable.
- If a student decides not to take a course, the student contacts the SLC early.

2.4.2 Students register and de-register for tests through OSIRIS Student. Registration applies to all types of tests and all tests within a course. HZ works with registering for tests so that courses can organize the work for taking and assessing tests (OER article 6.3 paragraph 1).

- Students are informed centrally in week 1 of each block via an email by the domain offices about registering for tests.
- New students are enrolled by the program for the first two test occasions or guided therein by the program for tests of block 1 year 1.
- Students must register for all tests in the block in which the tests are offered no later than the second week of classes (Sunday 23:59h, GMT+1). With registration before the deadline, the student is guaranteed to participate in the tests.
- After registering, the student may decide not to take the test after all. In that case, the student deregisters himself/herself in OSIRIS Student again for the test opportunity. This can be done at any time, except if the student has participated in the test. *Note! A student is entitled to two test attempts per academic year, unless the examination committee decides otherwise (CER article 6.2). Articles 2.2.4 and 2.2.5 of the Implementation Regulations state for each test how many test opportunities are offered in the academic year.*
- If a student has not registered before the deadline for a test opportunity in which the student does want to participate, the student contacts the study coach (SLC)
- The student checks in week 6 of each block whether the test opportunity is in the timetable. If, after registration, the test is not in the timetable, the student contacts the domain office.
- When a student is registered for a test and has not participated, Not Participated (NP) is entered as a result in OSIRIS.

2.4.3 More information about OSIRIS Student can be found on HZ Learn under Student - OSIRIS Support.

CHAPTER 3 ESTABLISHMENT

3.1.1 The duration of the implementation regulations is the same as the duration of the HZ Education and Examination Regulations Bachelor programme full-time 2023-2024.

3.1.2 The study program committee has approved this implementation regulation on 18/04/2023.

3.1.3 These Course and Examination Regulations were established by the Executive Board on 04/07/2023.