Implementation Regulations CER HZ

Bachelor

CIVIL ENGINEERING

Full-time

CROHO 34279

2023-2024

UNIVERSITY OF APPLIED SCIENCES

INDEX

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 HZ CER 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 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 2.2 and 2.3 CER HZ)

Students with a havo diploma				
Havo profiles:	**NT**	**NG**	**EM**	**CM**
Admissible:	√	wisB + nat	**x**	**x**

Students with a vwo diploma				
Vwo profiles:	**NT**	**NG**	**EM**	**CM**
Admissible:	√	nat of nlt	nat	**x**

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

Not applicable.

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

Anyone who wishes to be admitted to a three-year Degree programme must comply with one of the following educational entry requirements: a) a pre-university education diploma (Dutch: VWO) or 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.

2.1.2 *Deficiency investigation* (article 2.4 CER HZ)

If a student who is not directly admissible wishes to enrol for Civil Engineering, then the student will undergo a deficiency investigation. When enrolling for the Civil Engineering programme, the investigation will consist of mathematics and physics at HAVO level 5.

By the 1st of September of that school year, the student can prove to be qualified by means of certificates proving that the subjects stated have been passed successfully at HAVO level 5 with a minimum score of 5.5. Summer courses in physics and mathematics that can provide the students with the required certificates are offered by HZ. For more information, see https://hz.nl/opleidingen/natuurkunde and https://hz.nl/opleidingen/wiskunde.

2.2 Programme and education structure

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

Civil engineering is a very broad field, with many different job opportunities and specializations. The HZ Civil Engineering study programme trains Bachelor's engineers with a broad overview about the professional field and its possible specializations. As a result of this wide-ranging training, graduates have secured positions in various engineering companies - such as Arup, Boskalis, BAM, van Oord Offshore and Balfour Beatty - as Project engineers, Designers, Contractors, etc. In several cases, students have decided to pursue a Master's degree in the Netherlands or abroad. The Civil Engineering study programme prepares highly versatile engineers who are directly able to apply their knowledge and skills in real-life situations, with a special focus on safety and sustainability goals. From the cohort 2017-2018, for both the four years programme and the three year programme, the Civil engineering programme is based on the learning outcomes of the built environment domain as set out in the book "Building together and making room for the future" (Hoger onderwijs groep Bouw & Ruimte, 2015)[1].

From 2015, the national set of learning outcomes has nine competences, coupled with ten focus areas that apply to all programmes within the built environment domain. The nine competencies formulated for the domain are divided into two categories: professional competencies (1-6) and general HBO competencies (7-9). The six professional competencies refer to the so-called design, creation and maintenance process, where the generic HBO skills are important in each stage. This concerns the competencies of (1) Initiating and controlling, (2) Design, (3) Specifying, (4) Realizing, (5) Management and (6) Monitoring, testing and evaluating. The generic HBO competencies are (7) Research, (8) Communication and collaboration and (9) Management and innovation. The programme has broken down the professional competencies into subtasks and general learning goals.

The subtasks and corresponding learning goals are the basis of the competences breakdown matrix. The Civil Engineering programme ensures that the coverage of the competences is completely achieved during the programme.

The Civil Engineering programme tries to offer a variety of subjects of specialization, related to the focus areas: (1) Spatial planning and design, (2) Water, soil and environment, (3) Infrastructure and mobility (4) Building and technology, (8) Applied research, (9) Communication, and (10) Management and organization. Within the national profile, the Dublin descriptors are used as a point of departure. This means that if a student has the competencies, (s)he meets the Dublin descriptors. The same procedure is used for other standards (such as those of ENAEE, NVAO and the Colleges Association). Three levels of competency are distinguished within the profile. These three levels are defined based on three aspects: task, context and degree of independence. The definition of the various levels is recorded in the book "Building together and making room for the future" (Hoger onderwijs groep Bouw & Ruimte, 2015).

[1] Hoger onderwijs groep Bouw & Ruimte (2015). *Samen bouwen en ruimte geven aan de toekomst. Eindkwalificaties domein built environment.*

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

Description of the programme learning outcomes:			
1	Initiating and directing		
	1.1	Systems analysis: understanding the situation	
		1.1.1	Describe the Civil Engineering work field and professions.
		1.1.2	Detect current challenges with relevant stakeholders, by exploiting system thinking and a wide market orientation.
		1.1.3	Know and explain the basic properties and behaviour of building materials like concrete, steel, wood, and masonry.
		1.1.4	Understand the hydrological/water cycle and water resources, in order to carry out rainfall-runoff analysis, hydrological modelling and hydrometry.
		1.1.5	Understand the basic theory regarding shear stresses, slope stability and ground water flow and apply it to simple soil mechanical problems.
		1.1.6	Understand the basic elements and principles of road design.
		1.1.7	Understand the basic principles of concrete design.
		1.1.8	Understand fundamental processes/concepts needed for a sustainable living environment as material separation in waste processing, air pollution and water pollution.
		1.1.9	Understand the basic principles behind the selection of a foundation system.
		1.1.10	Understand the importance of each element constituent of a road and also the basic maintenance aspects operating on a road.
		~~1.1.11~~	~~Understanding an explaining cartography, geodesy, satellite geodesy, topography, and draw 3D elements in AutoCAD.~~
		1.1.12	Consider the system requirements in terms of technical engineering constraints, management possibilities and water users, based on the acquired knowledge i.e. water in soil, salinity control and seepage, etc.
		1.1.13	Understand the basic principles of steel structural design.
		1.1.14	Understand the basics of flexible retaining structures.
		1.1.15	Understand the coastal processes, such as erosion and accretion, and the causes like tides and waves. The safety assessment of the Dutch coast and the programs regarding this safety can be elaborated.
		1.1.16	Explain the (waste)water treatment units and consider the water supply network components their maintenance and asset management. Perform the hydraulic design of the most common treatment units.
		1.1.17	Understand the elements included in the preliminary phases of the project life cycle, such as contracting, project evaluation, delivery methods, etc.
		1.1.18	Explain what the most important failure mechanisms of dikes are and how to prevent failure.
		1.1.19	Understand the dredging world and its characteristics in connection with environment and ecology.
		1.1.20	Understand the elements included in the life cycle of a civil engineering project, starting from the design phase until the project close out.
		1.1.21	Learn, detect, identify, analyze and validate with relevant stakeholders, based on a helicopter perspective, systems thinking and a wide market orientation, socially relevant (project) assignments and challenges.
	1.2	Defining programme requirements	
		1.2.1	Make an overview of the boundary conditions and requirements by talking to the clients and stakeholders and by analyzing regulations / legislation.
		1.2.2	Define (pre-) conditions, requirements, wishes and shared ambitions and vision, aimed at creating broad-based improvements and solutions.
	1.3	Describing, monitoring and adjusting	
		1.3.1	Monitor and adjust the process of project initiation by peer-reviewing your team members and by reflecting on your personal performance.
		1.3.2	Describe, monitor and adjust/control the process.
		1.3.3	Analyze, structure, validate, enrich (theory development), report and share (existing and new) findings obtained by applying systems thinking.
		1.3.4	Communicate appropriately and handle the situation based on appropriate (ethical) codes of conduct
2	Designing		
	2.1	Developing a solution based on systems thinking and programme requirements	
		2.1.1	Design a general layout by working out several variants, taking into account the preconditions, requirements, and stakeholders' wishes.
		2.1.2	Develop and validate, in collaboration and alignment with stakeholders, a design (a project or research plan, a model, advice, spatial or technical design, a solution) based on programme requirements by working out several variants.
	2.2	Creating different solutions	
		2.2.1	Examine the (design) variants and make a deliberate and validated selection of the most suitable.
		2.2.2	Examine various solutions and designs and make a deliberate, validated selection.
		2.2.3	When deemed necessary, you propose further, in-depth (applied, practice-oriented) research.

3	Specifying		
	3.1	Specifying and detailing	
		3.1.1	Apply mathematical and physical knowledge and skills to obtain the required calculation level for civil engineering professionals
		3.1.2	Determine the distribution of internal forces in statically determined beams
		3.1.3	Apply the basic properties of fluids and governing laws of fluid mechanics focusing on hydrostatics and pressure flow, including hydrodynamic modelling.
		3.1.4	Understand the principles and rules of technical civil engineering drawings, both considering hand drawings and AutoCAD drawings.
		3.1.5	Determine the distribution of internal stresses in statically determined beams.
		3.1.6	Apply the basic properties of fluids and governing laws of fluid mechanics focusing on open channel flow, including hydrodynamic modelling and identifying elements of sewerage networks.
		3.1.7	Identify the basic material properties of soil and use them to calculate vertical earth pressures, settlements, including the incorporation of consolidation.
		3.1.8	Calculate loads and combinations, determine distribution of internal forces in hinged structures and trusses, and calculate torsion in simple structures.
		3.1.9	Execute a (part of) detailed design of parts of your civil engineering objects using a systematic approach complying with environmental regulations: manual calculations, software modelling, detailed drawings, etc.
		3.1.10	Design an irrigation and drainage system in a rural area balancing water supply and water requirements in time and space.
		3.1.11	Calculate the lateral earth pressures and check the design and construction of shallow and deep (pile) foundations and rigid retaining structures.
		3.1.12	Design the layout of a simple road.
		3.1.13	Calculate basic bending reinforcement of statically determined concrete structures and draw the dimension drawings.
		3.1.14	Calculate the lateral earth pressures and check the design and construction of various types of flexible earth retaining structures.
		3.1.15	Detail the layout of a simple road.
		~~3.1.16~~	~~Determine dimensions of simple steel structures when considering strength (cross-section resistance).~~
		3.1.18	Design a water distribution network and analyse the performance of the system under diverse system conditions using a hydrodynamic computer model (EPANET). Solve hydraulic iterative-based problems using Matlab
		3.1.19	Determine dimensions of simple steel structures when considering strength, stability and stiffness.
		3.1.20	Design and calculate hard coastal defence structures like a dike profile with different types of revetment, taking the environment and climate change into account.
		3.1.21	Determine deformation and distribution of internal forces in statically indeterminate structures.
		3.1.22	Calculate (the reinforcement and foundation of) permanent underground concrete structures. Understand and explain the fundamental design considerations and the close relationship between design, construction, and maintenance of these structures.
		3.1.23	Understand and explain the fundamental design principles of temporary works of construction pits. Understand the close relationship between their design and construction.
		3.1.24	Explain spreading of concentrated loads in soil and concrete structures and interpret the impact of isotropic and orthotropic material behaviour.
		3.1.25	Understand and explain the fundamental design principles of hydraulic structures. Understand the close relationship between their design, construction, and maintenance.
		3.1.26	Specifying and detailing the proposed design. You specify goals, (pre-) conditions and feasibility of the project, such that it directs and shapes development of the product. Based on the programme requirements, including required levels of quality and relevance, you further specify a selected design(s).
		3.1.27	Calculate basic shear reinforcement and draw the bending and shear reinforcement of statically determined concrete structures.
		3.1.28	Programming mathematical formulas in Excel for applications in civil engineering.
4	Realizing		
	4.1	Realizing	
		4.1.1	Investigate management and maintenance procedures for assets using your knowledge about construction materials and methods.
		4.1.2	Set up and carry out practical experiments and tests.
		4.1.3	Make a plan for the realization.
		4.1.4	Plan the dredging project from the pre-tendering phase to the tendering phase, suggesting the most suitable contract depending on the project conditions.
		4.1.5	Make a plan for the building process, schedule, safety, work plan, cost estimation, construction site planning, quality control.
		4.1.6	Advise the owner of assets on management and maintenance by using your knowledge about construction materials and methods.
5	Maintaining		
	5.1	Maintaining	
		5.1.1	Draft a global maintenance plan.

		5.1.2	Know and clarify the most common types and causes of the deterioration of concrete and steel in civil assets.
		5.1.3	Know and identify often-used rehabilitation measures to renovate various types of civil assets.
		5.1.4	Understand and explain the principles and thinking approach of asset management.
		5.1.5	Apply and evaluate such principles to a concept asset-management plan (qualitative) for a civil asset.
		5.1.6	Devise a quantitative life/cycle plan for (part of) a civil asset
6	Monitoring, assessing and evaluating		
	6.1	Monitoring, assessing and evaluating	
		6.1.1	Monitor your solution and assess your results based on initial requirements and preconditions.
		6.1.2	Understand and explain cartography, geodesy, satellite geodesy, topography and draw 3D elements in AutoCAD.
		6.1.3	Draft a global monitoring plan.
7	Research		
	7.1	You are able to make a proposal for (applied) research and set up a research project to solve problems in practical situations	
		7.1.1	Formulate a problem statement (which comprises the problem description, research question and objective).
		7.1.2	Conduct a literature review.
		7.1.3	Set up a research project and define it in a research proposal.
		7.1.4	Develop a problem statement and to conduct a literature review in order to produce a research proposal for a professional research project
	7.2	You are able to conduct research (or have it conducted), as described in the research proposal, monitor progress and quality and make adjustments where necessary	
		7.2.1	Collect the required data and process it accordingly to enable a meaningful interpretation.
		7.2.2	Monitor the progress and quality of the execution and make adjustments if necessary.
		7.2.3	Examine the given data and you are able to provide meaningful interpretation, monitoring and adjusting your process when needed
	7.3	You are able to interpret data and draw conclusions regarding the research question. Additionally, you are able to evaluate and report results and process	
		7.3.1	Ascribe significance to retrieved and processed data.
		7.3.2	Report your research results.
		7.3.3	Examine and report your results and you are able to discuss them and to elaborate meaningful conclusions
	7.4	You act in accordance with the (ethical) code of conduct associated with research	
		7.4.1	Adapt your behaviour to the norms, professional ethics, attitude and responsibilities associated with research.
		7.4.2	Adapt your behavior to the professional and research environment
8	Communication and collaboration		
	8.1	Communication	
		8.1.1	Deliver a report, portfolio and presentation based on given requirements.
		8.1.2	Communicate efficiently and clearly with your team members and project leader by using written and oral means.
		8.1.3	Present your products in a professional environment using both written and verbal forms
		8.1.4	Use 21st century skills and techniques in order to make your reporting appealing and interesting for your client
	8.2	Collaboration	
		8.2.1	Collaborate in your group as a junior civil engineering team.
		8.2.2	Work in a group setting, operating such as a professional working team with responsibilities and roles.
9	Management and innovation		
	9.1	Management	
		9.1.1	Act as an independent professional, performing in your group according to your role.
		9.1.2	Organize and undertake your task with a professional attitude in accordance with a given level/instructions
	9.2	Innovation	
		9.2.1	Propose innovative solutions inspired to the literature review and on information coming from the professional market/field.
		9.2.2	Use your creativity and your personal input to provide innovative results and interpretations to a given task

These competences were established in April 2015 for the Domain Built Environment. In the table below, these competences are compared with the former ones, adopted by the study program until study year 2016-2017.

Competences until cohort 2016-2017	**Competences from cohort 2017-2018**
BBE 1 Drawing up a schedule of design requirements	Pt.1 Initiating and directing
BBE 2 Creating and justifying an integral design	Pt.2 Designing
BBE 3 Specifying a design	Pt.3 Specifying
BBE 4 Managing and monitoring the implementation process	Pt.4 Realizing
BBE 5 Implementing a management plan	Pt.5 Maintaining Pt.6 Monitoring, assessing and evaluating

The subtasks for the former competences are summarized in the table below.

Description of the professional competences of the study programme until cohort 2016-2017:		
1	BBE 1 Drawing up a schedule of design requirements	
	1.1	CiE 1 Drawing up a programme of requirements and design
2	BBE 2 Creating and justifying an integral design	
	2.1	CiE 2 Drawing up alternatives and variations
	2.2	CiE 3 Assessing and choosing alternatives and variations
3	BBE 3 Specifying a design	
	3.1	CiE 4 Detailing, calculating and drawing
	3.2	CiE 5 Drawing up contract documents
	3.3	CiE 6 Drawing up a budget
4	BBE 4 Managing and monitoring the implementation process	
	4.1	CiE 7 Drawing up the implementation plan
	4.2	CiE 8 Drawing up a schedule
	4.3	CiE 9 Describing project-based quality description
	4.4	CiE 10 Managing a construction site
	4.5	CiE 11 Supervising
5	BBE 5 Implementing a management plan	
	5.1	CiE 12 Drawing up a plan for management and maintenance of infrastructure

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

National name:	B Civiele Techniek
International name:	B Civil Engineering
Orientation:	Bachelor HBO
Title conferred:	Bachelor of Science (BSc)
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:	34279
Location:	Middelburg
Language:	Dutch/English
Effective date:	29-06-2018
Submission date	01-11-2025
Joint degree programme:	Not applicable
180 ECTS fast track:	Yes

2.2.3a ***Programme schedule***

Four year programme 2023-2024

		Course code	Course name	ECs	
Year 1 (Propaedeutic phase)	Block 1	CU20596V1	Introduction CE	2,5	15,0
		CU79090V1	Construction Materials 1	2,5	
		CU20598V1	Mathematics & Physics	2,5	
		CU20600V1	Fluid mechanics 1	2,5	
		CU26000V2	Exploring Civil Engineering - Project & Professional Skills 1	5,0	
	Block 2	VCCU06284	HZ personality CE 0	1,25	15,0
		VCCU06283V6	VCA	1,25	
		CU20604V1	Fluid mechanics 2	2,5	
		CU79091V1	Construction Materials 2	2,5	
		CU20602V1	Mathematics 1	2,5	
		CU20603V3	Exploring Civil Engineering - Project & Professional Skills 2	5,0	
	Block 3	CU20605V1	Soil Mechanics 1	2,5	12,5
		CU20613V1	Mathematics 2	2,5	
		CU79092V1	Applied Mechanics 1	2,5	
		CU20607V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 3	5,0	
	Block 4	CU20608V1	Hydrology	2,5	12,5
		CU20609V1	Soil Mechanics 2	2,5	
		CU79093V1	Applied Mechanics 2	2,5	
		CU20612V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 4	5,0	
	Block 1-4	EN39001 or EN39002 or EN39003 or EN39004	English B1 or English B2 or English C1 or English C2	5,0	5,0
Year 2	Block 1	CU23856	Transport Infrastructure 1	2,5	15,0
		CU23857	Structural Engineering 1	2,5	
		CU23875	Environmental Engineering	2,5	
		CU23859	Foundations 1	2,5	
		CU206001	HZ personality CE 1	1,25	
		CU23860V2	Inland infrastructure development - Project & Professional Skills 5	3,75	
	Block 2	CU23861	Transport Infrastructure 2	2,5	15,0
		CU23874	Structural Engineering 2	2,5	
		CU23858	Rural Water Management	2,5	
		CU23876	Foundations 2	2,5	
		CU206002	HZ personality CE 2	1,25	
		CU23877V3	Inland infrastructure development - Project & Professional Skills 6	3,75	
	Block 3	CU23878	Coastal Engineering 1	2,5	15,0
		CU23879	Structural Engineering 3	2,5	
		CU23880	Water supply and Sanitation	2,5	
		CU23881	Project Management 1	2,5	
		CU206003	HZ personality CE 3	1,25	
		CU23882V2	Coastal zone development - Project & Professional Skills 7	3,75	
	Block 4	CU23883	Coastal Engineering 2	2,5	15,0
		CU79094V1	Applied Mechanics 3	2,5	
		CU23885	Dredging and Ecology	2,5	
		CU23886V1	Project Management 2	2,5	
		CU206004	HZ personality CE 4	1,25	
		CU23887V3	Coastal zone development - Project & Professional Skills 8	3,75	
Y3	S1 or S2	Various	Minor	30,0	30,0
	S1 or S2	CU11122	Orientation Internship	30,0	30,0
Year 4	S1	CU79085V2	Coastal Challenge	10,0	30,0
		CU79086V1 or CU79087V1	Advanced Construction Engineering or Urban Water Management	10,0	
		CU79086V1 or CU79087V1 or CU20700V1 or CU75044V1 + CU75043V1	Advanced Construction Engineering or Urban Water Management or Advanced Water Technology or Change yes we can + Making Business Intelligent	10,0	
	S2	CU11021V1	Final Thesis	30,0	30,0

Three year VWO programme 2023-2024

		Course code	Course name	ECs	
Year 1 (Propaedeutic phase)	Block 1	CU20596V1	Introduction CE	2,5	15,0
		CU79090V1	Construction Materials 1	2,5	
		CU20598V1	Mathematics & Physics	2,5	
		CU20600V1	Fluid mechanics 1	2,5	
		CU26000V2	Exploring Civil Engineering - Project & Professional Skills 1	5,0	
	Block 2	VCCU06284	HZ personality CE 0	1,25	15,0
		VCCU06283V6	VCA	1,25	
		CU20604V1	Fluid mechanics 2	2,5	
		CU79091V1	Construction Materials 2	2,5	
		CU20602V1	Mathematics 1	2,5	
		CU20603V3	Exploring Civil Engineering - Project & Professional Skills 2	5,0	
	Block 3	CU20605V1	Soil Mechanics 1	2,5	12,5
		CU20613V1	Mathematics 2	2,5	
		CU79092V1	Applied Mechanics 1	2,5	
		CU20607V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 3	5,0	
	Block 4	CU20608V1	Hydrology	2,5	12,5
		CU20609V1	Soil Mechanics 2	2,5	
		CU79093V1	Applied Mechanics 2	2,5	
		CU20612V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 4	5,0	
	Block 1-4	EN39001 or EN39002 or EN39003 or EN39004	English B1 or English B2 or English C1 or English C2	5,0	5,0
Year 2	Block 1	CU23856	Transport Infrastructure 1	2,5	15,0
		CU23857	Structural Engineering 1	2,5	
		CU23875	Environmental Engineering	2,5	
		CU23859	Foundations 1	2,5	
		CU206001	HZ personality CE 1	1,25	
		CU23860V2	Inland infrastructure development - Project & Professional Skills 5	3,75	
	Block 2	CU23861	Transport Infrastructure 2	2,5	15,0
		CU23874	Structural Engineering 2	2,5	
		CU23858	Rural Water Management	2,5	
		CU23876	Foundations 2	2,5	
		CU206002	HZ personality CE 2	1,25	
		CU23877V3	Inland infrastructure development - Project & Professional Skills 6	3,75	
	Block 3	CU23878	Coastal Engineering 1	2,5	15,0
		CU23879	Structural Engineering 3	2,5	
		CU23880	Water supply and Sanitation	2,5	
		CU23881	Project Management 1	2,5	
		CU206003	HZ personality CE 3	1,25	
		CU23882V2	Coastal zone development - Project & Professional Skills 7	3,75	
	Block 4	CU23883	Coastal Engineering 2	2,5	15,0
		CU79094V1	Applied Mechanics 3	2,5	
		CU23885	Dredging and Ecology	2,5	
		CU238863	Project Management 2 3yt	2,5	
		CU206004	HZ personality CE 4	1,25	
		CU23887V3	Coastal zone development - Project & Professional Skills 8	3,75	
Year 3	S1	CU79085V2	Coastal Challenge	10,0	30,0
		CU79086V1 or CU79087V1	Advanced Construction Engineering or Urban Water Management	10,0	
		CU79086V1 or CU79087V1 or CU20700V1 or CU75044V1 + CU75043V1	Advanced Construction Engineering or Urban Water Management or Advanced Water Technology or Change yes we can + Making Business Intelligent	10,0	
	S2	CU11021V1	Final Thesis	30,0	30,0

Three years option (for Associate degree Built Environment diploma)

		Course code	Course name	ECs	
Year 1 (Propaedeutic phase)	Block 1	CU20596V1	Introduction CE	2,5	15,0
		CU79090V1	Construction Materials 1	2,5	
		CU20598V1	Mathematics & Physics	2,5	
		CU20600V1	Fluid mechanics 1	2,5	
		CU26000V2	Exploring Civil Engineering - Project & Professional Skills 1	5,0	
	Block 2	VCCU06284	HZ personality CE 0	1,25	15,0
		VCCU06283V6	VCA	1,25	
		CU20604V1	Fluid mechanics 2	2,5	
		CU79091V1	Construction Materials 2	2,5	
		CU20602V1	Mathematics 1	2,5	
		CU20603V3	Exploring Civil Engineering - Project & Professional Skills 2	5,0	
	Block 3	CU20605V1	Soil Mechanics 1	2,5	12,5
		CU20613V1	Mathematics 2	2,5	
		CU79092V1	Applied Mechanics 1	2,5	
		CU20607V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 3	5,0	
	Block 4	CU20608V1	Hydrology	2,5	12,5
		CU20609V1	Soil Mechanics 2	2,5	
		CU79093V1	Applied Mechanics 2	2,5	
		CU20612V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 4	5,0	
	Block 1-4	EN39001 or EN39002 or EN39003 or EN39004	English B1 or English B2 or English C1 or English C2	5,0	5,0
Year 2	Block 1	CU23856	Transport Infrastructure 1	2,5	15,0
		CU23857	Structural Engineering 1	2,5	
		CU23875	Environmental Engineering	2,5	
		CU23859	Foundations 1	2,5	
		CU206001	HZ personality CE 1	1,25	
		CU23860V2	Inland infrastructure development - Project & Professional Skills 5	3,75	
	Block 2	CU23861	Transport Infrastructure 2	2,5	15,0
		CU23874	Structural Engineering 2	2,5	
		CU23858	Rural Water Management	2,5	
		CU23876	Foundations 2	2,5	
		CU206002	HZ personality CE 2	1,25	
		CU23877V3	Inland infrastructure development - Project & Professional Skills 6	3,75	
	Block 3	CU23878	Coastal Engineering 1	2,5	15,0
		CU23879	Structural Engineering 3	2,5	
		CU23880	Water supply and Sanitation	2,5	
		CU23881	Project Management 1	2,5	
		CU206003	HZ personality CE 3	1,25	
		CU23882V2	Coastal zone development - Project & Professional Skills 7	3,75	
	Block 4	CU23883	Coastal Engineering 2	2,5	15,0
		CU79094V1	Applied Mechanics 3	2,5	
		CU23885	Dredging and Ecology	2,5	
		CU23886V1	Project Management 2	2,5	
		CU206004	HZ personality CE 4	1,25	
		CU23887V3	Coastal zone development - Project & Professional Skills 8	3,75	
Y3 [2]	S1 or S2	Various	Minor	30,0	30,0
	S1 or S2	CU11122	Orientation Internship	30,0	30,0
Year 4	S1	CU79085V2	Coastal Challenge	10,0	30,0
		CU79086V1 or CU79087V1	Advanced Construction Engineering or Urban Water Management	10,0	
		CU79086V1 or CU79087V1 or CU20700V1 or CU75044V1 + CU75043V1	Advanced Construction Engineering or Urban Water Management or Advanced Water Technology or Change yes we can + Making Business Intelligent	10,0	
	S2	CU11021V1	Final Thesis	30,0	30,0

[2] Year 3 can be fully exempted upon request (article 3.3 CER HZ).

February enrollment intake January 2024

		Course code	Course name	ECs	
Year 0	Block 3	CU20605V1	Soil Mechanics 1	2,5	12,5
		CU20613V1	Mathematics 2 Applied Mechanics 1	2,5	
		CU79092V1	Soil Mechanics 1	2,5	
		CU20607V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 3	5,0	
	Block 4	CU20608V1	Hydrology	2,5	12,5
		CU20609V1	Soil Mechanics 2 Applied Mechanics 2	2,5	
		CU79093V1	Hydrology	2,5	
		CU20612V4	Sustainability and circularity in Civil Engineering - Project & Professional Skills 4	5,0	
0-1	Block 1-4	EN39001 or EN39002 or EN39003 or EN39004	English B1 or English B2 or English C1 or English C2	5,0	5,0
Year 1 (Propaedeutic phase + Orientation Internship)	Block 1	CU20596V1	Introduction CE	2,5	15,0
		CU79090V1	Construction Materials 1	2,5	
		CU20598V1	Mathematics & Physics	2,5	
		CU20600V1	Fluid mechanics 1	2,5	
		CU26000V2	Exploring Civil Engineering - Project & Professional Skills 1	5,0	
	Block 2	VCCU06284	HZ personality CE 0	1,25	15,0
		VCCU06283V6	VCA	1,25	
		CU20604V1	Fluid mechanics 2	2,5	
		CU79091V1	Construction Materials 2	2,5	
		CU20602V1	Mathematics 1	2,5	
		CU20603V3	Exploring Civil Engineering - Project & Professional Skills 2	5,0	
	S2	CU11122	Orientation Internship	30,0	30,0
Year 2	Block 1	CU23856	Transport Infrastructure 1	2,5	15,0
		CU23857	Structural Engineering 1	2,5	
		CU23875	Environmental Engineering	2,5	
		CU23859	Foundations 1	2,5	
		CU206001	HZ personality CE 1	1,25	
		CU23860V2	Inland infrastructure development - Project & Professional Skills 5	3,75	
	Block 2	CU23861	Transport Infrastructure 2	2,5	15,0
		CU23874	Structural Engineering 2	2,5	
		CU23858	Rural Water Management	2,5	
		CU23876	Foundations 2	2,5	
		CU206002	HZ personality CE 2	1,25	
		CU23877V3	Inland infrastructure development - Project & Professional Skills 6	3,75	
	Block 3	CU23878	Coastal Engineering 1	2,5	15,0
		CU23879	Structural Engineering 3	2,5	
		CU23880	Water supply and Sanitation	2,5	
		CU23881	Project Management 1	2,5	
		CU206003	HZ personality CE 3	1,25	
		CU23882V2	Coastal zone development - Project &	3,75	
	Block 4	CU23883	Coastal Engineering 2	2,5	15,0
		CU79094V1	Applied Mechanics 3	2,5	
		CU23885	Dredging and Ecology	2,5	
		CU23886V1	Project Management 2	2,5	
		CU206004	HZ personality CE 4	1,25	
		CU23887V3	Coastal zone development - Project & Professional Skills 8	3,75	
Year 3	S1	CU79085V2	Coastal Challenge	10,0	30,0
		CU79086V1 or CU79087V1	Advanced Construction Engineering or Urban Water Management	10,0	
		CU79086V1 or CU79087V1 or CU20700V1 or CU75044V1 + CU75043V1	Advanced Construction Engineering or Urban Water Management or Advanced Water Technology or Change yes we can + Making Business Intelligent	10,0	
	S2	Various	Minor	30,0	30,0
Y4	S1	CU11021V1	Final Thesis	30,0	30,0

2.2.3b ***Transfer with an associate degree certificate*** (article 3.3 CER HZ)

Admission of students with an Associate Degree certificate: Students with an Ad certificate Built environment granted by Avans Hogeschool (Brin 07GR), located in Roosendaal and 's-Hertogenbosch, receive immediate admission. These students can during the first year of registration also register for the post-'propedeuse' phase of the programme. The institutional board exempts them from the requirement of having a certificate for the successful completion of the 'propedeuse' examination (via WHW art. 7.30 paragraph 2). The Examination Board grants students with this certificate individual exemption from taking those examinations for which the Examination Board, prior to the first year of enrolment, has established, based on a programme comparison, that the student possesses the knowledge, insight and skills at the level that is being investigated through these examinations. The students must request exemption to this end in accordance with CER HZ Bachelor programma full-time article 4.6. The above does not apply to students with an Ad Built Environment certificate issued by other universities of applied sciences than the one mentioned, nor to students with an Ad certificate from a programme other than Ad Built Environment. For these students, the usual procedure of applying for exemptions applies according to the exemption policy.

2.2.4 ***Courses propaedeutic phase*** (article 3.5 CER HZ)
See appendix 1.

2.2.5 ***Main phase courses*** (article 3.6 CER HZ)
See appendix 2.

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.

HZ Personality		
VCCU06284	HZ personality CE 0	1,25
VCCU06283V6	VCA	1,25
CU206001	HZ personality CE 1	1,25
CU206002	HZ personality CE 2	1,25
CU206003	HZ personality CE 3	1,25
CU206004	HZ personality CE 4	1,25
CU79085V1	Coastal Challenge	2,5
	Total	**10,0**

For the cohorts of students that start the degree programme in the study year 2018-2019 and thereafter the HZ personality space in the curriculum is 10 credits. Some exceptions are listed as follows:

1. For the cohorts of students that started the degree programme in the study year 2015-2016 and earlier a VCC (VCC = Free Composition Course) space is reserved in the curriculum of at least 2.5 and up to 7.5 credits. Students of the cohorts 2014-2015 and earlier are not obliged to follow Free Composition Courses. In that case they follow (other) courses related to the curriculum of the degree programme.

2. For the cohorts starting the degree programme in the study year 2017-2018 the HZ personality space in the curriculum is 7.5 credits.

2.2.7 ***Specialisations*** (article 3.9 CER HZ)
Not applicable.

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

Students who take part in the orienting internship CU11122 (work placement) of the study programme must meet the following conditions:

- The student must have an approved and signed work placement contract.
- Students who need to enter a construction site are strongly advised to have a valid VCAcertificate. If you do not have a VCA-certificate you are not allowed access 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 semester of internship is allowed. If the student has more than 15EC of resits in the simultaneous running semester of the internship, the student is not allowed to attend the internship abroad since this will cause difficulties in attending the resits.

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

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.

If you are enrolled in the VWO track you can decide to follow a pre-Master program instead of the courses in semester 5.

2.2.10 ***Participation in international exchange program*** (article 4.5 CER HZ)
No additional conditions.

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

Students who take part in the study program graduation phase (CU11021V1) must:

- carry out the graduation project at a company, body, or department within the Civil Engineering field of expertise.
- For the 4 years track:
  - have obtained at least 175 EC (including 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 defense takes place.

- For the 3 years track:
  - have obtained at least 115 EC (including provisional credits) from the first-year phase and main phase when starting the graduation study period.
  - have obtained 150 EC (including provisional credits) from the first year phase and the main phase, before the graduation defense takes place.

The graduation manual is available on the Learn page of the course CU11021V1 Final Thesis. The latest version of the manual applies to all the students starting their graduation period in this academic year.

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

- The period in which a specific graduation project is worked out is 1 semester, with a maximum 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 6.7 CER HZ)

The following courses and assessments are considered equivalent.

In principle, the 'immediate effect' of the latest manuals, guides, requirements, etc. applies. This prevents different regimes applying to different cohorts of students registered at the same time for the same course/exam, especially during the orientation internship and the graduation phase.

ECs	Courses phased out	Current equivalent courses
2,5	CU20596 Introduction CE	CU20596V1 Introduction CE
2,5	CU79090 Construction materials 1 CU20610V1 Construction materials	CU79090V1 Construction materials 1
2,5	CU20598 Mathematics & Physics	CU20598V1 Mathematics & Physics
2,5	CU20600 Fluid mechanics 1	CU20600V1 Fluid mechanics 1
5,0	CU26000 to V1 Exploring Civil Engineering - Project & Professional Skills 1	CU26000V2 Exploring Civil Engineering - Project & Professional Skills 1
2,5	CU20604 Fluid mechanics 2	CU20604V1 Fluid mechanics 2
2,5	CU79091 Construction materials 2 CU20601V1 Applied mechanics 2	CU79091V1 Construction materials 2
2,5	CU20602 Mathematics 1	CU20602V1 Mathematics 1
5,0	CU04206/ to V14 Academic reading for Delta + CU04207/ to V10 Argument writing and persuasive loop presentation	EN39001 English B1 or EN39002 English B2 or EN39003 English C1 or EN39004 English C2
5,0	CU20603 to V2 Exploring Civil Engineering - Project & Professional Skills 2	CU20603V3 Exploring Civil Engineering - Project & Professional Skills 2
1,25	VCCU06283 to V5 VCA	VCCU06283V6 VCA
2,5	CU20605 Soil Mechanics 1	CU20605V1 Soil Mechanics 1
2,5	CU20613 Mathematics 2	CU20613V1 Mathematics 2
2,5	CU79092 Applied Mechanics 1	CU79092V1 Applied Mechanics 1
5,0	CU20607 to V3 Dutch Flemish delta polders - Project & Professional Skills 3	CU20607V4 Sustainability and circularity in Civil Engineering - Project & Professional Skills 3
2,5	CU20608 Hydrology	CU20608V1 Hydrology
2,5	CU20609 Soil Mechanics 2	CU20609V1 Soil Mechanics 2
2,5	CU79093 Applied mechanics 2 CU20606V1 Applied mechanics 3	CU79093V1 Applied mechanics 2
5,0	CU20612 to V3 Dutch Flemish delta polders - Project & Professional Skills 4	CU20612V4 Sustainability and circularity in Civil Engineering - Project & Professional Skills 4
3,75	CU23860 to V1 Inland infrastructure development - Project & Professional Skills 5	CU23860V2 Inland infrastructure development - Project & Professional Skills 5
3,75	CU23877 to V2 Inland infrastructure development - Project & Professional Skills 6	CU23877V3 Inland infrastructure development - Project & Professional Skills 6
3,75	CU23882 to V1 Coastal zone development - Project & Professional Skills 7	CU23882V2 Coastal zone development - Project & Professional Skills 7
2,5	CU79094 Applied Mechanics 3 CU23884 Applied Mechanics 4	CU79094V1 Applied Mechanics 3
2,5	CU23886 Project Management 2	CU23886V1 Project Management 2
3,75	CU23887 to V2 Coastal zone development - Project & Professional Skills 8	CU23887V3 Coastal zone development - Project & Professional Skills 8
30,0	CU11022 to V12 Orientation internship	CU11122 Orientation internship
10,0	CU79085V1 Integrated Coastal Challenge	CU79085V2 Coastal Challenge
30,0	CU11020 to V14 Final thesis	CU11021V1 Final thesis

2.3 Study recommendation

2.3.1. ***Conditions for registration for programme after NBSA*** (article 8.1, paragraph 9 HZ CER)

A study recommendation will be negative if the student, taking into account his personal circumstances is not deemed suitable for the bachelor's programme that he is doing because the results of his studies do not meet the requirements that the executive board has set down for this. Student with a formal negative study advice from the HZ Exam Committee are not allowed for any new enrolment in the Civil Engineering program of the HZ (CROHO 34279) for three years after the negative study recommendation.

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 Course and Examination Regulations Bachelor programme full-time 2023-2024.

3.1.2 The study program committee has approved this implementation regulation on 24/04/2023.

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

Appendix 1 – Course propaedeutic phase

Block 1 / Semester 1												
CU20596V1	**Title: Introduction CE**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language:**	
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: The course will explore the many fields and roles in the civil engineering profession. At the end of the course you will have an overview of all the possible job opportunities and specializations. You will also get acquainted with technical drawing techniques and rules necessary to design civil engineering objects.												
Compulsory literature: Bielefeld, B., & Skiba, I. (2017). Basics technical drawing. Birkhäuser.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Portfolio	1.1.1; 4.1.1	100%	5.5	S1.9	S1.10	S1.11	S1.12

Block 1 / Semester 1												
CU20598V1	**Title: Mathematics & Physics**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: The course deals with mathematics and physics principles applied to the civil engineering profession. At the end of the course you will master fundamental mathematics, differential equations and goniometry.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.1	100%	5.5	S1.9	S1.10	S1.20	S2.02

Block 1 / Semester 1												
CU20600V1	**Title: Fluid Mechanics 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: This course presents the basics of fluid mechanics. At the end of this course you will be able to apply the basic properties of fluids and governing laws of fluid mechanics focusing on hydrostatics and pressure flow, including hydrodynamic software modelling (EPANET).												
Compulsory literature: Giles, R. V., Evett, J. B., & Liu, C. (2014). Schaum's outline of fluid mechanics and hydraulics. McGraw-Hill Education.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.3	100%	5.5	S1.9	S1.10	S1.20	S2.02

Block 1 / Semester 1												
CU79090V1	**Title: Construction Materials 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: This course will introduce the basics properties of the most common construction materials, such as concrete, steel, timber and masonry. At the end of the course you will be able to choose the most appropriate construction material based on the system requirements.												
Compulsory literature: Illston, J. M., & Domone, P. (2001). Construction materials: their nature and behaviour. CRC press.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Portfolio	1.1.3	100%	5.5	S1.9	S1.10	S1.11	S1.12

Block 1 / Semester 1					
CU26000V2	**Title: Exploring Civil Engineering - Project & Professional Skills 1**	**Number of study credits: 5,0**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch / English**
Conditions for course participation: -					
Conditions for test participation: -					
Brief description of course content: This group project focuses on the professional design of an urban area for real client in a real case scenario. Introduction CE will provide the basic knowledge to understand the different elements of the project, together with the ability to approach technical drawings. Construction Materials 1, Fluid Mechanics 1 and Mathematics & Physics will provide the tools to develop a simple design and detail it. The course provides the theoretical background to approach the project as a research product. This project corresponds to a preliminary design phase during which you will work as a professional engineering team; at the end of the quarter you will deliver a research proposal, a poster presentation and portfolios.					
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.					

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	1.1.2; 1.2.1 2.1.1;7.1.1; 7.1.2; 7.1.3; 7.4.1; 8.1.1; 8.1.2 ; 9.2.1	50%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS02 (VT)		*x*			*x*	Portfolio Fluid Mechanics 1	3.1.9	15%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS03 (VT)		*x*		*x*		Portfolio hand drawing	3.1.4	30%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS04 (VT)		*x*		*x*		Portfolio peer review and personal reflection	1.3.1; 8.2.1; 9.1.1	5%	5.5	S1.7	S1.9	S1.10	S1.12

Block 2 / Semester 1												
CU20602V1	**Title: Mathematics 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: The course will teach to apply mathematical knowledge and skills to obtain the required calculation level for civil engineering professionals. At the end of this course you will master functions, differential equations and partial derivation. The course will also cover programming in Excel.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.1; 3.1.28	100%	5.5	S1.18	S1.19	S1.20	S2.2

Block 2 / Semester 1												
CU79091V1	**Title: Construction Materials 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: This course presents the internal properties of structural cross sections and teaches how to calculate moment of inertia and moment of resistance for complex cross sections. At the end of the course you will be able to determine the distribution of internal stresses in structural sections.												
Compulsory literature: Hibbeler, R. C. (2018). Statics and Mechanics of Materials. Pearson Higher Ed.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.5	100%	5.5	S1.18	S1.19	S1.20	S2.2

Block 2 / Semester 1												
CU20604V1	**Title: Fluid Mechanics 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: At the end of this course you will be able to apply the basic properties of fluids and governing laws of fluid mechanics focusing on open channel flow and identifying elements of sewerage networks, including hydrodynamic software modelling (SOBEK).												
Compulsory literature: Giles, R. V., Evett, J. B., & Liu, C. (2014). Schaum's outline of fluid mechanics and hydraulics. McGraw-Hill Education.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.6	100%	5.5	S1.18	S1.19	S1.20	S2.2

Block 2 / Semester 1												
VCCU06283V6	**Title: VCA**					**Number of study credits: 1.25**		**Number of contact hours: 0**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: This course allows you to gain a Safety for Operational Supervisors diploma. This diploma is often necessary to gain access to construction sites and workshops. You will study for the theoretical part on your own, and the practice exams will be offered in HZ by an external organization. You will receive an email that will invite you to register to the exam. Our study program finances only two attempts for each students. All other attempts must be paid by the students. This course belongs to HZ personality.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Certificate	-	100%	6.5[3]	S1.13	S1.13	S2.6	S2.6

[3] The minimum score of 6.5 (65%) is set by the VCA organization and is required to pass the exam and achieve the VCA certificate.

Block 2 / Semester 1												
VCCU06284	**Title: HZ personality CE 0**					**Number of study credits: 1.25**		**Number of contact hours: various**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: You can fill this space with various activities for a total of 35 work hours. You can propose activities yourself, which you must submit to your study career coach for approval. The study program invites you to take part to internal activities to fill up this space, such us by participating to the We Explore Together technology project week, by enrolling as class representative, by being member of the program committee, by helping in marketing and promotional activities, etc. More information about the HZ personality policy is available at the course Learn page.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*	*x*	*x*	*x*	Various	-	100%	5.5	Variable	Variable	Variable	Variable

Block 2 / Semester 1					
CU20603V3	**Title: Exploring Civil Engineering - Project & Professional Skills 2**	**Number of study credits: 5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: -					
Conditions for test participation: -					
Brief description of course content: This group project focus on the professional design of an urban area for real client in a real case scenario. Construction Materials 2, Fluid mechanics 2 and Mathematics 1 provide the tools to develop a simple design and to detail it. The course provides the theoretical background to approach the project as a research product and to move from hand drawing to software drawings using AutoCAD. This project corresponds to a detailed design phase during which you will work as a professional engineering team; at the end of the quarter you will deliver a research report, a power point presentation and portfolios.					
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.					

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	2.2.1; 7.2.1; 7.2.2; 7.3.1; 7.3.2; 7.4.1; 8.1.1; 8.1.2; 9.2.1	50%	5.5	S1.17	S1.19	S1.20	S2.2
TOETS02 (VT)		*x*			*x*	Portfolio Fluid mechanics 2	4.1.2; 3.1.9	15%	5.5	S1.17	S1.19	S1.20	S2.2
TOETS03 (VT)		*x*			*x*	Portfolio Construction materials	4.1.2	15%	5.5	S1.17	S1.19	S1.20	S2.2
TOETS04 (VT)		*x*		*x*		Portfolio AutoCAD	3.1.4	15%	5.5	S1.18	S1.19	S1.20	S2.2
TOETS05 (VT)		*x*		*x*		Portfolio peer review and personal reflection	1.3.1; 8.2.1; 9.1.1	5%	5.5	S1.17	S1.19	S1.20	S2.2

Block 3 / Semester 2												
CU79092V1	**Title: Applied Mechanics 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: During this course you will get acquainted with the basics of applied mechanics, such as the resultant of all forces, the load types and equilibrium of single particles and cantilevered or fixed end statically determined beams. At the end of the course you will be able to describe the distribution of internal forces in statically determined members.												
Compulsory literature: Hibbeler, R. C. (2018). Statics and Mechanics of Materials. Pearson Higher Ed.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.2	100%	5.5	S2.8	S2.9	S2.10	S2.12

Block 3 / Semester 2												
CU20605V1	**Title: Soil Mechanics 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: This course will introduce the basics of soil mechanics. At the end of the course you will know how to identify the basic material properties of soil and be able to calculate vertical earth pressures, settlements, including the incorporation of consolidation.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.7	100%	5.5	S2.8	S2.9	S2.10	S2.12

Block 3 / Semester 2												
CU20613V1	**Title: Mathematics 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: The course deals with mathematics and physics principles applied to the civil engineering profession. At the end of this course you will master integrations, vectors and matrices and complex functions. The course will also cover programming in Excel.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.1; 3.1.28	100%	5.5	S2.8	S2.9	S2.10	S2.12

Block 3 / Semester 2					
CU20607V4	**Title: Sustainability and circularity in Civil Engineering - Project & Professional Skills 3**	**Number of study credits: 5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: -					
Conditions for test participation: -					
Brief description of course content: This group project focuses on the professional design of a sustainable and circular urban system for a real client in a real case scenario. Applied mechanics and soil mechanics provide the background knowledge to understand the system and provide possible solutions for the design case. Laboratory experiments and field work involve all the disciplines. This project corresponds to a preliminary design phase during which you will work as a professional engineering team; at the end of the quarter you will deliver a research proposal, a poster presentation and a portfolios.					
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.					

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	1.1.2; 1.2.1; 2.1.1;7.1.1; 7.1.2; 7.1.3; 7.4.1; 8.1.1; 8.1.2;9.2.1	50%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS02 (VT)		*x*			*x*	Portfolio Applied Mechanics 1	3.1.9	25%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS03 (VT)		*x*			*x*	Portfolio Soil Mechanics 1	4.1.2	20%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS04 (VT)		*x*		*x*		Portfolio peer review and personal reflection	1.3.1;8.2.1; 9.1.1	5%	5.5	S2.7	S2.9	S2.10	S2.12

Block 4 / Semester 2													
CU20608V1	**Title: Hydrology**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: -													
Conditions for test participation: -													
Brief description of course content: At the end of this course you will be able to understand the hydrological/water cycle and water resources, in order to carry out rainfall-runoff analysis, hydrological modelling and hydrometry.													
Compulsory literature: Shaw, E. M., Beven, K., Chappell, N., & Lamb, R. (2010). Hydrology in practice 4th edition.													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.4	100%	5.5	S2.18		S2.19	S2.20	S2.22

Block 4 / Semester 2													
CU20609V1	**Title: Soil Mechanics 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: -													
Conditions for test participation: -													
Brief description of course content: At the end of this course you will be able to understand and apply the basic theory regarding shear stresses, slope stability and ground water flow to simple soil mechanical problems.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.5	100%	5.5	S2.18		S2.19	S2.20	S2.22

Block 4 / Semester 2												
CU79093V1	**Title: Applied Mechanics 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: -												
Conditions for test participation: -												
Brief description of course content: At the end of this course, you will be able to calculate loads and combinations, determine distribution of internal forces and stresses in hinged structures and trusses, and calculate torsion in simple structures.												
Compulsory literature: Hibbeler, R. C. (2018). Statics and Mechanics of Materials. Pearson Higher Ed.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.8	100%	5.5	S2.18	S2.19	S2.20	S2.22

Block 4 / Semester 2					
CU20612V4	**Title: Sustainability and circularity in Civil Engineering - Project & Professional Skills 4**	**Number of study credits: 5**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: -					
Conditions for test participation: -					
Brief description of course content: This group project focuses on the professional design of a sustainable and circular urban system for a real client in a real case scenario. Applied mechanics and soil mechanics provide the background knowledge to understand the system and provide possible solutions for the design case. Laboratory experiments and field work involve all the disciplines. With AutoCAD Civil 3D, land surveying and GIS you will understand and explain cartography, geodesy, satellite geodesy, and topography and draw 3D elements in AutoCAD. This project corresponds to a detailed design phase during which you will work as a professional engineering team; at the end of the quarter you will deliver a research report, a power point presentation and a portfolios.					
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.					

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	2.2.1; 5.1.1; 6.1.1; 7.2.1; 7.2.2;7.3.1; 7.3.2;7.4.1; 8.1.1;8.1.2; 9.2.1	40%	5.5	S2.17	S2.19	S2.20	S2.22
TOETS02 (VT)		*x*			*x*	Portfolio Applied Mechanics 2	3.1.9	20%	5.5	S2.17	S2.19	S2.20	S2.22
TOETS03 (VT)		*x*			*x*	Portfolio practical[4]	4.1.1; 6.1.2	15%	5.5	S2.17	S2.19	S2.20	S2.22
TOETS04 (VT)		*x*		*x*		Portfolio AutoCAD Civil 3D	3.1.9	10%	5.5	S2.18	S2.19	S2.20	S2.22
TOETS05 (VT)		*x*		*x*		Portfolio GIS	3.1.9	10%	5.5	S2.18	S2.19	S2.20	S2.22
TOETS06 (VT)		*x*		*x*		Portfolio peer review and personal reflection	1.3.1;8.2.1; 9.1.1	5%	5.5	S2.17	S2.19	S2.20	S2.22

[4] This portfolio includes the practicals of Surveying, Soil Mechanics 2, and Hydrology (each of those contributes to 5% of the final grade).

Block / Semester: S1 **Block / Semester: S2**	
EN39001	**Title: Foundation Course B1**
Course information	
Number of study credits: 5	**Teaching language:** English
Conditions for course participation:	
Conditions for test participation:	
Brief description of course content: Students must complete the placement test and/or consult the LCC teacher before they can register for an English foundation course. Learning Outcome(s): • **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 goal: Strong B-1 level	
Compulsory literature: Open World Preliminary: Student's Book with Answers with Online Practice, Niamh Humphreys; Susan Kingsley, 1e druk, ISBN: 9783125405967, Kosten: €37,00, Open World Preliminary: Student's Book with Answers with Online Practice	

Exams info

Code	Form	Description	**Weight** (%)	Result	Planned tests
TOETS01 (VT)	Written knowledge test	Reading	25%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TOETS02 (VT)	Written knowledge test	Writing	25%	5,5	B3.8; B4.8; B3.10; B4.10
TOETS03 (VT)	Oral test	Listening	25%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TOETS04 (VT)	Oral test	Speaking	25%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Block / Semester: S1
Block / Semester: S2

EN39002	**Title: Foundation Course B2**

Course information

Number of study credits: 5	**Teaching language:** English

Conditions for course participation: -

Conditions for test participation: -

Brief description of course content:
Students must complete the placement test and/or consult the LCC teacher before they can register for an English foundation course.

Learning Outcome(s):

- **Reading**

Ability to: scan texts for relevant information; understand the gist of information and articles on nonfamiliar topics and understand most of the content;

- **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 fairly 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 goal: Strong B2 Level

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

Exams info

Code	**Code**	**Code**	**Code**	**Code**	**Toetsgelegenheden** (blokcodes)
TOETS01 (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
TOETS02 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10
TOETS03 (VT)	Oral test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TOETS04 (VT)	Oral test	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Block / Semester: S1 **Block / Semester: S2**	
EN39003	**Title: Foundation Course C1**
Course information	
Number of study credits: 5	**Teaching language:** English
Conditions for course participation: -	
Conditions for test participation: -	
Brief description of course content: Students must complete the placement test and/or consult the LCC teacher before they can register for an English foundation course. Learning Outcome(s): • **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 goal: Strong C-1 level	
Compulsory literature: Open World First Student's Book with Answers with Online Practice, Anthony Cosgrove Deborah Hobbs, 1e druk, ISBN: 9781108759052, Kosten: €36,99, Open World First Student's Book with Answers with Online Practice	

Exams info

Code	Code	Code	Code	Code	Code
TOETS01 (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
TOETS02 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10
TOETS03 (VT)	Oral test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TOETS04 (VT)	Oral test	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Block / Semester: S1 **Block / Semester: S2**	
EN39004	**Title: Foundation Course C2**
Course information	
Number of study credits: 5	**Teaching language:** English
Conditions for course participation: -	
Conditions for test participation: -	
Brief description of course content: Students must complete the placement test and/or consult the LCC teacher before they can register for an English foundation course. Learning Outcome(s): • **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 goal: 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, Kosten: €35,99, Objective Proficiency Student's Book with Answers with Downloadable Software Annette Capel and Wendy Sharp	

Exams info

Code	Code	Code	Code	Code	Code
TOETS01 (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
TOETS02 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10
TOETS03 (VT)	Oral test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TOETS04 (VT)	Oral test	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Appendix 2 – Course main phase

Block 5 / Semester 3													
CU23856	**Title: Transport Infrastructure 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: Good infrastructure is a must to transport goods to and from the hinterland. Historically speaking, delta areas could not develop without infrastructure (roads). In areas where roads were built, harbours were thriving and cities were developing. In this course, you will learn how to design, build and maintain a road.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.6; 3.1.12	100%	5.5	S1.9	S1.10	S1.20	S2.02

Block 5 / Semester 3													
CU23857	**Title: Structural Engineering 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: In the course you will broaden the knowledge about concrete constructions as well as of the mechanics required to calculate the force distribution. After this course, you will be able to design and concrete beams and floors using the existing regulations, such as NEN standards and in the near future the European building regulations established in the Eurocodes.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.7; 3.1.13	100%	5.5	S1.9	S1.10	S1.20	S2.02

Block 5 / Semester 3													
CU23875	**Title: Environmental Engineering**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: Understand fundamental processes/concepts needed for a sustainable living environment as material separation in waste processing, air pollution and water pollution.													
Compulsory literature: Mines Jr, R. O. (2014). Environmental engineering: principles and practice. John Wiley & Sons.													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.8	100%	5.5	S1.9		S1.10	S1.20	S2.02

Block 5 / Semester 3													
CU23859	**Title: Foundations 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: This course deals with shallow foundations and pile foundations and it will present the basic knowledge needed for the selection and the design of the most suitable foundation systems considering the boundary conditions and limitations deduced by the geotechnical characteristics and soil properties.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.9; 3.1.11	100%	5.5	S1.9		S1.10	S1.20	S2.02

Block 5/ Semester 3					
CU23860V2	**Title: Inland infrastructure development - Project & Professional Skills 5**	**Number of study credits: 3.75**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*					
Conditions for test participation: -					
Brief description of course content: This group project focus on the development of inland areas for a real client in a real case scenario. Environmental engineering is fundamental to create a sustainable and resilient environment, while new roads need to be designed in order to connect the new areas with the existing infrastructure. The design of new roads will require concrete constructions and foundation systems. Design software, such as Sobek, Technosoft, D-sheets, etc., are needed to develop your design. This project corresponds to a preliminary design phase during which you will work as a professional engineering team.					
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.					

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	1.1.2; 1.2.1; 2.1.1; 7.1.1; 7.1.2; 7.1.3; 7.4.1; 8.1.1; 8.1.2; 9.2.1	50%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS02 (VT)		*x*			*x*	Portfolio Transport infrastructure 1	3.1.9	10%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS03 (VT)		*x*			*x*	Portfolio Structural engineering 1	3.1.9	14%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS04 (VT)		*x*			*x*	Portfolio Environmental Engineering	3.1.9	10%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS05 (VT)		*x*			*x*	Portfolio Foundations 1	3.1.9	10%	5.5	S1.7	S1.9	S1.10	S1.12
TOETS06 (VT)		*x*		*x*		Portfolio peer review and personal reflection	1.3.1;8.2.1; 9.1.1	6%	5.5	S1.7	S1.9	S1.10	S1.12

Block 5 / Semester 3													
CU206001	**Title: HZ personality CE 1**					**Number of study credits: 1.25**		**Number of contact hours: various**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: -													
Conditions for test participation: -													
Brief description of course content: You can fill this space with various activities for a total of 35 work hours. You can propose activities yourself, which you must submit to your study career coach for approval. The study program invites you to take part to internal activities to fill up this space, such us by participating to the We Explore Together technology project week, by enrolling as class representative, by being member of the program committee, by helping in marketing and promotional activities, etc. More information about the HZ personality policy is available at the course Learn page.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*	*x*	*x*	*x*	Various	-	100%	5.5	Variable	Variable	Variable	Variable

Block 6 / Semester 3													
CU206002	**Title: HZ personality CE 2**					**Number of study credits: 1.25**		**Number of contact hours: various**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: -													
Conditions for test participation: -													
Brief description of course content: You can fill this space with various activities for a total of 35 work hours. You can propose activities yourself, which you must submit to your study career coach for approval. The study program invites you to take part to internal activities to fill up this space, such us by participating to the We Explore Together technology project week, by enrolling as class representative, by being member of the program committee, by helping in marketing and promotional activities, etc. More information about the HZ personality policy is available at the course Learn page.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*	*x*	*x*	*x*	Various	-	100%	5.5	Variable	Variable	Variable	Variable

Block 6 / Semester 3													
CU23861	**Title: Transport Infrastructure 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: Good infrastructure is a must to transport goods to and from the hinterland. Historically speaking, delta areas could not develop without infrastructure (roads). In areas where roads were built, harbours were thriving and cities were developing. In this course, you will learn how to design, build and maintain a road.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.10; 3.1.15	100%	5.5	S1.18	S1.19	S1.20	S2.2

Block 6 / Semester 3													
CU23874	**Title: Structural Engineering 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: In the course you will broaden the knowledge about drawing and detailed design of concrete constructions as well as design of steel constructions. After this course, you will be able to design and concrete beams and floors and steel members using the existing regulations, such as NEN standards and in the near future the European building regulations established in the Eurocodes.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.13; 3.1.19; 3.1.27	100%	5.5	S1.18	S1.19	S1.20	S2.2

Block 6 / Semester 3												
CU23858	**Title: Rural Water Management**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: This course deals with water management in rural areas. Important themes are preventing water nuisance, optimum matching of groundwater and agricultural use, preventing salination and limiting water shortages during drought. The water system in the outer areas is very complex, which is why simulation software (Sobek) is used. By the end of this course you will be able to design an irrigation and drainage system in a rural area balancing water supply and water requirements in time and space.												
Compulsory literature: Waller, P., & Yitayew, M. (2015). Irrigation and drainage engineering. Springer.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.12; 3.1.10	100%	5.5	S1.18	S1.19	S1.20	S2.2

Block 6 / Semester 3												
CU23876	**Title: Foundations 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: This course deals with flexible retaining structures and it will present the basic knowledge needed for the selection and the design of the most suitable foundation systems considering the boundary conditions and limitations deduced by the geotechnical characteristics and soil properties.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.14; 3.1.14	100%	5.5	S1.18	S1.19	S1.20	S2.2

Block 6/ Semester 3					
CU23877V3	**Title: Inland infrastructure development - Project & Professional Skills 6**	**Number of study credits: 3.75**	**Number of contact hours: 30**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*					
Conditions for test participation: -					
Brief description of course content: This group project focus on the development of inland areas for a real client in a real case scenario. Rural water management is fundamental to create a sustainable and resilient environment, while new roads need to be designed in order to connect the new areas with the existing infrastructure. The design of new roads will require concrete constructions and foundation systems. Design software, such as Sobek, Technosoft, D-sheets, etc., are needed to develop your design. This project corresponds to a detailed design phase during which you will work as a professional engineering team; at the end of the quarter you will deliver a research report, a power point presentation and a portfolio.					
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.					

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	2.2.1; 3.1.9; 6.1.1; 7.2.1; 7.2.2;7.3.1; 7.3.2;7.4.1; 8.1.1; 9.2.1	50%	5.5	S1.17	S1.19	S1.20	S2.22
TOETS02 (VT)		*x*			*x*	Portfolio Transport infrastructure 2	3.1.9	10%	5.5	S1.17	S1.19	S1.20	S2.22
TOETS03 (VT)		*x*			*x*	Portfolio Structural engineering 2	3.1.9	10%	5.5	S1.17	S1.19	S1.20	S2.22
TOETS04 (VT)		*x*			*x*	Portfolio Rural water management	3.1.9	10%	5.5	S1.17	S1.19	S1.20	S2.22
TOETS05 (VT)		*x*			*x*	Portfolio Foundations 2	3.1.9	14%	5.5	S1.17	S1.19	S1.20	S2.22
TOETS06 (VT)		*x*		*x*		Portfolio peer review and personal reflection	1.3.1; 8.2.1; 9.1.1	6%	5.5	S1.17	S1.19	S1.20	S2.22

Block 7 / Semester 4													
CU23878	**Title: Coastal Engineering 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: This course introduces the basics of coastal engineering, such as safety, tides, and waves. The different kinds of coasts are distinguished based on their morphological activity, location, etc. At the end of this course you will be able to design safe coastal environments using dunes and dikes.													
Compulsory literature: Bosboom, J. and Stive, M.J.F. (2022) Coastal Dynamics https://doi.org/10.5074/T.2021.001 ISBN 978-94-6366-371-7 Free for download at the link https://textbooks.open.tudelft.nl/textbooks/%20catalog/book/37													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.15	100%	5.5	S2.8	S2.9	S2.10	S2.12

Block 7 / Semester 4													
CU23879	**Title: Structural Engineering 3**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*													
Conditions for test participation: -													
Brief description of course content: In the course you will broaden the knowledge about steel constructions. After this course, you will be able to design and steel members using the existing regulations, such as NEN standards and in the near future the European building regulations established in the Eurocodes.													
Compulsory literature: -													
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.13; 3.1.19	100%	5.5	S2.8	S2.9	S2.10	S2.12

Block 7 / Semester 4												
CU23880	**Title: Water supply and Sanitation**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: This course deals with water distribution and water and wastewater treatment. At the end of this course you will be able to explain and compare different (waste)water treatment technologies and design different treatment units. Design a water distribution network and analyse the performance of the system under diverse system conditions using a hydrodynamic computer model.												
Compulsory literature: Mines Jr, R. O. (2014). Environmental engineering: principles and practice. John Wiley & Sons.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.16; 3.1.18	100%	5.5	S2.8	S2.9	S2.10	S2.12

Block 7 / Semester 4												
CU23881	**Title: Project Management 1**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**	**Teaching language: Dutch / English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: The course prepares you for a professional role in the management of engineering projects by providing you with an understanding of both the people-related and technical requirements necessary for the successful management of engineering projects, as well as the organizational and strategic aspects. This course is designed to introduce course participants to the nature and purpose of project management and to engage with its application in project contexts.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.2; 1.1.17; 8.2.2	100%	5.5	S2.8	S2.9	S2.10	S2.12

Block 7/ Semester 4												
CU23882V2	**Title: Coastal zone development - Project & Professional Skills 7**					**Number of study credits: 3.75**		**Number of contact hours: 30**		**Mandatory**	**Teaching language: Dutch/English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: This group project focus on the development of coastal areas for a real client in a real case scenario. The knowledge of the coastal environments is fundamental to ensure a safe and sustainable development. Project management skills and competences are required to plan, monitor and control the design and construction processes. Water supply systems and structural objects must be designed to complete the design of the coastal area. This project corresponds to a preliminary design phase during which you will work as a professional engineering team.												
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	1.1.2; 1.2.1; 1.3.1; 2.1.1; 7.1.2; 7.1.3; 7.4.1; 8.1.1; 8.1.2; 9.2.1	50%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS02 (VT)		*x*			*x*	Portfolio Project Management 1	4.1.1, 4.1.6	10%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS03 (VT)		*x*			*x*	Portfolio Coastal Engineering 1	1.1.20; 1.3.3; 5.1.1	10%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS04 (VT)		*x*			*x*	Portfolio Structural engineering 3	3.1.9	10%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS05 (VT)		*x*			*x*	Portfolio Water supply and sanitation	3.1.9	10%	5.5	S2.7	S2.9	S2.10	S2.12
TOETS06 (VT)		*x*		*x*		Portfolio peer review and personal reflection	8.2.1; 9.1.1	10%	5.5	S2.7	S2.9	S2.10	S2.12

Block 7 / Semester 4														
CU206003	**Title: HZ personality CE 3**					**Number of study credits: 1.25**		**Number of contact hours: various**		**Mandatory**		**Teaching language: Dutch / English**		
Conditions for course participation: -														
Conditions for test participation: -														
Brief description of course content: You can fill this space with various activities for a total of 35 work hours. You can propose activities yourself, which you must submit to your study career coach for approval. The study program invites you to take part to internal activities to fill up this space, such us by participating to the We Explore Together technology project week, by enrolling as class representative, by being member of the program committee, by helping in marketing and promotional activities, etc. More information about the HZ personality policy is available at the course Learn page.														
Compulsory literature: -														
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)	*x*	*x*	*x*	*x*	*x*	Various	-	100%	5.5	Variable		Variable	Variable	Variable

Block 8 / Semester 4														
CU206004	**Title: HZ personality CE 4**					**Number of study credits: 1.25**		**Number of contact hours: various**		**Mandatory**		**Teaching language: Dutch / English**		
Conditions for course participation: -														
Conditions for test participation: -														
Brief description of course content: You can fill this space with various activities for a total of 35 work hours. You can propose activities yourself, which you must submit to your study career coach for approval. The study program invites you to take part to internal activities to fill up this space, such us by participating to the We Explore Together technology project week, by enrolling as class representative, by being member of the program committee, by helping in marketing and promotional activities, etc. More information about the HZ personality policy is available at the course Learn page.														
Compulsory literature: -														
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**		**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)	*x*	*x*	*x*	*x*	*x*	Various	-	100%	5.5	Variable		Variable	Variable	Variable

Block 8 / Semester 4												
CU23883	**Title: Coastal Engineering 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: At the end of this course you will be able to design and calculate hard and soft coastal defence structures such as a dike profile with different types of revetment, taking the environment and climate change into account. You will be able to understand the most important failure mechanisms of dikes are and how to prevent failure.												
Compulsory literature: Bosboom, J. and Stive, M.J.F. (2022) Coastal Dynamics https://doi.org/10.5074/T.2021.001 ISBN 978-94-6366-371-7 Free for download at the link https://textbooks.open.tudelft.nl/textbooks/%20catalog/book/37												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.18; 3.1.20; 3.1.25	100%	5.5	S2.18	S2.19	S2.20	S2.22

Block 8 / Semester 4												
CU79094V1	**Title: Applied Mechanics 3**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch / English**
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: At the end of this course you will be able to draw the N-, V- and M-diagram and deflection curve of statically indeterminate beams to the first and second degree. You will know the principles of pre-stressed concrete constructions.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Written knowledge test	3.1.21	100%	5.5	S2.18	S2.19	S2.20	S2.22

Block 8 / Semester 4														
CU23885	**Title: Dredging and Ecology**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: English**		
Conditions for course participation: -														
Conditions for test participation: -														
Brief description of course content: At the end of this course you will understand the world of dredging and you will be able to select the best equipment and systems depending on the geotechnical and soil characteristics. The dredging activities will be analyzed also under the ecological point of view.														
Compulsory literature: -														
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**	
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)		*x*		*x*		Written knowledge test	1.1.19; 4.1.4	100%	5.5	S2.18	S2.19	S2.20	S2.22	

Block 8 / Semester 4														
CU23886V1	**Title: Project Management 2**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch/ English**		
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*														
Conditions for test participation: -														
Brief description of course content: The course prepares you for a professional role in the management of engineering projects by providing you with an understanding of both the people-related and technical requirements necessary for the successful management of engineering projects, as well as the organizational and strategic aspects. This course is designed to introduce course participants to the nature and purpose of project management and to engage with its application in project contexts.														
Compulsory literature:														
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**	
	V	**W**	**O**	**I**	**G**									
TOETS01 (VT)		*x*			*x*	Portfolio	1.1.20; 4.1.5	100%	5.5	S2.18	S2.19	S2.20	S2.22	

Block 8 / Semester 4												
CU238863	**Title: Project Management 2 3yt**					**Number of study credits: 2.5**		**Number of contact hours: 21**		**Mandatory**		**Teaching language: Dutch/ English**
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it. This course is available only for students enrolled in the 3 years VWO track.*												
Conditions for test participation: *To participate to toets02(VT), students should have a passing grade for toets01(VT)*												
Brief description of course content: The course prepares you for a professional role in the management of engineering projects by providing you with an understanding of both the people-related and technical requirements necessary for the successful management of engineering projects, as well as the organizational and strategic aspects. This course is designed to introduce course participants to the nature and purpose of project management and to engage with its application in project contexts.												
Compulsory literature:												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*			*x*	Portfolio	1.1.20; 4.1.5	40%	5.5	S2.18	S2.19	S2.20	S2.22
TOETS02 (VT)	*x*			*x*		Oral assessment	4.1.5; 5.1.1; 6.1.3	60%	5.5	S2.19	S2.19	S2.20	S2.20

Block 8/ Semester 4												
CU23887V3	**Title: Coastal zone development - Project & Professional Skills 8**					**Number of study credits: 3.75**		**Number of contact hours: 30**		**Mandatory**	**Teaching language: Dutch/English**	
Conditions for course participation: *The course will be also given in Dutch if at least 10 students subscribe for it*												
Conditions for test participation: -												
Brief description of course content: This group project focus on the development of coastal areas for a real client in a real case scenario. The knowledge of the coastal environments is fundamental to ensure a safe and sustainable development. Project management skills and competences are required to plan, monitor and control the design and construction processes. Water supply systems and structural objects must be designed to complete the design of the coastal area. This project corresponds to a detailed design phase during which you will work as a professional engineering team.												
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)			*x*	*x*		Field study week (Portfolio)	8.1.1; 8.2.2; 9.1.2	10%	5.5	Variable	Variable	Variable	Variable
TOETS02 (VT)	*x*	*x*			*x*	Report and presentation (Portfolio)	2.2.1; 7.2.1; 7.2.2; 7.3.1; 7.3.2; 7.4.1; 8.1.1; 8.1.2; 9.2.1	50%	5.5	S2.17	S2.19	S2.20	S2.22
TOETS03 (VT)		*x*			*x*	Portfolio Coastal Engineering 2	1.1.20; 1.3.3; 3.1.4; 3.1.20; 3.1.25; 3.1.26	10%	5.5	S2.17	S2.19	S2.20	S2.22
TOETS04 (VT)		*x*			*x*	Portfolio Project Management 2	4.1.1; 4.1.5	10%	5.5	S2.17	S2.19	S2.20	S2.22
TOETS05 (VT)		*x*			*x*	Portfolio Dredging	4.1.3; 4.1.5	10%	5.5	S2.17	S2.19	S2.20	S2.22
TOETS06 (VT)		*x*			*x*	Portfolio Applied Mechanics 3	3.1.9	10%	5.5	S2.17	S2.19	S2.20	S2.22

Semester 5/6 for four year track only												
CU11122	**Title: Orientation Internship**					**Number of study credits: 30**		**Number of contact hours: 12**		**Mandatory**	**Teaching language: Dutch / 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: See article 2.2.8 in this document for the rules of admission to the internship.												
Brief description of course content: During your work placement you will be dealing with real-life practical assignments, regardless if you go abroad or stay in the Netherlands. These assignments are quite different from the study assignments, no matter how context-rich they can be. During your work placement, you will be introduced to real life situations! You will carry out assignments that match your study courses for or at an organisation. These assignments require that you clarify your choices. Finally, they will lead to an end product, often including a final report.												
Compulsory literature: -												
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week[5]**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Report (Portfolio)	4.1.5; 5.1.1 6.1.3; 8.1.2 8.2.2; 9.1.2	100%	5.5	S1.18 S1.20 S2.18 S2.20	S1.18 S1.20 S2.18 S2.20	S1.20 S2.18 S2.20	S1.20 S2.18 S2.20

[5] The student has right to two attempts per study year. The student makes a selection for the attempts through Osiris student.

Semester 7 4 year track/ Semester 5 3 year track											
CU79085V2	**Title: Coastal challenge**					**Number of study credits: 10,0**		**Number of contact hours: 60**	**Mandatory**	**Teaching language: English**	
Conditions for course participation: -											
Conditions for test participation: -											
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 within the built environment. The coastal challenge is based on a complex real-life case. You will initiate, design, and specify the project and learn and apply tools for communication, collaboration, management, and innovation.											
Compulsory literature: -											
Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*		*x*		Professional development (Portfolio)	8.1.3; 8.1.4; 8.2.2; 9.1.2; 9.2.2	50%	5.5	S1.17	S1.19	S1.20	S2.1
TOETS02 (VT)	*x*	*x*			*x*	End products (Portfolio)	1.1.21; 1.2.2;1.3.2; 1.3.3; 1.3.4; 2.1.2; 2.2.2; 2.2.3; 3.1.26; 7.1.4; 7.2.3; 7.3.3; 7.4.2	50%	5.5	S1.17	S1.19	S1.20	S2.1

Semester 7 4 year track/ Semester 5 3 year track					
CU79086V1	**Title: Advanced Construction Engineering**	**Number of study credits: 10,0**	**Number of contact hours: 70**	**Compulsory choice/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. Minor or internship passed.
- For the 3-year track: at least 30 ECs obtained in the major phase.

Conditions for test participation: -

Brief description of course content: : A good Construction Engineer not only has the skills to construct Civil assets, but also has a good understanding of the underlying design and maintenance aspects. On the other hand it is essential that Design Engineers also know which building methods are best applicable in which situation and have a sharp eye of the maintenance aspects to guarantee an optimal functioning of an asset during its service lifetime. In-depth design knowledge helps Asset Managers to be able to assess the asset's condition and to understand which measures are needed to rehabilitate the structure. A good Engineer Consultant for a Client must understand the complexities of significant construct, design and maintenance aspects. This advanced course provides a solid and broad foundation to become a very skilled professional. You will learn how to design and construct a wide range of civil structures, with emphasis on Underground and Hydraulic Structures. You will learn how to apply Asset Management skills, not only process wise but also with technical in-depth knowledge of how to recover aging infrastructure. The course focusses on applying in depth theory in practical real life cases, often located in the soft soil of urban delta areas. Key words are: design and construct of reinforced and post-tensioned concrete underground structures, temporary works, foundations, dewatering systems, construction pits, retaining structures, quay walls, jetties, piled fendering, and optional hydraulic infra, asset management processes in practice, technical knowledge for condition assessment and rehabilitation of existing infrastructure. This course has been developed in cooperation with the asset management research group of HZ and external experts from the professional field.

Compulsory literature: De Gijt, J.G., Broeken, M.L., CUR Centre For Civil Engineering (2014*) Handbook Quay Walls* (2nd edition). London CRC Press.

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*			*x*	Portfolio Temporary Works Construction Pit (Portfolio)	1.1.9; 1.2.1; 2.1.1; 2.2.1; 3.1.9; 3.1.11; 3.1.22; 3.1.23	25%	5.5	S1.07	S1.09	S1.10	S1.11
TOETS02 (VT)		*x*		*x*		Mid-term exam Underground Temporary Works Construction Pit Underground Concrete Structures (Written knowledge test)	1.1.9; 1.2.1; 2.2.1; 2.2.3; 3.1.22; 3.1.23	25%	5.5	S1.09	S1.10	S1.20	S2.02

TOETS03 (VT)		*x*			*x*	Portfolio Asset Management (Portfolio)	1.1.12; 1.2.1; 4.1.6; 5.1.1; 5.1.4; 5.1.5; 5.1.6; 6.1.1	25%	5.5	S1.17	S1.19	S1.20	S2.2
TOETS04 (VT)		*x*		*x*		Final exam Asset Management (Hydraulic) Structures (Written knowledge test)	1.1.12; 1.2.1; 3.1.24; 3.1.25; 4.1.6; 5.1.2; 5.1.3; 5.1.4; 5.1.5; 5.1.6	25%	5.5	S1.18	S1.19	S1.20	S2.2

Semester 7 4 year track/ Semester 5 3 year track					
CU79087V1	**Title: Urban Water Management**	**Number of study credits: 10**	**Number of contact hours: 70**	**Compulsory choice/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. Minor or internship passed.
- For the 3-year track: at least 30 ECs obtained in the major phase.
- Minor or internship passed.

Conditions for test participation: -

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.

Compulsory literature: -

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)		*x*			*x*	Portfolio sewer systems design (Portfolio)	1.1.4; 1.1.16; 2.1.2; 2.2.2; 2.2.3; 3.1.1; 3.1.9; 3.1.25	30%	5.5	S1.09	S1.10	S1.10	S1.11
TOETS02 (VT)		*x*			*x*	Portfolio asset management (Portfolio)	1.1.20; 1.1.21; 1.3.2; 1.3.3; 1.3.4; 5.1.1; 5.1.2; 5.1.3; 5.1.4; 5.1.6	30%	5.5	S1.18	S1.19	S1.20	S2.2
TOETS03 (VT)		*x*		*x*		Final exam (Written knowledge test)	1.1.4; 1.1.12; 1.1.20; 1.1.21; 1.3.2; 2.2.2; 3.1.1; 3.1.9; 3.1.25; 5.1.1; 5.1.2; 5.1.3; 5.1.4	40%	5.5	S1.18	S1.19	S1.20	S2.2

Semester 7 4 year track/ Semester 5 3 year track					
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 (not relevant for the Civil Engineering 3-year track).
- 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	

Semester 7 4 year track/ Semester 5 3 year track												
CU75044V1	**Title:** *Change, Yes you Can (CYC)*					**Number of study credits:** 5		**Contact hours:** 40		**Elective**		**Teaching language: English**
Conditions for course participation: *none*												
Conditions for test participation: *none*												
Brief description of course content: *In terms of content, the soft skills in the field of conversation techniques are practiced in this course (how do you deal with a bad news conversation, how do you deal with resistance, how do you deal with someone who does not listen, etc.). The hard skills are researching change strategies, so that you can implement this theory later in the project.*												
Compulsory literature: *none*												
Test code	**Format**					**Assessment type**	**Content (Refer to IR-CER-HZ – B – HBO ICT)**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	X			X		Assessment	7.3K	50%	5.5	BW 8 or 9	≥5 WD	BW 10	< 10 WD
TOETS02 (VT)		*X*		X		Report	2.2K	50%	5.5	BW 8 or 9	≥5 WD	BW 10	< 10 WD

Semester 7 4 year track/ Semester 5 3 year track												
CU75043V1	**Title:** *Making Business Intelligent (MBI)*					**Number of study credits:** 5		**Contact hours:** 15		**Elective**		**Teaching language: English**
Conditions for course participation: *none*												
Conditions for test participation: *none*												
Brief description of course content: *In terms of content, various (advanced) data sets are used in this course to ultimately display self-invented KPIs in a BI report.*												
Compulsory literature: *none*												
Test code	**Format**					**Assessment type**	**Content (Refer to IR-CER-HZ – B – HBO ICT)**	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*X*	X		X		Portfolio + optional assessments	2.1E,2.1F,2.2C,2.3A,2.3B	100%	5.5	BW 8 or 9	≥5 WD	BW 10	< 10 WD

Semester 8 4 year track/ Semester 6 3 year track					
CU11021V1	**Title: Final thesis**	**Number of study credits: 30**	**Number of contact hours: -**	**Mandatory**	**Teaching language: Dutch/English**
Conditions for course participation: See article 2.2.11 of this document.					
Conditions for test participation: See article 2.2.11 of this document.					
Brief description of course content: : Conducting research: investigate a complex practical project in a complex situation independently and choose between relevant methods from Civil Engineering professional practice. The graduation manual and all communication of information sessions to prepare for graduation is in English because this is combined for the Dutch and International classes. Students can choose to do their graduation internship, supervision and reports in English or Dutch.					
Compulsory literature: Baarda, D.B. (2014). Research. This is it! Guide to quantitative and qualitative research. 2nd edition. Groningen: Noordhoff Uitgevers. Verhoeven, N. (2015). Doing Research. The hows and whys of applied research. 4th edition. Amsterdam: Boom Lemma. Verschuren, P. & Doorewaard, H. (2010). Designing a Research Project. 2nd edition. Den Haag: Eleven International Publishing.					

Test code	**Format** *Verbal/Written/Other Individually/Group*					**Description and assessment type**	**Content** *Link with learning outcomes*	**Weighting Factor (%)**	**Minimum score**	**Planning test in week**	**Inspection of work in week**	**Resit scheduled in week**	**Inspection of resit in week**
	V	**W**	**O**	**I**	**G**								
TOETS01 (VT)	*x*	*x*		*x*		Report and portfolio: Professional competences (Portfolio)	1.1.21; 1.2.2; 1.3.2; 1.3.3; 1.3.4; 2.1.2; 2.2.1;2.2.2; 2.2.3; 3.1.26	50%	5.5	S1.18/19 OR S2.19/20	S1.18/19 OR S2.19/20	S2.19/20 OR Last 2 weeks of the study year	S2.19/20 OR Last 2 weeks of the study year
TOETS02 (VT)	*x*	*x*		*x*		Report and portfolio: HBO competences (Portfolio)	7.1.4; 7.2.3; 7.3.3; 7.4.2; 8.1.3; 8.1.4; 8.2.2	50%	5.5	S1.18/19 OR S2.19/20	S1.18/19 OR S2.19/20	S2.19/20 OR Last 2 weeks of the study year	S2.19/20 OR Last 2 weeks of the study year