Implementation Regulations CER HZ

Bachelor

CHEMISTRY

Full-time

CROHO 34396

2023-2024



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CHAPTER 1 GENERAL PROVISIONS

1.1 <u>General</u>

- 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 <u>Registration, prior educational requirements, and admission policy</u>

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	СМ
Admissible:	Yes	Yes	No	No

Students with a vwo diploma					
Vwo profiles: NT NG EM CM					
Admissible: Yes Yes				No	

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);
 - a. Students with a NT and/or NG profile are admissible to the 180 ECTS VWO programme.
 - b. International students are admissible to the 180 ECTS VWO programme only if Nuffic has determined that their diploma is equal to the Dutch VWO diploma with a profile comparable with the Dutch NT (e.g. mathematics, chemistry, biology) or NG profile (e.g. chemistry, physics and mathematics).
- 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)

The holder of a diploma that does not meet the admission requirements (deficiency) (see article 2.1.1) can be admitted on the condition that the requirements for the contents are met by means of a deficiency investigation. The deficiency investigation for the study programme Chemistry is an assessment of the knowledge of and skills in Mathematics (B) and Chemistry at HAVO level. If the candidate is able to prove by means of the assessment that he or she possesses the required knowledge, he or she will be admitted to the study programme. An assessment for deficiency investigation requires a minimal age of 21 years.

2.2 Programme and education structure

2.2.1 Programme profile (article 3.2 CER HZ)

Study programme profile, according to DAS profile, version 3.1, September 2022.

The main focus of the programme is solving problems or answering questions, either individually or in a group, at the molecular level in the fields of chemistry, pharmacy, nutrition and health, generally by conducting experimental research in a laboratory. The use of advanced and often automated equipment is becoming an important aspect of this. It is clear here that information technology, such as the use of advanced software to simulate and optimise chemical processes and the use of bioinformatics (data mining, gene and protein analyses, genomics, proteomics), is becoming increasingly important.

In the study programme there is a focus on the role and importance of new developments in Biobased Chemistry and Biobased materials. Besides this the students will get familiar with practicals with Biobased sources and materials and learn about developments from oil-based economy to a more sustainable, circular and biobased economy.

Chemistry graduates are characterised by analytical, abstract-reasoning, investigative and service skills. This means that Chemistry graduates do not just ask about the 'what' and the 'how' but also about the 'why'. They consequently focus on gaining the insight that will allow them to achieve new developments. Chemistry graduates are able to work in a multidisciplinary environment. In their work they take into account the risks for people and the environment and base their decisions on the Royal Netherlands Chemical Society's ethics chapter. They work within the legal framework that governs the tasks they are performing and aim for the most sustainable solution possible. Chemistry graduates always follow the guidelines of a quality system, or they apply the Good Laboratory Practice (GLP) rules to their work.

In the laboratory Chemistry graduates might focus on a particular field, for example, a specialisation within the discipline, fundamental or applied research or the development of laboratory techniques. A few years into their careers they might move on to managerial positions such as project manager or head of department or to positions such as quality manager, equipment manager, instructor/supervisor, IT professional and so on. They could also end up working in the education sector, for example as a teacher or supervisor, or in a commercial position in the private sector. An HBO degree in Chemistry also forms a good basis for an academic programme in, for example, chemistry, biomedical sciences, health sciences, molecular/medical biology. Such a programme can generally be taken in an accelerated form at one of the research universities.

2.2.2 Learning outcomes (article 3.2 CER HZ)

Learning outcomes, according to DAS profile, version 3.1, September 2022.

1.1	ucts the res	
1.1	1.1a	ent performs simple research in response to a problem statement and setup provided. Communicating with the client about the problem and the objective of the research
	1.1a 1.1b	Gaining an insight into the professional aspects of the research by studying the literature or sources provided.
	1.1c	Explaining the relationship between the research question provided, sub-questions and research activities.
	1.1d	Developing an approach to carrying out the research activities of a simple research assignment according to a format provided, including the planning of the work.
	1.1e	Working in accordance with the work plan when carrying out the assignment and finding effective ways of achieving the intended results. Applying basic knowledge or skills.
	1.1f	Summarising the data from the research activities, structuring it in the light of the research question and presenting it clearly. Reflecting critically on the results to determine whether they are realistic.
	1.1g	Using the research results to formulate conclusions relating to the research question and if necessary submitting a proposal for improving the implementation of the assignment/the research.
	1.1h	Reporting orally and/or in writing on the assignment in accordance with specified guidelines.
	1.1i	Actively working as part of a team, processing the feedback on the work delivered to achieve better results. Being able to communicate concisely about goals and results as the work progresses.
1.2	The stude	ent makes a major contribution to a research strategy provided and conducts the research.
	1.2a	Analysing a problem in consultation and in a coordinated way and translating it into the objectives of the research assignment.
	1.2b	Gaining an insight into the problem and the professional aspects of the research by studying the literature or sources the student has selected.
	1.2c	Formulating, under supervision, sub-questions and research activities regarding the research to be carried out.
	1.2d	Preparing a work plan in consultation, drawing up the plan independently, taking account of any preconditions.
	1.2e	Working in accordance with the work plan when carrying out the assignment. Implementing the work plan effectively and efficiently and determining whether interim adjustments are necessary on the basis of interim results. Applying relevant knowledge or skills.
	1.2f	Summarising and interpreting the full or partial results in relation to the assignment/research question. Critically reflecting on the reliability of the results.
	1.2g	Using the research results to formulate conclusions relating to the research question and using these to make a proposal for follow-up steps.
	1.2h	Combining the results into one report in accordance with the applicable guidelines/ standard.
	1.2i	Acting as a full team member in the student's working environment, where feedback and reflection lead to better results, reasoned choices and effective coordination in conducting the research. Being able to match communication on progress to the situation.
1.3	The stude	ent translates a problem provided into a research strategy and conducts the research.
	1.3a	Analysing, independently, a problem provided and translating it into the objective of the research assignment.
	1.3b	Selecting and obtaining, without assistance, scientific and other literature or sources in order to study the problem in greater depth, thereby validating the reliability of the different sources of information.
	1.3c	Formulating, without assistance, sub-questions and research activities regarding the research to be carried out.
	1.3d	Preparing a work plan without assistance, taking into account the interdependencies of various research activities and preconditions.
	1.3e	Implementing a complex work plan effectively and efficiently and updating it as necessary in between times. Acquiring relevant knowledge and putting it into practice.

Implementation Regulations CER HZ Bachelor program Chemistry – full-time Approval study program committee: 06/04/2023. Approval University Council: 04/07/2023. Established by the executive board: 04/07/2023.

1.3f Logically and clearly combining the full or partial results and interpreting them in relation research question. Performing an analysis of the reliability of the results.		Logically and clearly combining the full or partial results and interpreting them in relation to the research question. Performing an analysis of the reliability of the results.
1.3g		Using the research results to formulate and interpret conclusions relating to the research question. Making proposals for follow-up research based on the conclusions.
	1.3h	Reporting on the research in accordance with the standard applicable in the professional field.
	1.3i	Acting as a full member and working as part of a team which also contains staff from other professional field(s). Communicating independently about the relevant substantive aspects of the progress.

2 Experimentation

The Bachelor of Science sets up experiments under supervision and conducts them unsupervised in a systematic way and obtains reproducible and reliable results.

2.1	The student conducts an experiment according to the approach/ protocol provided and obtains replicable results.				
	2.1a	Explaining the objective of the experiment.			
		Explaining the principle of the method and technique provided.			
	2.10 2.1c	Becoming proficient in the correct handling of the equipment.			
	2.1d	Properly preparing an experiment on the basis of a protocol/approach provided, conducting it and			
	2.10	obtaining replicable results within the specified time and maintaining accurate and clear documentation.			
	2.1e	Working according to HSE standards and taking ethical and sustainability standards into account			
		when preparing and conducting the experiment.			
	2.1f	Processing measurement results properly and correctly and estimating whether a result obtained is realistic.			
	2.1g	Giving reasons to establish whether the approach to the experiment has been followed correctly.			
2.2	The studen	t chooses a suitable protocol, adjusts it as necessary and carries it out.chooses a protocol/approach,			
	adjusts it if	necessary, implements it and obtains reproducible and reliable results.			
	2.2a	Choosing an approach and explaining why it is a suitable way of achieving the objective.			
	2.2b	Having sufficient knowledge and understanding of available methods and techniques to assess their			
		suitability and choose the right equipment and/or device settings.			
	2.2c	Becoming so skilled in operating the available equipment that adjusting the settings leads to desired effects.			
	2.2d	Preparing a schedule for implementing a protocol/ approach, conducting the experiment and obtaining reproducible results within the specified time and maintaining accurate and clear documentation.			
	2.2e	Assessing whether the approach can be implemented according to HSE, ethical and sustainability standards.			
	2.2f	Assessing the reliability of a result on the basis of an (e.g. statistical) analysis provided.			
	2.2g	Giving reasons to establish whether the approach to the experiment requires improvement.			
2.3	The studen	it sets up experiments under supervision and conducts them unsupervised in a systematic way and			
	obtains rep	producible and reliable results.			
	2.3a	Formulating, without assistance, an approach to achieving the objective of the experiment.			
	2.3b	Choosing or developing suitable methods and techniques and anticipating possible experimental problems.			
	2.3c	Being capable of learning independently about the possibilities and limitations of the equipment to be used in order to recognise experimental problems and be able to act accordingly.			
	2.3d	Preparing a schedule for a number of experiments, conducting them and obtaining reproducible results within the specified time and main- taining accurate and clear documentation.			
	2.3e	Assessing the approach and adapting it if necessary in accordance with HSE, ethical and sustainability standards.			
	2.3f	Choosing a statistical or other analysis for assessing the reliability and validity of the result obtained.			
	2.3g	Making proposals, where necessary, to improve the approach and propose ad- ditional experiments.			

		ment and coordination Ior of Science checks the work against the requirements of different management systems.
4 .		student checks the work against the requirements of different management systems.
1	THC 5	tradent checks the work against the requirements of different management systems.
	4.1	Demonstrate general knowledge of the context in which relevant management systems are set up.
	а	
	4.1	Comply with the guidelines of relevant management systems by acting appropriately when performing own
	b	work.
	4.1	Communicate about (compliance with) the guidelines of the relevant management systems when carrying
	С	out his work.

5 Advice, procurement and sales

The Bachelor of Science familiarises himself with users' problems and/or requirements within the Applied Science domain.

uom				
5.1	The st	The student familiarises himself with users' problems and/or requirements.		
	5.1a	5.1a Listening to the client and repeating the question in your own words.		
	5.1b	.1b Describing the provided information about the context.		
	5.1c	1c To use the technical knowledge provided to propose a possible solution.		
	5.1d To motivate the chosen solution for the question.			

6 Instruction, supervising, teaching and coaching

The Bachelor of Science passes his own knowledge and skills, on request, to employees (by demonstrating and explaining) within the Applied Science domain.

6.1	The st	The student passes his own knowledge and skills, on request, to employees (by demonstrating and explaining).		
	6.1a	Helping to provide fellow employees, students or trainees with instructions/demonstrations with regard to a practical test, etc.		
	6.1b	6.1b Helping to supervise employees, trainees, students or course participants in the use of methods and equipment, etc.		
	6.1c	Explaining things clearly.		
	6.1d	1d Being aware of the importance of continuously developing his expertise.		
	6.1e	Providing feedback, on request, on the evaluation/ assessment of the results of instructions, etc.		

7 Leadership and managing people

The Ba	The Bachelor of Science provides employees with assistance and guidance when asked to do so.				
7.1	The student provides employees with assistance and guidance when asked to do so.				
	7.1a Showing that he understands the place and role of his part of the organisation (internship/graduation project).				
	7.1b	7.1b Helping to allocate tasks and work.			
	7.1c	Lc Being approachable and accessible for employees, fellow students and lecturers.			
	7.1d	d Being honest and reliable towards employees, fellow students and lecturers.			
	7.1e	7.1e Supporting others in their initiatives.			
	7.1f	7.1f Contributing to staff and progress meetings on the basis of his own work.			
	7.1g	Giving a clear and unambiguous explanation or instructions about a task to be performed.			
	7.1h	Giving employees an insight into the importance of the constratints of the project.			

	-manage			
8.1		achelor of Science reflects on his own performance and development. The student reflects on his own performance.		
	Working towards an established learning objective. Discussing the learning strategy and the ensuing results; being aware of the function of a learning objective and how to use it in his learning strategy.			
	8.1b	Identifying any need to adjust his own performance in the academic environment.		
8.1c Communicating with others about professional and ethical dilemmas and identifying professional dilemmas.		Communicating with others about professional and ethical dilemmas and identifying professional and ethical dilemmas.		
	8.1d	Seeking information in order to improve his own performance.		
, , ,		Critically evaluating his own actions and thinking. Being aware of the effect of his own attitude to work on others and on group members in the case of a project.		
8.2	The student reflects on his own performance and development.			
	8.2a	Determining his own learning objective and learning strategy in consultation/without assistance and reflecting on the result.		
	8.2b	Using feedback on his own performance to adapt to the working environment.		
	8.2c	Taking note of any professional and ethical dilemmas and giving his opinion on them.		
	8.2d	Taking on board criticism of work delivered and discussing his own performance with colleagues.		
	8.2e	Drawing conclusions on his actions and if necessary articulating them to others.		

2.2.3 Programme structure (article 3.3 CER HZ)

National name:	B Chemie
International name:	B Chemistry
Orientation:	Bachelor
Title conferred:	Bachelor of Science (B.Sc.)
Programme duration:	240 study credits (EC)
Course workload 'propaedeutic' phase:	60 study credits (EC)
Conclusion with 'propaedeutic' examination:	Yes
Course workload main phase:	180 study credits (EC)
Variant:	Full-time
ISAT code:	34396
Location:	Middelburg
Language:	Dutch and English
Effective date:	30-11-2017
Submission date	01-05-2023
Joint degree programme:	Not applicable
180 ECTS fast track:	Yes

2.2.3a Programme schedule

Programme regular track 240 EC

Note

Sen **S**1

S:	semester
AC:	Applied Chemistry

Block: 1/2 semester (= quarter) Life Science

2	Applied Chemistry

Study programme component Block 01 Food Chemistry

LS: Course code EC CU20623V2 5.00 Beer Chemistry

01	Diodit of 1 ood onemiotry	002002012	0.00	Beer chemistry
		CU20624V1	5.00	Chemistry 1 and Microbiology 1
		CU76012V1	2.50	Mathematics 1
S1	Block 02 Quality Control	CU20626V2	5.00	Pool Chemistry
		CU20627V1	5.00	Chemistry 2 and Microbiology 2
		CU76013	2.50	Physics
		CU76014	2.50	Quality & Safety
		CU20637V1	1.25	Professionalization block 1 & 2
S2	Block 03 Biobased Products & Technology	CU20629V2	5.00	Bioproduct Extraction & Analysis
		CU20630V1	5.00	Organic Chemistry 1 & Cell biology 1
		CU20631V2	2.50	Biobased Products & Materials
S2	Block 04 Health & Chemistry	CU20632V2	5.00	Biologically Active Compounds
	·····,	CU20633V1	5.00	Organic Chemistry 2 & Cell biology 2
		CU76016	2.50	Mathematics 2
		CU76015	2.50	Data analysis 1
		CU20638V1	1.25	Professionalization block 3 & 4
S1/S2	Free Composition Course	CH-HZP-YEAR1-22	2.5	HZ Personality year 1
S3	Block 05 Environmental Chemistry & Toxicology	CU24063V1	5.00	Environmental Chemistry & Toxicology
00		CU24064	5.00	Spectroscopy 1 & Toxicology
		CU76018	1.25	Data analysis 2
		CU76022V1	1.25	Student assistant
S3	Block 06 Bio-organic Toolbox	CU24067V1	5.00	Bio-organic Toolbox
55	BIOCK OU BIO-OI GALIIC TOOIDOX	CU24068	5.00	Organic chemistry 3 and Biochemistry 1
		CU76019	3.75	Spectroscopy 2
		CU24070	1.25	Professionalization block 5 & 6
S4	Block 07 Forensic Science	CU24070 CU24074V1	5.00	Forensic Science
54	BIOCK U7 FOIEnsic Science			
		CU24075	5.00	Spectroscopy 3 / Separations1 & DNA 1
04	Dia da 00 Marina Diabana di Obamiatra	CU76021	1.25	Data analysis 3
S4	Block 08 Marine Biobased Chemistry	CU24077V1	5.00	Marine Biobased Chemistry
		CU24078	5.00	Research cycle / Separations 2 & Biochemistry 2
		CU76023V1	2.50	Labmanagement & Safety
00/04	Free Ormanities Orman	CU24080	1.25	Professionalization block 7 & 8
S3/S4	Free Composition Course	CH-HZP-YEAR2-22	2.5	HZ Personality year 2
S3/S4	English ^(*)	EN39001	5.00	English - Foundation Course B1
		EN39002	5.00	English - Foundation Course B2
		EN39003	5.00	English - Foundation Course C1
		EN39004	5.00	English - Foundation Course C2
S5 - AC	Block 09 Specialisation Applied Chemistry I	CU76000V1	5.0	Chromatography practice
00 - A0	block of opecialisation Applied Orientistry 1	CU76001V1	5.0	Polymer chemistry & analysis
		CU76002	2.5	Circular Chemistry
S5 - LS	Block 09 From Molecules & Cells to Human Health	CU76003V1	5.0	Immunology practice
30 - L3	BIOCK 09 FIOTT MOIECUIES & CEIIS TO HUTTATI HEALTT	CU76004	5.0	Immunology 1 & Biochemistry 3
		CU13416V6	2.5	Biotechnology
SE 40	Plack 10 Specialization Applied Chemistry II			
S5 - AC	Block 10 Specialisation Applied Chemistry II	CU76006V1 CU76007	5.0 5.0	Circular Chemistry practice Advanced Chromatography
05 1 0	Diade 40 Ashievenesta 8 Obellanana af Life Osiana	CU76008	2.5	Circular chemistry & Biopolymers
S5 - LS	Block 10 Achievements & Challenges of Life Science		5.0	Molecular Biology toolbox
		CU76010	5.0	Immunology 2 & DNA 2
		CU13415V6	2.5	Bioinformatics
S5	Block 10 Achievements & Challenges of Life Science		2.5	Professionalization block 9 &10
S5/S6	Free Composition Course	CH-HZP-YEAR3-22	2.5	HZ Personality year 3
S6 or S7	Minor	CU05600V12	30.0	Research minor
S6 or S7	Internship	CU06725V18	27.5	Internship in company
S7/S8	Free Composition Course	CH-HZP-YEAR4-22	2.5	HZ Personality year 4
S8	Final thesis	CU06726V16	30.0	Final Thesis & project

(*) A student will follow at least one of the Foundation courses English: B1, B2, C1 or C2 level.

Programme short track 180 EC

See programme regular track 240 EC, semester 3 to 8. Semester 3 and 4 is the propaedeutic level.

Regular and alternative programme mainphase

In the regular programme, the minor is programmed in the 6th semester and the internship in company in the 7th semester. In the alternative programme, the internship in company is programmed in the 6th semester and the minor in the 7th semester.

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

Not applicable.

2.2.4 Courses propaedeutic phase (article 3.5 CER HZ)

See appendix 1.

Lessons and tests of the theoretical part will take place in two separate groups, Dutch and English.

As an exception, collective meetings will be organized (in English), for instance by guest speakers. When the maximum number of students in the international class has not been exceeded, Dutch students are allowed to follow classes in English on a voluntary basis.

2.2.5 Main phase courses (article 3.6 CER HZ)

See appendix 2.

The language of instruction and examining is English, with the exception of the work placement / graduation phase at the request of the work placement company / company where the student completes his graduation.

The 180 ECTS track is a full English language program, with the exception of the work placement / graduation phase at the request of the work placement company / company where the student completes his graduation.

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.

Cohort 2021-2022, 2022-2023 en 2023-2024

See policy HZ Personality published on www.hz.nl. For each activity, an accompanying Personal Development Plan is mandatory, as described at the HZ.learn page of Chemistry and with support of the Study Coach.

Transition arrangement Cohort 2020-2021 and before

Students can choose activities of the following categories:

Implementation Regulations CER HZ Bachelor program Chemistry – full-time Approval study program committee: 06/04/2023. Approval University Council: 04/07/2023. Established by the executive board: 04/07/2023.

Category	Course code	Credits
1 Management activities	VCCU76011-1	1.25
	VCCU76011-2	1.25
2 Information & promotion activities	VCCU76012-1	1.25
	VCCU76012-2	1.25
3 Social & cultural activities	VCCU76013-1	1.25
	VCCU76013-2	1.25
4 Coaching activities	VCCU76014-1	1.25
	VCCU76014-2	1.25
5 Project activities	VCCU76015-1	1.25
	VCCU76015-2	1.25
6 Training activities and courses	VCCU76016-1	1.25
	VCCU76016-2	1.25

Additional restrictions:

There is a maximum of 2.5 EC to be done within one single category.

For each activity, an accompanying Personal Development Plan is mandatory, as described at the HZ.learn page of Chemistry and with support of the Study Coach.

2.2.7 Specialisations (article 3.9 CER HZ)

The Chemistry programme offers the following specializations:

- Applied Chemistry
- Life Sciences

Students choose one of these specialisations by delivering a motivational letter. For additional information see programme descriptions. These can be found on the HZ website and are available from the Academy Office.

2.2.8 Internship (article 3.8 CER HZ)

To take part in an internship that is part of a bachelor programme with a studyload of 240 credits, the student must have passed the propaedeutic phase and at least 30 credits in the main phase. To participate in an internship that is part of bachelors with a 180 credits study load (accelerated track), the student must have completed the propaedeutic phase or at least 60 credits in total. If the student does not meet these and/or any additional participation requirements but can present special circumstances, the examination board may decide to grant permission to participate in the minor after all.

For information on the graduation/graduation internship, securing an internship and its assessment, please refer to 'Graduation' in the general student manual and in the programme-specific student manual. These can be found on the Chemistry HZ Learn page.

2.2.9 *Minor* (article 3.7 CER HZ)

See article 2.2.3a of this regulation.

2.2.10 *Participation in international exchange programme* (article 4.5 CER HZ) Exchange programme is provided via International office (Article 4.5 CER HZ)

Implementation Regulations CER HZ Bachelor program Chemistry – full-time Approval study program committee: 06/04/2023. Approval University Council: 04/07/2023. Established by the executive board: 04/07/2023. Exchange programme is provided via 'Kies op maat' minorships.

2.2.11 Graduation (article 3.8 CER HZ)

In order to participate in the graduation phase of the Chemistry programme (semester 8), the student has to have no more than 10 ECTS unpassed, besides the 30 ECTS of the graduation phase. The actual graduation manual is applicable for each student, starting a graduation.

For information on the graduation/graduation internship, securing an internship and its assessment, please refer to 'Graduation' in the general student manual and in the programme-specific student manual. These can be found on the Chemistry HZ Learn page.

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 <u>HZ Assessment Policy</u>, 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)

Transition arrangement implementation HZ Personality. See article 2.2.6.

2.3 Study recommendation

2.3.1. **Conditions for registration for programme after NBSA** (article 8.1, paragraph 9 HZ CER) The student who has received a negative binding study recommendation cannot be enrolled in the bachelor degree programme Chemistry for a period of three years after deregistration (see HZ CER chapter 8).

2.4 <u>Registering for courses and tests</u>

- 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.
 - Procedure for registration practical exercise:
 - The student must register with the *Registration form resit practical exercise* on Learn.

- The student can only register for the practical exercise that is taken in the same block.
- The student must register no later than the eight block week (Sunday 23:59h) of the block in which the practical exercise is offered.
- The resit of the practical exercise will be scheduled in the tenth block week of the same block.
- 2.4.3 More information about OSIRIS Student can be found on https://learn.hz.nl/course/view.php?id=14505.

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 06/04/2023.
- 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 Food chemistry

CU20623V2	Title: Beer Chemist	'v			
02002372	The beer chemist	-	nformation		
Amount of study	credits:	Course ii	Language:		
5			English		
			Dutch		
Conditions for co	urse participation:		Duten		
	urse participation.				
None.					
Conditions for tes					
	e scheduled practical e	exercises is condition	hal for participation	(article 6.3 pa	ragraph 4 CER HZ).
•	of course content:				.
-		-			of beers, i.e. a black gold
	After the brewing pro				
	form various chemical	and microbiologica	analysis. The cour	se will be comp	pleted by a beer brewing
contest. Besides beer brev	wing we provide you w	ith the most import	ant practice of you	r career in cho	mistry: how to work in a
					within a certain precision
• ·					standards. By titration yo
	e alcohol content of yo				
	, er to determine the co				
	i.e. by prepare a growt				
perform fermenta	ation tests.				
During the practic	cal's you report all obs	ervations and obtain	ned data in your lat	journal accord	ding the guidelines and yo
	ow to keep up a labora				
		ples and is commun	ication essential to	be successful.	The teacher will motivate
,	ate and to approach.				
Course learning o					
	e objective of the exp		م م م ا		
	e principle of the met oficient in the correct				
	paring an experiment			ovided condu	cting it and obtaining
	within the specified til				
		-			account when preparing
and conducting th	-	Ũ	,		
-	easurement results pr	operly and correctly	and estimating wh	nether a result	obtained is realistic.
Compulsory litera	ature:				
		Assessmen	t information		
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities
		description	Factor	score	(block codes)
			(%)		
TOETS01 (VT)	(Workplace)	Individual	100%	5.5	B1.9, B2.9
	Assessment	workplace			
		assessment			
		Practica	al exercise		
	Practical exercise	1		on of related sk	kills training during the
PRAKT-OEF (VT)	i ructicui exercise	The practical exer	cise is a combinatio	in or related si	the standing during the

Block / Semester	Title: Chemistry 1 a	nd Microbiology 1				
	ritici chemistry 2 d		formation			
Amount of study	credits:	course in	Language:			
5			English			
			Dutch			
Conditions for co	ourse participation:					
None.						
Conditions for te	st participation:					
None.						
Brief description	of course content:					
Che1						
					n topics are: the scientific	
method, atomic	nodel, chemical bondi	ng (Lewis structures), the periodic tabl	e of the eleme	nts and stoichiometry.	
Mic1			and the state of the state	damaa Uuul	the second second second second	
	gical concepts and tech in fully comprehending				standing of microbial	
Course learning			etween microbes a			
TOETS01 (Che1)	vaccomes.					
	the objective of the ex	operiment.				
• •	the principle of the me	•	e provided.			
2.1f Processing	measurement results	properly and correct	ly and estimating	whether a resu	It obtained is realistic.	
TOETS02 (Mic1)						
	the objective of the ex		ب میں میں بار			
	the principle of the me measurement results			whathar a rasu	It obtained is realistic	
2.11 FIOCESSING	ineasurement results		tiy and estimating	whether a resu	in obtained is realistic.	
Compulsory liter	ature:					
• •		al Edition, Madigan, I	M. Bender, K. Bucl	kley, Daniel Sat	tley, Matthew Stahl, David,	
	N: 9781292404943	, , ,	,	.,	,, , , ,	
	son, McMurry, Fay, 8tl					
		n MasteringBiology	with Pearson eTex	t, Global Editio	n, Campbell, Neil, 12th	
edition, ISBN: 9781292345864						
Test code	Assessment type	Assessment	t information Weighting	Minimum	Test opportunities	
lest tode	Assessment type	description	Factor	score	(block codes)	
		accomption	(%)			
				5.5		
TOETS01 (VT)	Written	Che1 - Written	50%		B1.9. B2.10	
TOETS01 (VT)	Written knowledge test	Che1 - Written exam	50%	5.5	B1.9, B2.10	
	knowledge test	exam				
TOETS01 (VT) TOETS02 (VT)			50%	5.5	B1.9, B2.10 B1.9, B2.10	

Course information Amount of study credits: Language: 2.5 Dutch English Conditions for course participation: Dutch None. English Conditions for test participation: None. Secondary and the matrice of the secondary and the seconda	Block / Semester: S1							
Amount of study credits: Language: 2.5 Dutch English Conditions for course participation: None. Conditions for test participation: None. Brief description of course content: Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Compulsory literature: Assessment information Test code Assessment type Assessment description effector (%) TOETS01 (VT) Written Mathematics 1 -	CU76012V1	CU76012V1 Title: Mathematics 1						
2.5 Dutch English Conditions for course participation: None. None. Conditions for test participation: None. Brief description of course content: Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment information Test code Assessment description (%) Dutch ToETSO1 (VT) Written			Course in	formation				
Conditions for course participation: English None. Conditions for test participation: None. Secondary and the mattice of the second	Amount of study	credits:		Language:				
Conditions for course participation: None.None.Brief description of course content: Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle.The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support.Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic.Compulsory literature:Assessment informationTest codeAssessment typeAssessment gescriptionCourse learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic.Test codeAssessment informationTest codeMathematics 1 -100%5.5B1.9, B2.10	2.5			Dutch				
None. Conditions for test participation: None. Brief description of course content: Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment type Assessment type Assessment description Factor (%) (%) 5.5 B1.9, B2.10				English				
Conditions for test participation: None. None. Brief description of course content: Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Veighting Assessment description Meighting Factor (%) Toest of Minimum Score Test code Misessment type Mathematics 1 - 100% 00%	Conditions for co	urse participation:						
None. Brief description of course content: Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type description (%) Minimum factor (%) Test opportunities (block codes) TOETS01 (VT) Written Mathematics 1- 100% 5.5 B1.9, B2.10	None.							
Brief description of course content: Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Factor (%) TOETS01 (VT) Written	Conditions for tes	t participation:						
Elementary mathematics: expanding forms (removing brackets), factorising forms. Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment tree session et al. Test code Assessment type Assessment type Assessment description TOETSO1 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	None.							
Basic algebra: Understanding and solving linear, quadratic and exponential (the number e, logarithms) equations. Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Test code Assessment type Assessment description Factor (%) Course loar (%) TOETS01 (VT) Written	Brief description	Brief description of course content:						
Solving systems of equations. Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Factor (%) TOETS01 (VT) Written	Elementary mathe	ematics: expanding for	ms (removing brack	ets), factorising for	rms.			
Basic trigonometry: definition of sine and cosine and he use of the unit circle. The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Factor (%) TOETS01 (VT) Written	-	-	g linear, quadratic ar	nd exponential (the	e number e, lo	garithms) equations.		
The course will be relying on self-study in the online environment of Sowiso. A weekly Q&A session will be planned at HZ for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment type Assessment description Test code Assessment type Assessment description Weighting Factor (%) (%) Minimum score TOETS01 (VT) Written								
for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	Basic trigonometr	y: definition of sine an	d cosine and he use	of the unit circle.				
for support. Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10								
Course learning outcomes: 2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score Test opportunities (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10		e relying on self-study i	n the online environ	ment of Sowiso. A	weekly Q&A s	ession will be planned at HZ		
2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score Test opportunities (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	for support.							
2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic. Compulsory literature: Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score Test opportunities (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	Course learning o	utcomes:						
Compulsory literature: Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score Test opportunities (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	•		properly and correct	v and estimating w	whether a resul	It obtained is realistic		
Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score Test opportunities (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	2.11 110003311g1	incusurement results p			viletilei a lesui	tootainea is realistic.		
Assessment information Test code Assessment type Assessment description Weighting Factor (%) Minimum score Test opportunities (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	Compulsory litera	ature:						
description Factor (%) score (block codes) TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10								
TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10	Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
TOETS01 (VT) Written Mathematics 1 - 100% 5.5 B1.9, B2.10			description	Factor	score	(block codes)		
				(%)				
	TOETS01 (VT)	Written	Mathematics 1 -	100%	5.5	B1.9, B2.10		
knowledge test Written exam		knowledge test	Written exam					

Block 2 Quality Control

Block / Semester: S1								
CU20626V2 Title: Pool chemistry								
Course information								
Amount of study	credits:		Language:					
5			English					
			Dutch					
Conditions for co	urse participation:							
None.								
Conditions for tes	t participation:							
Completion of the	e scheduled practical e	xercise is conditiona	l for participation (article 6.3 par	agraph 4 CER HZ).			
Brief description	of course content:							
water? Think about "pee in the pool", perfumes, sweat, body lotion. In this course you will monitoring the chemical and microbiological parameters of a local swimming pool. Questions as how do they react with chlorine, how do these products affects our health and which kind of bacteria in swimming pools can cause serious health effects will be studied.								
Course learning o								
	e objective of the expe							
	e principle of the meth							
	oficient in the correct l paring an experiment (ovidad candur	ting it and obtaining			
	within the specified tir							
•	•	-			account when preparing			
and conducting th	-							
0	easurement results pr	operly and correctly	and estimating wh	ether a result	obtained is realistic.			
2.1g Giving reason	ns to establish whethe	r the approach to th	e experiment has b	been followed	correctly.			
Compulsory litera	nture:							
			information					
Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)			
TOETS01 (VT)	(Workplace)	Individual	100%	5.5	B2.9, B3.9			
	Assessment	workplace						
		assessment						
					1			
		Practical	excercise					

Block / Semester	: S1				
CU20627V1	Title: Chemistry 2 a	nd Microbiology 2			
	•	Course ir	formation		
Amount of study	credits:		Language:		
5			English		
			Dutch		
Conditions for co	urse participation:				
None.					
Conditions for te	st participation:				
None.					
Brief description	of course content:				
Basic microbiolog	gical concepts are taug	ht in relation to wate	er quality and hy	giene. The cours	e focuses on infectious
, 0	tic detection, preventi				
•	oncepts are taught in I	•			
•		, ,,			concepts are the covalent
and ionic bonding	g and the basics of the	rmochemistry (inter	nal energy, entha	llpy, entropy, Gi	bbs energy).
Course learning o	outcomes:				
TOETS01 (Che2)					
	the objective of the ex	•			
	the principle of the me				
	within the specified ti	•		•	lucting it and obtaining
•	•		•		ult obtained is realistic.
2.11 FIOCESSING	ineasurement results		iy and estimating	g whether a rest	
TOETS02 (Mic2)					
· · ·	the objective of the ex	periment.			
	the principle of the m		provided.		
• •	· ·	•	•	whether a resu	Ilt obtained is realistic.
0			,	,	
Compulsory liter	ature:				
		Assessment	t information		
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities
		description	Factor	score	(block codes)
			(%)		
TOETS01 (VT)	Written	Chemistry 2 -	50%	5.5	B2.8, B2.10
	knowledge test	Written exam			
TOETS02 (VT)	Written	Microbiology 2 -	50%	5.5	B2.8, B2.10
1011302 (VI)	whitten	Which Obiology 2 -	50%	5.5	DZ.0, DZ.10
	knowledge test	Written exam			

Block / Semester: S1							
CU76013	CU76013 Title: Physics						
		Course in	formation				
Amount of study	credits:		Language:				
2.5			English				
			Dutch				
Conditions for co	urse participation:						
None.							
Conditions for tes	t participation:						
None.							
Brief description of course content:							
	stand equipment in the cs: Light as a(n electro	•	0	0	nonic oscillation and Lambert-Beer's Law and		
Polarisation.	0 1	0, , ,	,				
Electrostatics: und understand molec	derstand what is an ele cular models.	ectrical field and elec	trical tension (volt	age) and Could	omb' s Law. Useful to		
		•			d voltage. Electrical power.		
Magnetism: The Lorentz Force. Bending of charged particles in a magnetic field. The magnetic induction of a coil and a wire.							
Course learning o	utcomes:						
2.1b Explaining t	he principle of the me	thod and technique	provided.				
2.1f Processing measurement results properly and correctly and estimating whether a result obtained is realistic.							
Compulsory litera	iture:						
			information				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
		description	Factor	score	(block codes)		

		description	Factor (%)	score	(block codes)
TOETS01 (VT)	Written	Physics -	100%	5.5	B2.8, B2.10
	knowledge test	Written exam			

Block / Semester:	Block / Semester: S1							
CU20637V1	CU20637V1 Title: Professionalization block 1 & 2							
	•	Course in	formation					
Amount of study	Amount of study credits: Language:							
1.25			English					
	Dutch							
Conditions for cou	urse participation:							
None.								
Conditions for tes	t participation:							
None.								
Brief description	of course content:							
Assignments, indiv	vidual and as a group t	o work on persona	l professional skills	and knowledg	e of the students			
competencies to c	develop toward a profe	essional chemistry e	mployee.					
Course learning o	utcomes:							
,	0 1				chieve better results. Being			
	ate concisely about go		• •		daha ana tao mandar batan			
U U	tion of a learning obje	U ,	0	0 0,	d the ensuing results; being			
	any need to adjust his		-					
	ormation in order to ir	•						
-		•		fect of his own	attitude to work on others			
• ·	and on group members in the case of a project.							
Compulsory literature:								
			information					
Test code	Assessment type	Assessment	Weighting Factor	Minimum	Test opportunities			
		description	(%)	score	(block codes)			
TOETS01 (VT)	Portfolio	Individual	100%	5.5	B2.9, B2.10			
		reflection						

Block / Semester:	S1					
CU76014	Title: Quality & Safe	ty				
	·	Course in	formation			
Amount of study	credits:		Language:			
2.5			English			
			Dutch			
Conditions for co	urse participation:					
None.						
Conditions for test participation:						
Passed the theore	etical safety exam.					
Brief description	of course content:					
Before you can ca	rry out an experiment	in a lab, you will nee	ed to ask yourself t	wo important	questions: (1) How do I	
ensure that the ex	periment is conducted	d safely (people and	environment)? (2)	How do I ensu	ire that my results are	
reliable?						
Course learning o	utcomes:					
					ucting it and obtaining	
•	within the specified tir	-				
-	-	rds and taking ethica	al and sustainability	y standards int	o account when preparing	
and conducting th	•	reports and correct	ly and actimating y	whathar a recul	t obtained is realistic	
2.11 Processing i	measurement results p	property and correct	iy and estimating v	vnetner a resul	it obtained is realistic.	
Compulsory litera						
· ·		ntal risks in laborato	ries. Ir. Iris van 't I	even. 2nd editi	ion, ISBN: 9789491764530	
			information	2.2.1, 2.1.0 Guit	,	
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities	
		description	Factor	score	(block codes)	
			(%)			
TOETS01 (VT)	(Workplace)	Individual	100%	5.5	B2.7, B2.10	
	Assessment	practical exam				

Block 3 Biobased Products & Technology

Block / Semester:	S2						
CU20629V2	Title: Bioproduct Ex	traction & Analysis					
		Course in	formation				
Amount of study	credits:		Language:				
5			English				
			Dutch				
Conditions for co	urse participation:						
None.							
Conditions for tes	t participation:						
Completion of the scheduled practical exercise is conditional for participation (article 6.3 paragraph 4 CER HZ).							
Brief description of course content:							
	ow long this planet ca	n provide for fossil fu	uels? What other s	ources are ava	ilable? Which role do		
	his particular topic?		6 1 1 1 1 1				
	will get familiar with o						
					practiced: synthesizing, preparation and accuracy of		
work.	iversion of chemical c	ompounds. A strong	iocus will be neiu	on salety, lab p	oreparation and accuracy of		
	ment will focus on pre	labs. use of labiourn	al. understanding	goals and team	work attitude. An		
	will be provided befor		,	5			
Course learning o	utcomes:						
2.1a Explaining t	he objective of the ex	periment.					
	he principle of the me						
	roficient in the correc						
					ucting it and obtaining		
-	within the specified tir	-					
and conducting th	-	rds and taking ethica	and sustainability	y standards int	o account when preparing		
-	neasurement results p	properly and correct	v and estimating w	whether a resul	t obtained is realistic		
-	ons to establish wheth						
	he relationship betwe				-		
	, g the data from the re						
presenting it clear	ly. Reflecting critically	on the results to det	termine whether t	hey are realisti	c.		
			-	irch question a	nd if necessary submitting		
	proving the implement	-					
	orally and/or in writing	; on the assignment i	n accordance with	specified guid	elines.		
Compulsory litera	iture:	Assessment	information				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	description	Factor	score	(block codes)		
		•	(%)				
TOETS01 (VT)	Assignment	Reporting	100%	5.5	B3.9, B4.3		
	(group)						
		Practical	excercise				
PRAKT-OEF (VT)	Practical excercise			on of related sk	ills training during the		
. ,		block.					

Block / Semester:	: S2				
CU20630V1	Title: Organic Chem	istry 1 & Cell Biolog	gy 1		
		Course in	nformation		
Amount of study 5	credits:		Language: English Dutch		
Conditions for co	urse participation:				
None.					
Conditions for tes	st participation:				
None.	of course content:				
is the basis of con chemistry is relate Biochemistry, on Biochemistry, you industries. This course is a th knowledge, learne	nbinations/reactions b ed to all fields of chem the other hand, relate u may think of: fatty ac eoretical component o ed previously about: ir nical bonding in organio	etween chemicals a istry such as: food, s the organic chemi- cids, (bio) oils, enzyr of the (practical) cou idustrial distillation	nd leading to the e environment, phar stry to biological co nes, amino acids p urse CU20629, addi of fossil fuels; nam	existence of new maceuticals but proponents. Wh resent in chem ing depth to yo ing structures	t also petroleum industry. nen thinking of ical drop-ins used in diverse our organic chemistry
mankind for thou such as the dome the last decades. expression of cert organisms, and th The Biological Mo you will study the	ns to use living cells an sands of years for a va stication of animals an Modern biotechnology tain target genes. To the central dogma of mo- lecules & Structures p	riety of agricultural, id selective breedin, i has a strong found his end, you will lear blecular biology (fol art explores which Is and cellular struct	food, and medicin g of cultivars, and r lation based on DN m more about the low-up on theory o valuable resources	al purposes; in nodern applica A technology, s organization of f Microbiology can be extracte	genes and genomes in
2.1f Processing a2.1h Making a pTOETS02 (Bio1)1.1b Gaining an2.1a Explaining a	ng, when asked, the pi measurement results p roposal if necessary to	properly and correct improve the perfor sional aspects of th periment.	tly and assessing w rmance of a protoc e research by study	ol	obtained is realistic ure or sources provided.
Compulsory litera	ature:				
	y, Global Edition, Bruic			781292160344	
			t information	T	
Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)
TOETS01 (VT)	Written knowledge test	Organic Chemistry 1 - Written exam	50%	5.5	B3.8, B3.10
TOETS02 (VT)	Written knowledge test	Cell biology 1 - Written exam	50%	5.5	B3.8, B3.10

Implementation Regulations CER HZ Bachelor program Chemistry – full-time Approval study program committee: 06/04/2023. Approval University Council: 04/07/2023. Established by the executive board: 04/07/2023.

Block / Semester:	S2						
CU20631V2	Title: Biobased Prod	lucts & Materials					
		Course in	formation				
Amount of study	credits:		Language:				
2.5			English				
			Dutch				
Conditions for co	urse participation:						
None.							
Conditions for test participation:							
None.							
Brief description	of course content:						
Everybody is ta	alking about sustai	nability. But wha	at does sustaina	bility actual	ly mean? This course		
will try to give	an answer. It will a	also illustrate ho	w biobased pro	ducts and th	ne bioeconomy can		
help to tackle t	the problems our p	planet is facing. E	But also which c	hallenges th	ne bioeconomy is		
facing to do so	. In the end you w	ill see the biobas	ed future of th	e chemical i	ndustry which part		
you might bec	ome.						
, ,							
Course learning o	utcomes:						
	he relationship betwe		•	•			
				irch question a	nd if necessary submitting		
	proving the implement	-		ما نمام مختلف نامم م	vefeesievel and athing		
dilemmas.	iting with others abou	t professional and er	unical uneminas an	a identifying p	rofessional and ethical		
Compulsory litera	iture:						
		Assessment	information				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
		description	Factor	score	(block codes)		
			(%)				
TOETS01 (VT)	Written	Biobased P&E -	100%	5.5	B3.8, B3.10		
	knowledge test	Written exam					

Block 4 Health & Chemistry

CU20632V2	Title: Biologically A	ctive Compounds			
		•	formation		
Amount of stud	/ credits:		Language:		
5			English		
			Dutch		
Conditions for c	ourse participation:		2 4 4 6 1 1		
Conditions for to	est participation:				
Completion of the	e scheduled practical e	exercise is conditiona	I for participation (article 6.3 par	agraph 4 CER HZ).
Brief description	of course content:				
The course focu	ses on the synthesis and	d purification of biolo	ogically active com	pounds. They a	are subsequently tested for
their activity in s	everal bioassays.				
Course learning	outcomes:				
2.1a Explaining	the objective of the ex	periment.			
2.1b Explaining	the principle of the me	ethod and technique	provided.		
2.1c Becoming	proficient in the correct	t handling of the eq	uipment.		
2.1d Properly	preparing an experimen	it on the basis of a p	rotocol/approach p	provided, cond	ucting it and obtaining
replicable result	s within the specified ti	me and maintaining	accurate and clear	documentatio	n.
2.1e Working a	ccording to HSE standa	rds and taking ethic	al and sustainability	y standards int	o account when preparing
and conducting	•				
	measurement results				
	sons to establish wheth				
	the relationship betwe		•	•	
1.1f Summariz	ng the data from the re		-	-	•
	arly. Reflecting critically	on the results to de	torming whather t	hev are realist	
				•	
1.1g Using the		nulate conclusions re	elating to the resea	•	ic. Ind if necessary submitting
1.1g Using the a proposal for in	proving the implement	nulate conclusions re tation of the assignment	elating to the resea nent/the research.	irch question a	nd if necessary submitting
1.1g Using the a proposal for in 1.1h Reporting	nproving the implement orally and/or in writing	nulate conclusions re tation of the assignment	elating to the resea nent/the research.	irch question a	nd if necessary submitting
1.1g Using the a proposal for in	nproving the implement orally and/or in writing	nulate conclusions ro tation of the assignm g on the assignment	elating to the resea nent/the research. in accordance with	irch question a	nd if necessary submitting
1.1g Using the a proposal for in 1.1h Reporting Compulsory lite	nproving the implement orally and/or in writing rature:	nulate conclusions ro tation of the assignm g on the assignment Assessment	elating to the reseatent, the reseatent, the research. in accordance with	rch question a	nd if necessary submitting
1.1g Using the a proposal for in 1.1h Reporting Compulsory lite	nproving the implement orally and/or in writing	nulate conclusions ro tation of the assignm g on the assignment Assessment Assessment	elating to the resea nent/the research. in accordance with information Weighting	specified guid	nd if necessary submitting elines. Test opportunities
1.1g Using the a proposal for in 1.1h Reporting	nproving the implement orally and/or in writing rature:	nulate conclusions ro tation of the assignm g on the assignment Assessment	elating to the resear nent/the research. in accordance with information Weighting Factor	rch question a	nd if necessary submitting
1.1g Using the a proposal for in 1.1h Reporting Compulsory lite Test code	nproving the implement orally and/or in writing rature: Assessment type	nulate conclusions ro tation of the assignm g on the assignment Assessment description	elating to the research. in accordance with information Weighting Factor (%)	specified guid	nd if necessary submitting elines. Test opportunities (block codes)
1.1g Using the a proposal for in 1.1h Reporting Compulsory lite	Assignment	nulate conclusions ro tation of the assignm g on the assignment Assessment Assessment	elating to the resear nent/the research. in accordance with information Weighting Factor	specified guid	nd if necessary submitting elines. Test opportunities
1.1g Using the a proposal for in 1.1h Reporting Compulsory lite Test code	nproving the implement orally and/or in writing rature: Assessment type	nulate conclusions re tation of the assignment g on the assignment Assessment description Reporting	elating to the research. in accordance with information Weighting Factor (%) 100%	specified guid	nd if necessary submitting elines. Test opportunities (block codes)
1.1g Using the a proposal for in 1.1h Reporting Compulsory lite Test code	Assignment	nulate conclusions re tation of the assignment on the assignment Assessment description Reporting Practical	elating to the research. in accordance with information Weighting Factor (%) 100% excercise	Minimum score 5.5	nd if necessary submitting elines. Test opportunities (block codes)

Block / Semeste	r: S2				
CU20633V1	Title: Organic Chem	histry 2 & Cell biolog	gy 2		
	·	Course i	nformation		
Amount of study	y credits:		Language:		
5			English		
			Dutch		
Conditions for co	ourse participation:				
None.					
Conditions for te	est participation:				
None.					
Brief descriptior	of course content:				
Key aspects in re	lation to diseases are o	liscussed in the cell	biology part; cell c	ycle (de)regulat	tion, cancer, meiosis,
development, ar	•				
	ough organic chemistry				
		cohols, epoxides and	d ethers. The conc	ept of stereoch	emistry is also explored.
Course learning	outcomes:				
TOETS01 (Org2)					
	the objective of the ex	•	a www.daal		
2.1b Explaining	the principle of the m	ethod and techniqu		provided cond	lucting it and obtaining
2.1b Explaining 2.1d Properly p	the principle of the moreparing an experimer	ethod and techniquent on the basis of a p	orotocol/approach		lucting it and obtaining
2.1b Explaining 2.1d Properly preplicable results	the principle of the more preparing an experimer s within the specified ti	ethod and techniquent of the basis of a p me and maintaining	rotocol/approach accurate and clea	r documentatio	on.
2.1b Explaining 2.1d Properly preplicable results	the principle of the moreparing an experimer	ethod and techniquent of the basis of a p me and maintaining	rotocol/approach accurate and clea	r documentatio	on.
2.1b Explaining 2.1d Properly p replicable results 2.1f Processing	the principle of the more preparing an experimer s within the specified ti	ethod and techniquent of the basis of a p me and maintaining	rotocol/approach accurate and clea	r documentatio	on.
2.1b Explaining 2.1d Properly p replicable results 2.1f Processing TOETS02 (Bio2)	the principle of the more preparing an experimer s within the specified ti	ethod and techniqu It on the basis of a p me and maintaining properly and correc	rotocol/approach accurate and clea	r documentatio	on.
 2.1b Explaining 2.1d Properly preplicable results 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 	the principle of the more preparing an experimer s within the specified ti measurement results	ethod and techniqu nt on the basis of a p me and maintaining properly and correc operiment.	rotocol/approach accurate and clea tly and estimating	r documentatio	on.
 2.1b Explaining 2.1d Properly preplicable results 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 	the principle of the more preparing an experimer s within the specified ti measurement results the objective of the ex	ethod and techniqu tt on the basis of a p me and maintaining properly and correct operiment. ethod and technique	e provided.	r documentatio whether a resu	on. Ilt obtained is realistic.
 2.1b Explaining 2.1d Properly preplicable results 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 	the principle of the more preparing an experimer s within the specified ti measurement results the objective of the ex- the principle of the more	ethod and techniqu tt on the basis of a p me and maintaining properly and correct operiment. ethod and technique	e provided.	r documentatio whether a resu	on. Ilt obtained is realistic.
 2.1b Explaining 2.1d Properly preplicable result: 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing 	the principle of the more preparing an experimer s within the specified ti measurement results the objective of the ex- the principle of the more measurement results	ethod and techniqu tt on the basis of a p me and maintaining properly and correct operiment. ethod and technique	e provided.	r documentatio whether a resu	on. Ilt obtained is realistic.
2.1b Explaining 2.1d Properly p replicable results 2.1f Processing TOETSO2 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing Compulsory lite	the principle of the more preparing an experiment s within the specified ti measurement results the objective of the ex- the principle of the more measurement results	ethod and techniqu nt on the basis of a p me and maintaining properly and correct operiment. ethod and techniqu properly and correct Assessmen	e provided. tly and estimating tly and estimating tly and estimating	r documentatio whether a resu whether a resu	on. Ilt obtained is realistic. Ilt obtained is realistic.
2.1b Explaining 2.1d Properly p replicable results 2.1f Processing TOETSO2 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing Compulsory lite	the principle of the more preparing an experimer s within the specified ti measurement results the objective of the ex- the principle of the more measurement results	ethod and techniquit on the basis of a properly and correct operiment. ethod and techniquiproperly and correct operiment. ethod and techniquiproperly and correct operly and correct ope	e provided. tly and estimating tly and estimating tinformation Weighting	r documentatic whether a resu whether a resu Minimum	on. It obtained is realistic. It obtained is realistic.
2.1b Explaining 2.1d Properly p replicable results 2.1f Processing TOETSO2 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing Compulsory lite	the principle of the more preparing an experiment s within the specified ti measurement results the objective of the ex- the principle of the more measurement results	ethod and techniqu nt on the basis of a p me and maintaining properly and correct operiment. ethod and techniqu properly and correct Assessmen	e provided. tly and estimating e provided. tly and estimating t information Weighting Factor	r documentatio whether a resu whether a resu	on. Ilt obtained is realistic. Ilt obtained is realistic.
2.1b Explaining 2.1d Properly p replicable result 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing Compulsory liter Test code	the principle of the more preparing an experimer s within the specified ti measurement results the objective of the ex- the principle of the more measurement results rature:	ethod and techniquit on the basis of a properly and correct operiment. ethod and technique properly and correct operiment. ethod and technique properly and correct operly and correct o	t information Weighting Factor (%)	whether a resu	on. It obtained is realistic. It obtained is realistic. Test opportunities (block codes)
2.1b Explaining 2.1d Properly p replicable result 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing Compulsory liter Test code	the principle of the more paring an experimer so within the specified tig measurement results the objective of the experiment results the principle of the more measurement results reture:	ethod and techniquit on the basis of a properly and correct ethod and techniquit properly and correct ethod and techniquit properly and correct Assessment description Organic	e provided. tly and estimating e provided. tly and estimating t information Weighting Factor	r documentatic whether a resu whether a resu Minimum	on. It obtained is realistic. It obtained is realistic. Test opportunities
2.1b Explaining 2.1d Properly p replicable result 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing Compulsory liter Test code	the principle of the more preparing an experimer s within the specified ti measurement results the objective of the ex- the principle of the more measurement results rature:	ethod and techniquit on the basis of a properly and correct operiment. ethod and technique properly and correct operiment. ethod and technique properly and correct operly and correct o	t information Weighting Factor (%)	whether a resu	on. It obtained is realistic. It obtained is realistic. Test opportunities (block codes)
 2.1b Explaining 2.1d Properly preplicable results 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 	the principle of the more paring an experimer so within the specified tig measurement results the objective of the experiment results the principle of the more measurement results reture:	ethod and techniquit on the basis of a properly and correct ethod and techniquit properly and correct ethod and techniquit properly and correct Assessment description Organic	t information Weighting Factor (%)	whether a resu	on. It obtained is realistic. It obtained is realistic. Test opportunities (block codes)
2.1b Explaining 2.1d Properly p replicable result 2.1f Processing TOETS02 (Bio2) 2.1a Explaining 2.1b Explaining 2.1f Processing Compulsory liter Test code	the principle of the more paring an experimer so within the specified tig measurement results the objective of the experiment results the principle of the more measurement results reture:	ethod and techniqui nt on the basis of a p me and maintaining properly and correct operiment. ethod and techniqui properly and correct Assessment description Organic Chemistry 2 -	t information Weighting Factor (%)	whether a resu	on. It obtained is realistic. It obtained is realistic. Test opportunities (block codes)

Block / Semester:	S2						
CU76015	Title: Data analysis	1					
	•	Course in	formation				
Amount of study	credits:		Language:				
2.5			English				
			Dutch				
Conditions for course participation:							
None.							
Conditions for test participation:							
None.							
Brief description	of course content:						
Before you can ca	rry out an experiment	in a lab, you will nee	ed to ask yourself t	wo important	questions: (1) How do I		
ensure that the ex	periment is conducted	d safely (people and	environment)? (2)	How do I ensu	ire that my results are		
reliable? One of the	ne essential tools to give	ve evidence that you	ir results are reliab	ole is statistics.	In this course you will		
process your labo	ratory data with the he	elp of a spreadsheet	program. Major to	opics: measure	s of location and spread		
(mean standard d	eviation, variance), no	rmal distributions (s	amples and popula	ations), confide	ence limits and intervals,		
principles of signif	icance testing (one-sid	ded and two-sided),	applications of the	t-test for com	paring means, F-test for		
comparing variand	ces, testing for outliers	and the chi-square	d test.				
Course learning o	utcomes:						
2.1f Processing r	neasurement results p	properly and correct	ly and estimating v	vhether a resul	It obtained is realistic.		
Compulsory litera	ture:						
		Assessment	information	-			
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
		description	Factor (%)	score	(block codes)		
TOETS01 (VT)	Written	Data analysis 1 -	100%	5.5	B4.8, B4.10		
	knowledge test	Written exam					

Block / Semester:	S2						
CU76016	Title: Mathematics	2					
	•	Course in	formation				
Amount of study	credits:		Language:				
2.5			English				
			Dutch				
Conditions for course participation:							
None.							
Conditions for tes	t participation:						
None.							
Brief description	of course content:						
Introduction to di	fferentiation and integ	gration.					
Part 1: Differentia	tion: More theory abo	out functions (inverse	e functions etc), Lir	nits, The first o	derivative as an limit and as		
the slope a of a ta	ngent line, Finding the	e equation of a tange	ent line, Finding ext	treme values o	f a function and Second		
derivative of a fun	ction and inflection po	pints.					
Part 2: Integration	n: Integration as the ar	ea under a graph, In	tegral without bor	ders as reverse	e of differentiation,		
Integration with s	ubstitution and Partial	integration.					
Course learning o							
	he principle of the me						
2.1f Processing r	measurement results p	properly and correct	ly and estimating v	vhether a resu	It obtained is realistic.		
Compulsory litera	ture:						
comparisony intere	iture.	Assessment	information				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
		description	Factor	score	(block codes)		
			(%)				
TOETS01 (VT)	Written	Mathematics 2 -	100%	5.5	B4.8, B4.10		
	knowledge test	Written exam					

Block / Semester	r: S2				
CU20638V1	Title: Professionaliz	ation block 3 & 4			
	•	Course in	formation		
Amount of study	credits:		Language:		
1.25			English		
			Dutch		
Conditions for co	ourse participation:				
None.					
Conditions for te	st participation:				
Brief description	of course content:				
Assignments, ind	ividual and as a group	to work on persona	l professional skills	and knowledg	e of the students
competencies to	develop toward a prof	essional chemistry e	mployee.		
Course learning	outcomes:				
8.1a Working tov	vards an established le	arning objective. Dis	cussing the learning	ng strategy and	the ensuing results; being
	ction of a learning obje		-		
, 0	any need to adjust his c	•		ronment.	
0	rmation in order to im				
•	mbers in the case of a		g aware of the effe	ect of his own a	ttitude to work on others
Compulsory liter		project.			
company neer		Assessment	tinformation		
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities
		description	Factor	score	(block codes)
			(%)		
TOETS01 (VT)	Portfolio	Individual	100%	5.5	B4.9, B4.12
		reflection			

Free Composition Course

Block / Semester:	\$1					
Block / Semester:	S2					
CH-HZP-YEAR1-	Title: HZ Personality	year 1				
22						
		Course in	formation			
Amount of study	credits:		Language:			
2.5			Dutch			
English						
Conditions for cou	urse participation:					
None.						
Conditions for tes	t participation:					
None.						
Brief description of	of course content:					
Within HZ Persona	ality you will work on s	kills that you think a	re important for y	our personal a	nd	
•	lopment. You design tl			the approach y	ou have chosen, and	
the insights obtair	ned. Your study career	coach will guide you	ı in this.			
		• • •	0,	•	HZ you will have to work at	
	each of these levels in ee themes:Personal d		•		•	
Course learning o		evelopment, comm				
•		e personal and profe	essional goals. Cari	rving out activi	ties that contribute to	
	opment goals and com		0	, .		
Compulsory litera		,				
		Assessment	information			
Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)	
TOETS01 (VT)	Portfolio	Self-reflection & burden of proof	100%	-	Not applicable	

Appendix 2 – Course main phase

Block 5 Environmental Chemistry

Block / Semester:	\$1				
CU24063V1	Title: Environmenta	l Chemistry & Toxico	ology		
		Course in	formation		
Amount of study	credits:		Language:		
5			English		
Conditions for co	urse participation:				
Conditions for tes	t participation:				
Completion of the	scheduled practical e	xercise is conditiona	l for participation (article 6.3 para	agraph 4 CER HZ).
Brief description	of course content:				
					of effluent is monitored of
a waste water tre	atment plant. Paramet	ters such as phospha	ite, total nitrogen (Khjeldahl metl	hod), Chemical Oxygen
Demand (COD) an	d Biochemical Oxygen	Demand (BOD) are	monitored. Heavy	metals such as	lead and copper are
measured in the r	esidual product from t	he sludge fermentat	ion. Besides, the e	ffect of toxic m	netals is studied with
	algae, bacteria and m				
	niques as Atomic Abso	orption Spectroscopy	(AAS), steam disti	illation and mid	crowave destruction are
introduced.					
Course learning o					
	he objective of the ex		a new data at		
	he principle of the me				
	roficient in the correc			wayidad candy	ucting it and obtaining
	within the specified tir				
	•	-			o account when preparing
and conducting th		ius anu taking etinea		y stanuarus int	o account when preparing
-	neasurement results p	roperly and correct	v and estimating w	whathar a racul	t obtained is realistic
	ons to establish wheth				
	he relationship betwe				
	accordance with the v				
-	nded results. Applying				
-	g the data from the re	-		ght of the rese	arch question and
	ly. Reflecting critically			-	
					nd if necessary submitting
	proving the implement			·	
1.1h Reporting c	orally and/or in writing	on the assignment i	n accordance with	specified guid	elines.
Compulsory litera	ture:				
-			information		
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities
		description	Factor	score	(block codes)
			(%)		
TOETS01 (VT)	Assignment	Reporting	100%	5.5	B1.9, B2.3
	(group)				
		Practical	excercise		
PRAKT-OEF (VT)	Practical excercise	The practical exerc	cise is a combinatio	on of related sk	ills training during the
		block.			

CU24064	Title: Spectroscopy	1 & Toxicology			
			formation		
Amount of stu	ly credits:		Language:		
5			English		
Conditions for	course participation:				
None.					
Conditions for	test participation:				
None.					
Brief description	on of course content:				
The toxicology	part addresses the intera	actions between toxi	cants and organisr	ns at different	levels; ecological,
organismal, cel	ular, and molecular. Imp	portant topics include	e dose-response e	ffects, organ dy	sfunction, ecology, heavy
· •					atment has as goal to help
•	to prepare and study for	•		•	•
					ng others) techniques used
	Environmental Chemistr				
	pment of the existed pro	otocols. Reading of N	EN and ISO norms	as well as othe	er materials is of a relevant
part.					
Course learning	•				
TOETS01 (Spe1	•				
•	g the objective of the ex g the principle of the me	•	nrovided		
	g measurement results			whether a resu	It obtained is realistic.
	-				
TOETS02 (Tox)					
•	g the objective of the ex	•			
•	ig the principle of the me	•	•		
2.1f Processir	g measurement results	properly and correct	ly and estimating v	whether a resu	it obtained is realistic.
Compulsory lit					
Compulsory lit		Daniel C. 10th editior	n. ISBN: 97813193	24506	
Quantitative Ch	erature: nemical Analysis, Harris, I Il's Essentials Of Toxicolo				5BN: 9780071847087
Quantitative Ch	emical Analysis, Harris,	ogy, Curtis D. Klaasse			SBN: 9780071847087
Quantitative Ch Casarett & Dou	emical Analysis, Harris,	ogy, Curtis D. Klaasse Assessment Assessment	n, John B. Watkins information Weighting		Test opportunities
Quantitative Ch	emical Analysis, Harris, Il's Essentials Of Toxicolo	ogy, Curtis D. Klaasse Assessment	n, John B. Watkins information Weighting Factor	, 3rd edition, I	
Quantitative Ch Casarett & Dou Test code	emical Analysis, Harris, II's Essentials Of Toxicolo Assessment type	ogy, Curtis D. Klaasse Assessment Assessment description	n, John B. Watkins information Weighting Factor (%)	, 3rd edition, IS	Test opportunities (block codes)
Quantitative Ch Casarett & Dou Test code	emical Analysis, Harris, Il's Essentials Of Toxicolo Assessment type Written	Assessment Assessment description Spectroscopy 1 -	n, John B. Watkins information Weighting Factor	, 3rd edition, IS	Test opportunities
Quantitative Ch Casarett & Dou	emical Analysis, Harris, II's Essentials Of Toxicolo Assessment type	ogy, Curtis D. Klaasse Assessment Assessment description	n, John B. Watkins information Weighting Factor (%)	, 3rd edition, IS	Test opportunities (block codes)
Quantitative Ch Casarett & Dou Test code	emical Analysis, Harris, Il's Essentials Of Toxicolo Assessment type Written	Assessment Assessment description Spectroscopy 1 -	n, John B. Watkins information Weighting Factor (%)	, 3rd edition, IS	Test opportunities (block codes)

Block / Semester: S1									
CU76018	18 Title: Data analysis 2								
	•	Course in	formation						
Amount of study	Amount of study credits: Language:								
1.25	1.25 English								
Conditions for co	urse participation:								
None.									
Conditions for tes	st participation:								
None.									
Brief description	of course content:								
This course is a follow-up course of data analysis 1 and focus on the calibration methods in instrumental analysis:									
regression and co	rrelation. Major topics	of this course are c	orrelation coefficie	nt, errors and	confidence limits in linear				
calibration, limits	of detection, standard	l addition, weighted	regression and out	tliers in regress	sion.				
Course learning o	utcomes:								
1.2f Summarizin	g and interpreting the	full or partial result	s in relation to the	assignment/re	esearch question. Critically				
-	eliability of the results								
2.2f Assessing th	ne reliability of a result	on the basis of an (e.g. statistical) ana	lysis provided.					
Compulsory litera	ature:		-						
			information	1	1				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities				
		description	Factor (%)	score	(block codes)				
TOETS01 (VT)	Written	Data analysis 2 -	100%	5.5	B1.9, B2.10				

Written exam

knowledge test

Block / Semester: S1									
CU76022V1	Title: Student assistant								
	•	Course in	formation						
Amount of study credits: Language:									
1.25	25 Dutch								
			English						
Conditions for co	urse participation:								
None.									
Conditions for tes	t participation:								
None.									
Brief description	of course content:								
The student assist	ant supports the educ	ational process of fir	st and year studer	nts and second	ary school pupils. He				
develops tests and	d practical's and takes	care of the necessar	y materials. The st	udent assistan	t assists the teacher during				
the practical. He instructs and supervises individual students, secondary school pupils and learning teams. The student									
assistant uses his specific knowledge and experience in the fields of Applied Chemistry and Life Sciences as well as									
general (laborator	ry) technology. The stu	ident assistant can d	emonstrate and pe	erform experin	nents and practicals and				
deal with software	e and equipment. The	student assistant ap	plies safety regula	tions and main	tains them. The activities				
are performed wit	thin the walls of HZ Ur	iversity.							
Course learning o	utcomes:								
6.1a Helping to pr	ovide fellow employee	es, students or traine	es with instruction	ns/demonstrat	ions with regard to a				
practical test, etc.									
1 0	pervise employees, tr	ainees, students or c	ourse participants	in the use of n	nethods and equipment,				
etc. 6.1c Explaining thi	ings cloarly								
	of the importance of c	ontinuously develor	ning his expertise						
	dback, on request, on			ults of instructi	ons, etc.				
Compulsory litera									
	•	Assessment	information	•					
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities				
		description	Factor	score	(block codes)				
			(%)						
TOETS01 (VT)	Portfolio	Student	100%	5.5	Not applicable				
		assistant -							
		Reflection							

Block 6 Bio-organic Toolbox

CU24067V1	Title: Bio-organic to	olbox					
		Course in	formation				
Amount of study credits: Language:							
5			English				
Conditions for co	urse participation:						
None.							
Conditions for tes	st participation:						
	e scheduled practical e	xercise is conditiona	l for participation (article 6.3 par	agraph 4 CER HZ).		
	of course content:				<u>-8</u>		
•		aboratory technique	s in organic synthe	sis and bioche	mical processes, such as		
					ns, purification techniques		
• • •	hniques (IR spectrosco	,		ignara reaction	is, pullication teeninques		
Course learning o		1119					
U U		neriment					
	the objective of the ex the principle of the me	•	provided				
	proficient in the correc	•	•				
01		e 1	•	provided cond	ucting it and obtaining		
	within the specified tir				5		
•	•	-			o account when preparing		
and conducting th	0			y standards int			
	measurement results p	aronerly and correct	ly and estimating w	hothor a rosu	It obtained is realistic		
-	ons to establish wheth	• •					
	the relationship betwe	• •	•		•		
	accordance with the v		•	•			
	inded results. Applying				ing effective ways of		
-	ig the data from the re	-		tht of the rece	arch question and		
	rly. Reflecting critically		. .		•		
	, , ,			•	ind if necessary submitting		
0 0	proving the implement		0	and question of			
	orally and/or in writing	-		specified guid	elines		
Compulsory litera				opeomed Bard			
		Assessment	information				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
		description	Factor	score	(block codes)		
			(%)				
TOETS01 (VT)	Assignment	Reporting	100%	5.5	B2.9, B3.3		
	(group)			5.0	,		
	(group)						
PRAKT-OEF (VT)	Practical excercise		excercise	m of rolated a	kills training during the		

Block / Semeste	er: S1									
CU24068	Title: Organic chem	istry 3 and Biochem	istry 1							
Course information										
Amount of stud	Amount of study credits: Language:									
5	5 English									
Conditions for o	course participation:									
None.										
Conditions for t	test participation:									
Brief descriptio	n of course content:									
					ganic chemistry part is a					
			nd CU20633. Top	oics: organomet	als, reactions of benzene					
	erivatives and carbonyl c	•		Linetie-						
Biochemistry to	pics: Properties polysac	charides, properties	proteins, enzyme	e kinétics.						
Course learning	outcomes:									
TOETS01 (Org3)										
	g the objective of the ex	operiment.								
	g the principle of the mo									
2.1f Processin	g measurement results	properly and correct	ly and estimating	whether a resu	It obtained is realistic.					
TOETS02 (Bch1)										
•	ng the objective of the en ng the principle of the m	•	provided							
•	ng measurement results	•	•	whether a resu	ult obtained is realistic.					
	.8			5						
Compulsory lite	erature:									
		Assessment	information							
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities					
		description	Factor	score	(block codes)					
			(%)							
TOETS01 (VT)	Written	Organic	50%	5.5	B2.8, B2.10					
TOETS01 (VT)	Written knowledge test	Organic Chemistry 3 -	50%	5.5	B2.8, B2.10					
TOETS01 (VT)		-	50%	5.5	B2.8, B2.10					
TOETS01 (VT) TOETS02 (VT)		Chemistry 3 -	50%	5.5	B2.8, B2.10 B2.8, B2.10					

Block / Semester: S1							
CU76019	Title: Spectroscopy 2	2					
		Course in	formation				
Amount of study	credits:		Language:				
3.75			English				
Conditions for cou	urse participation:						
Conditions for tes	Conditions for test participation:						
Brief description of	of course content:						
The theory behind	spectroscopic technic	ques (MS, IR and NM	IR) are explained. E	Exercises involv	e structure determination		
by assessing simul	ated spectra.						
Course learning o	utcomes:						
2.1b Explaining t	he principle of the me	thod and technique	provided.				
2.1f Processing r	neasurement results p	properly and correctl	y and estimating w	hether a resul	t obtained is realistic.		
Compulsory litera	ture:						
		Assessment	information				
Test code	t code Assessment type Assessment description Factor (%) Minimum (block codes)						
TOETS01 (VT)	Written knowledge test	Spectroscopy 2 - Written exam	100%	5.5	B2.8, B2.10		

Block / Semester:	Block / Semester: S1							
CU24070	J24070 Title: Professionalization block 5 & 6							
		Course in	formation					
Amount of study	credits:		Language:					
1.25			Dutch					
			English					
Conditions for co	urse participation:		L					
None.								
Conditions for tes	t participation:							
None.								
Brief description	of course content:							
Assignments, indi-	vidual and as a group t	o work on personal	professional skills	and knowledg	e of the students			
competencies to c	develop toward a profe	essional chemistry e	mployee.					
Course learning o	utcomes:							
8.1a Working tow	ards an established lea	arning objective. Dis	cussing the learnin	g strategy and	the ensuing results; being			
	tion of a learning obje		•	0,				
, 0	ny need to adjust his o	•		onment.				
	mation in order to imp							
	-		aware of the effe	ct of his own at	titude to work on others			
0 1	mbers in the case of a	project.						
Compulsory litera	iture:							
			information					
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities			
		description	Factor (%)	score	(block codes)			
TOETS01 (VT)	Portfolio	Individual	100%	5.5	B2.9, B2.10			
		reflection						

Block 7 Forensic Science

Block / Semester: S2								
CU24074V1 Title: Forensic Science								
Course information								
Amount of study	credits:		Language:					
5			English					
Conditions for cou	urse participation:							
None.								
Conditions for tes								
	scheduled practical e	xercise is conditiona	I for participation (article 6.3 para	agraph 4 CER HZ).			
-	of course content:							
		-			dence in court. Forensic			
during an investig	-	try, biology and phys	lics to recognize, id	entity and eva	luate physical evidence			
		ogical evidence (e.g.	blood, saliva) for [)NA analysis ar	nd paternity testing for			
					other substances in both			
	nd animals, particular							
This course is a pr	actical introduction on	h basics of forensic D	NA analysis (profili	ing human and	bacteriological DNA with			
	trophoresis) and forer	nsic toxicological (and	alytical) methods (fluorescence a	nd UV-Vis Spectroscopy,			
GC and HPLC).								
Course learning o		on the recearch que	ction provided cub	auostions an	d recearch activities			
	he relationship betwe accordance with the w							
	nded results. Applying				ng enective ways of			
-	g the data from the re	-		ght of the resea	arch question and			
	ly. Reflecting critically			-				
1.1g Using the re	esearch results to form	nulate conclusions re	lating to the resea	irch question a	nd if necessary submitting			
	proving the implement							
	orally and/or in writing							
					chieve better results. Being			
	ate concisely about go he objective of the ex		e work progresses.					
	the principle of the me		provided.					
	roficient in the correct							
					ucting it and obtaining			
	within the specified tir							
-	-	rds and taking ethica	al and sustainability	y standards int	o account when preparing			
and conducting th					a charte of the southeast			
-	neasurement results p ons to establish wheth							
Compulsory litera			ine experiment has	been ronowed	a confectiv.			
		Assessment	information					
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities			
		description	Factor	score	(block codes)			
			(%)					
TOETS01 (VT)	Assignment	Reporting	100%	5.5	B3.9, B4.3			
	(group)							
		1	excercise					
PRAKT-OEF (VT)	Practical excercise	•	cise is a combinatio	on of related sk	ills training during the			
	block.							

Block / Semester:	S2								
CU24075	Title: Spectroscopy	3 / Separations 1 &	DNA 1						
Course information									
Amount of study	credits:		Language:						
5			English						
Conditions for co	urse participation:								
None.									
Conditions for tes	t participation:								
Brief description	of course content:								
	les theoretical backgro								
• •	•	-	•		and Gas Chromatography ch make you more efficient				
	ethod development). I	••	•		•				
					f DNA as a macromolecule.				
					DNA forensic samples. You				
learn the mechan	ism, possibilities and li	imitations of the tec	hniques in the con	text of forensio	science.				
Course learning o	utcomes:								
TOETS01 (Spe3/Se	• •								
	the principle of the me	•	•						
2.11 Processing i	neasurement results	properly and correct	ly and estimating v	vnetner a resu	it obtained is realistic.				
TOETS02 (DNA1)									
	he objective of the ex	neriment							
	the principle of the me		provided.						
	neasurement results	•	•	vhether a resu	It obtained is realistic.				
Compulsory litera	ature:								
	T	1	information	T	Γ				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities				
		description	Factor (%)	score	(block codes)				
TOETS01 (VT)	Written	Spectroscopy 3	50%	5.5	D2 9 D2 10				
	knowledge test	/ Separations1 -	50%	5.5	B3.8, B3.10				
	kilowieuge test	Exam							
TOETS02 (VT)	Written	DNA 1 - Written	50%	5.5	B3.8, B3.10				
	knowledge test exam								

Block / Semester: S2									
CU76021	Title: Data analysis 3								
	•	Course in	formation						
Amount of study	Amount of study credits: Language:								
1.25	1.25 English								
Conditions for co	urse participation:								
None.									
Conditions for tes	t participation:								
None.									
Brief description	of course content:								
This course is a follow-up course of data analysis 1 and 2and focus on the quality of analytical measurements. Major									
topics of this cour	se are sampling, ANO	/A, quality control, c	ontrol charts (She	whart charges)	and proficiency testing				
scheme.									
Course learning o	utcomes:								
reflecting on the r	g and interpreting the eliability of the results he reliability of a result	j.		-	search question. Critically				
Compulsory litera	ature:								
		Assessment	information						
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities				
		description	Factor (%)	score	(block codes)				
TOETS01 (VT)	Written	Data analysis 3 -	100%	5.5	B3.8, B3.10				

Written exam

knowledge test

Block 8 Marine Biobased Chemistry

Block / Semester: S2								
CU24077V1	Title: Marine Bioba	sed Chemistry						
Course information								
Amount of study	credits:		Language:					
5			English					
Conditions for co	urse participation:							
None.								
Conditions for te	st participation:							
	e scheduled practical e	xercise is conditiona	l for participation (article 6.3 par	agraph 4 CER HZ).			
Brief description	of course content:							
This course focus	es on the students pra	ctical research skills,	which included dy	namics of tean	nwork, finding and citing			
published inform	ation, and experiment	al design. The course	is in close coopera	ation with the	research group Marine			
Biobased Special	ties and will include the	eir research subjects.	Includes separation	on techniques.				
Course learning	outcomes:							
	ting with the client abo							
-	nsight into the professi	•		-	•			
	e relationship betwee							
	an approach to carryin	-	tivities of a simple	research assig	nment according to a			
	including the planning				<i></i>			
-	ccordance with the wo			ent and finding	g effective ways of			
-	ended results. Applying							
					ch question and presenting			
	ng critically on the resu							
			-	ch question and	d if necessary submitting a			
	oving the implementa	-		n a aifi a d'au i dal				
	rally and/or in writing of the even	-	accordance with s	pecilied guidei	ines.			
	ne objective of the exponent of the met		rovidod					
	oficient in the correct							
	paring an experiment			ovided conduc	ting it and obtaining			
	within the specified ti							
		-			account when preparing			
and conducting t		J	· · · · · · · · · · · · · · · · · · ·					
	neasurement results pr	operly and correctly	and estimating wh	ether a result	obtained is realistic.			
-	ns to establish whethe		-					
Compulsory liter								
		Assessment						
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities			
		description	Factor	score	(block codes)			
			(%)					
TOETS01 (VT)	Assignment	Reporting	100%	5.5	B4.9, B4.12			
	(group)							
Practical excercise								
		Practical	excercise					
PRAKT-OEF (VT)	Practical excercise	1		on of related sk	ills training during the			

Block / Semeste	r: S2					
CU24078 Title: Research cycle & Separations 2 / Biochemistry 2						
		Course in	formation			
Amount of study credits: Language:						
5			English			
Conditions for c	ourse participation:					
None.						
Conditions for t	est participation:					
None.						
Brief descriptio	n of course content:					
This course focu	ses on the students pra	ctical research skills,	which included	dynamics of tear	mwork, finding and citing	
published inform	nation, and experiment	al design. The course	e is in close coop	eration with the	research group Marine	
Biobased Specia	Ities and will include the	eir research subjects				
Course learning	outcomes:					
TOETS01 (Resea	rch)					
•	g the objective of the ex	•				
	g the principle of the m					
	preparing an experimer	•		•		
	s within the specified ti	-				
2.1f Processin	g measurement results	properly and correct	ly and estimatin	ig whether a resi	ult obtained is realistic.	
TOETSON (Sanna)	Reh2)					
TOETS02 (Sep2/	g the objective of the ex	vneriment				
•	g the principle of the m	•	provided			
•	preparing an experimer	•	•	h provided. cond	lucting it and obtaining	
	s within the specified ti					
2.1f Processing	g measurement results	properly and correct	ly and estimatin	g whether a resi	ult obtained is realistic.	
Compulsory lite	rature:					
			information			
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities	
		description	Factor (%)	score	(block codes)	
	Critorian	Decearch such	. ,		D4 9 D4 10	
TOETS01 (VT)	Criterion-	Research cycle -	50%	5.5	B4.8, B4.10	
	referenced	Oral exam				
	assessment					
	assessifient					
TOETS02 (VT)	Written	Separations 2 &	50%	5.5	B4.8, B4.10	
TOETS02 (VT)		Separations 2 & Biochemistry 2 -	50%	5.5	B4.8, B4.10	

Block / Semester: S2							
CU76023V1	CU76023V1 Title: Labmanagement & Safety						
		Course in	formation				
Amount of study	credits:		Language:				
2.5			English				
Conditions for co	urse participation:						
None.							
Conditions for te	st participation:						
None.							
Brief description	of course content:						
The course is an i	ntroduction to general	safety and safety to	pics related to che	micals and the	production, processing,		
transport and sto	rage of chemicals, inclu	uding the legal aspec	ts and a person's o	own responsibi	lity.		
Course learning of	outcomes:						
1.2f Acting as a fu	Ill team member in his	own work environm	ent (through refle	ction and feed	back).		
0	he full or partial results	•			•		
, 0	nd noting actual or pot	•		· ·	em		
-	ne options for improvin		on of a manageme	nt system.			
-	t he is familiar with rele	-	nagement system		arrying out his activities.		
Compulsory liter			inagement system	s used when ca	arrying out his activities.		
comparsory interv		Assessment	information				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
		description	Factor (%)	score	(block codes)		
TOETS01 (VT)	Assignment	Labmanagemen	100%	5.5	B4.9, B4.12		
. ,	(group)	t & Safety -					
		Report					

Block / Semester: S2								
CU24080	CU24080 Title: Professionalization block 7 & 8							
Course information								
Amount of study	credits:		Language:					
1.25	L.25 English							
Conditions for co	ourse participation:							
None.								
Conditions for te	st participation:							
None.								
Brief description	of course content:							
Assignments, ind	ividual and as a group t	o work on personal	professional skills	and knowledg	e of the students			
competencies to	develop toward a profe	essional chemistry e	mployee.	-				
Course learning	outcomes:							
5.1a Listening to	the client and repeatin	g the question in yo	ur own words.					
•	he provided informatio	• • •						
-	echnical knowledge pro							
5.1d To motivate	the chosen solution fo	r the question.						
8.1a Working tov	vards an established lea	arning objective. Dis	cussing the learnin	g strategy and	the ensuing results; being			
aware of the fun	ction of a learning obje	ctive and how to use	e it in his learning s	trategy.				
8.1b Identifying a	any need to adjust his o	wn performance in	the academic envir	onment.				
8.1d Seeking info	ormation in order to imp	prove his own perfo	rmance.					
8.1e Critically eva	aluating his own actions	s and thinking. Being	aware of the effe	ct of his own a	ttitude to work on others			
and on group me	mbers in the case of a	project.						
Compulsory liter	ature:							
		Assessment	information					
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities			
		description	Factor	score	(block codes)			
			(%)					
TOETS01 (VT)	Portfolio	Individual	100%	5.5	B4.9, B4.12			
		reflection						

English

A student will follow at least one of the Foundation courses English: B1, B2, C1 or C2 level.

Semester: S1- S2									
EN39001	Title: Foundation Co	ourse B1							
Course information									
Number of study	Number of study credits: Language:								
5	5 Engels								
Conditions for co	urse participation: -								
Conditions for tes	st participation: -								
Brief description	of course content:								
	the placement test an egister. Course Level: A			ney decide for	which English foundation				
Learning Outcom	es:								
factual i <i>Writing</i> accurate <i>Listenin</i> with sou <i>Speakin</i> familiar	hewspaper articles; un . Ability to: write emai e notes from meetings g. Ability to: understar me guidance; understa g. Ability to: express o topics; take part in a s or more details see: <u>htt</u> <u>ls.pdf</u>	derstand the gist of Is/letters based on p and seminars on fai nd clear basic instruc- nd instructions on c pinions on simple m eminar or meeting u	theoretical acader personal experienc miliar topics; make ctions; identify the lasses and assignm natters; ask for bas using simple langua	nic articles on e or familiar m basic notes in main topic of nents by lecture ic information; age.	atters; make reasonably lectures. a basic broadcast or lecture ers.				
Strong B-1 level	-5.								
Compulsory litera	ature:								
	minary: Student's Bool 33125405967, Costs: €:			•					
		Assessment	information						
Tests code	Assessment type	Content	Weighting	Minimum	Test opportunities				
			Factor (%)	score					
TESTO1 (VT)	Written knowledge test	Reading	25%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9				

TEST02 (VT)	Written knowledge test	Writing	25%	5,5	B3.8; B4.8; B3.10; B4.10
TEST03 (VT)	Written knowledge test	Listening	25%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST04 (VT)	Assignment (group)	Speaking	25%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Semester: S1 - S2									
EN39002	EN39002 Title: Foundation Course B2								
Course information									
Number of study credits: Language:									
5	5 Engels								
Conditions for co	urse participation: -								
Conditions for tes	t participation: -								
Students can take	egister. Course level: B			hey decide for	which English foundation				
 Reading and artic B2. Writing 	1/ Use of English. Abili cles on nonfamiliar top . Ability to: express op	pics and understand	most of the conter	nt; apply and a piece of acade	I the gist of information dapt language suitable for emic writing (e.g. a report) abulary and grammatical				
structur <i>Listenin</i> topics; נ Speakin	es. g . Ability to: follow a t inderstand the answei	alk or lecture on a fa rs to factual question arification and furthe	miliar topic; keep ns asked. er information; che	up with conve eck for underst	rsations on a wide range of anding; express opinions				
Based on CEFR. Fo scales-and-all-skill		tps://learn.hz.nl/plu	ginfile.php/289968	3/mod_resourc	e/content/0/CEFR-all-				
Learning outcome	es:								
Strong B2 Level									
Compulsory litera	iture:								
	nthony Cosgrove and ook with Answers with		version, ISBN: 9783	3125406070, C	osts: €40,80, Open World				
		Assessment	information						
Tests code	Assessment type	Content	Weighting	Minimum	Test opportunities				
			Factor (%)	score					
TEST01 (VT)	Written knowledge test	Reading and Use of English	40%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9				
TEST02 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10				
TEST03 (VT)	Written knowledge test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9				

TEST04 (VT)	Assignment	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10;
	(group)				B4.10

Semester: S1 - S2										
EN39003	EN39003 Title: Foundation Course C1									
Course information										
Number of study	Number of study credits: Language:									
5 Engels										
Conditions for co	Conditions for course participation: -									
Conditions for tes	st participation: -									
Brief description	of course content:									
	egister. Course Level: E			ney decide for	which English foundation					
underst informa • Writing message serious • Listenin probing part in a occasion deal wit Based on CEFR. For scales-and-all-skil Learning outcome Strong C-1 level Compulsory litera	and complex and argu tion and understand ti . Ability to: make reaso e can be followed thro errors. g and speaking. Abilit for more information an abstract conversation hal need for clarification h unpredictable quest or more details see: htt is.pdf	ments in lectures wi he gist of the text; a onable accurate noto ughout; write a piec y to: contribute effe if required; maintain on with a good degre on; employ good con ions; give critical fee tps://learn.hz.nl/plu	ithout serious misu pply and adapt lan es in meetings and the of work showing ctively in meetings in a casual conversa ee of fluency; follow npensation strateg edback in a non-off ginfile.php/289968	inderstandings guage suitable lectures; write the ability to o and seminars ation with a go w discussions a ties to overcom ensive manner <u>B/mod resource</u>	e a piece of work whose communicate with no in own field of study, od degree of fluency; take and arguments with only he linguistic inadequacies;					
	9052, Costs: €36,99, O			-						
		Assessment	information							
Tests code	Assessment type	Content	Weighting Factor (%)	Minimum score	Test opportunities					
TEST01 (VT)	Written knowledge test	Reading and Use of English	40%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9					
TESTO2 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10					

TEST03 (VT)	Written knowledge test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST04 (VT)	Assignment (group)	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Semester: S1 - S2										
EN39004	EN39004 Title: Foundation Course C2									
Course information										
Number of study	Number of study credits: Language:									
5	5 Engels									
Conditions for co	Conditions for course participation: -									
Conditions for tes	t participation: -									
Brief description	of course content:									
	the placement test an egister. Course level: C			ney decide for	which English foundation					
Learning Outcome	es:									
in a rele quickly a <i>Writing</i> notes of lecture. <i>Listenin</i> knowled nuances context	vant field including co and reliably; apply and . Ability to: make full n meetings and semina g and speaking . Ability dge) with ease; deal co s of language; present with an effective logic or more details see: <u>htt</u> <u>is.pdf</u>	mplex ideas express adapt language suit otes of meetings an rs while continuing f y to: advise on or tal nfidently with hostil a clear, smooth-flow al structure.	ed in complex lang table for C2. d seminars with go to participate; mak k about sensitive o le questions; speak ving description or	uage; access a ood expression ae accurate and or complex issu fluently and e argument in a	ies (within field of					
			unlag da bla Caffuus	na Annahta Car	a land Mandu Cham					
Annette Capel and	ncy Student's Book wit d Wendy Sharp, ISBN: vnloadable Software A	9781107646377, Co	sts: €35,99, Object							
		Assessment	information							
Tests code	Assessment type	Content	Weighting	Minimum	Test opportunities					
			Factor (%)	score						
TEST01 (VT)	Written knowledge test	Reading and Use of English	40%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9					
TESTO2 (VT)	Written knowledge test	Writing	20%	5,5	B3.8; B4.8; B3.10; B4.10					

TEST03 (VT)	Written knowledge test	Listening	20%	5,5	B3.6; B4.6; B3.7; B4.7; B3.8; B4.8; B3.9; B4.9
TEST04 (VT)	Assignment (group)	Speaking	20%	5,5	B4.8; B3.9; B4.9; B3.10; B4.10

Free Composition Course

Block / Semester: S1										
Block / Semester: S2										
CH-HZP-YEAR2- Title: HZ Personality year 2										
22										
	Course information									
•	Amount of study credits: Language:									
2.5			Dutch							
			English							
Conditions for cou	rse participation:									
None.										
Conditions for test	t participation:									
None.										
Brief description of	of course content:									
	lity you will work on s	•	• • •	•						
•	opment. You design tl			the approach y	you have chosen, and					
the insights obtain	ed. Your study career	coach will guide you	u in this.							
		• • •		•	HZ you will have to work at					
	ee themes:Personal d		•		ry level. The levels are					
Course learning ou		evelopment, comm								
U U		e personal and profe	essional goals. Car	rving out activi	ties that contribute to					
	pment goals and com			, .						
Compulsory litera		,								
,		Assessment	information							
Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)					
					1					
TOETS01 (VT)	Portfolio	Self-reflection &	100%	-						

Specialisation Applied Chemistry

U76000V1 Title: Chromatography practice							
		Course in	formation				
Amount of study	credits:		Language:				
5 English							
Conditions for co	ourse participation:						
None.							
Conditions for te	st participation:						
Completion of th	e scheduled practical e	exercise is conditiona	al for participation	n (article 6.3 par	ragraph 4 CER HZ).		
•	of course content:						
•	n advanced applicatior	•			e e		
• •	n experimental approa	0 1			•		
	his class as well as you		-		-		
					paration is an important pai		
of the class as we	ell as the reporting of t	he data and co-oper	ation within your	practical-team.			
Course learning of	outcomes:						
TOETS01 (report	practical work)						
1.2c Formulatin	ng, under supervision, s	sub-questions and re	search activities	regarding the re	esearch to be carried out.		
1.2d Prenaring	a work plan in consulta	tion drawing up the	a selected the state of a selected at				
Lieu incputting	a work plan in consult	ation, urawing up the	e plan independe	ntly, taking acco	ount of any preconditions.		
					ount of any preconditions. and using these to make a		
1.2g Using the r	research results to form						
1.2g Using the r proposal for follo	research results to form	nulate conclusions re	elating to the reso	earch question a	and using these to make a		
1.2g Using the r proposal for follo	research results to forr ow-up steps.	nulate conclusions re	elating to the reso	earch question a	and using these to make a		
1.2g Using the proposal for follo 1.2h Combining TOETS02 (report	research results to forr w-up steps. the results into one re on trouble shooting)	nulate conclusions re eport in accordance	elating to the reso with the applicab	earch question a	and using these to make a		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming	research results to forr ow-up steps. the results into one re on trouble shooting) so skilled in operating	nulate conclusions re eport in accordance the available equipm	elating to the reso with the applicab nent that adjustin	earch question a le guidelines/ st g the settings le	and using these to make a candard.		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarisin	research results to forr ow-up steps. the results into one re on trouble shooting) so skilled in operating ng and interpreting the	nulate conclusions re eport in accordance the available equipment full or partial result	elating to the reso with the applicab nent that adjustin	earch question a le guidelines/ st g the settings le	and using these to make a		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarising reflecting on the	research results to forr ow-up steps. the results into one re on trouble shooting) so skilled in operating ng and interpreting the reliability of the result	nulate conclusions re eport in accordance the available equipment full or partial result	elating to the reso with the applicab nent that adjustin	earch question a le guidelines/ st g the settings le	and using these to make a candard.		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarisi reflecting on the	research results to forr ow-up steps. the results into one re on trouble shooting) so skilled in operating ng and interpreting the reliability of the result	nulate conclusions re eport in accordance the available equipm e full or partial result s.	elating to the reso with the applicab nent that adjustin s in relation to th	earch question a le guidelines/ st g the settings le	and using these to make a candard.		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarising reflecting on the Compulsory liter	research results to forr ow-up steps. g the results into one re on trouble shooting) so skilled in operating ng and interpreting the reliability of the result ature:	nulate conclusions re eport in accordance the available equipm e full or partial result s.	elating to the reso with the applicab nent that adjustin s in relation to th information	earch question a le guidelines/ st g the settings le	and using these to make a candard. eads to desired effects. esearch question. Critically		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarising reflecting on the Compulsory liter	research results to forr ow-up steps. the results into one re on trouble shooting) so skilled in operating ng and interpreting the reliability of the result	nulate conclusions re eport in accordance of the available equipm e full or partial result s. Assessment	elating to the reso with the applicab nent that adjustin s in relation to th	earch question a le guidelines/ st g the settings le e assignment/re	and using these to make a candard.		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarising reflecting on the Compulsory liter	research results to forr ow-up steps. g the results into one re on trouble shooting) so skilled in operating ng and interpreting the reliability of the result ature:	nulate conclusions re eport in accordance of the available equipm e full or partial result s. Assessment Assessment	elating to the reso with the applicab nent that adjustin s in relation to th information Weighting	earch question a le guidelines/ st g the settings le e assignment/re Minimum	and using these to make a candard. eads to desired effects. esearch question. Critically Test opportunities		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarish reflecting on the Compulsory liter	research results to forr ow-up steps. g the results into one re on trouble shooting) so skilled in operating ng and interpreting the reliability of the result ature:	nulate conclusions re eport in accordance of the available equipm e full or partial result s. Assessment Assessment	elating to the rest with the applicab eent that adjustin s in relation to th information Weighting Factor	earch question a le guidelines/ st g the settings le e assignment/re Minimum	and using these to make a candard. eads to desired effects. esearch question. Critically Test opportunities		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarish reflecting on the Compulsory liter	research results to forr ow-up steps. a the results into one re on trouble shooting) so skilled in operating in and interpreting the reliability of the result ature: Assessment type	nulate conclusions re eport in accordance of the available equipment full or partial result s. Assessment description	elating to the rest with the applicab eent that adjustin s in relation to th information Weighting Factor (%)	earch question a le guidelines/ st g the settings le e assignment/re Minimum score	and using these to make a candard. eads to desired effects. esearch question. Critically Test opportunities (block codes)		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming : 1.2f Summarish reflecting on the Compulsory liter Test code	research results to form ow-up steps. If the results into one re- on trouble shooting) so skilled in operating in g and interpreting the reliability of the result ature: Assessment type Assignment (group)	nulate conclusions re eport in accordance of the available equipment of full or partial result s. Assessment description Report on practical work	elating to the rest with the applicab nent that adjustin s in relation to th weighting Factor (%) 40%	earch question a le guidelines/ st g the settings le e assignment/re Minimum score 5.5	and using these to make a candard. eads to desired effects. esearch question. Critically Test opportunities (block codes) B1.9, B2.3		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming 1.2f Summarish reflecting on the Compulsory liter Test code	research results to form ow-up steps. If the results into one re- on trouble shooting) so skilled in operating in and interpreting the reliability of the result ature: Assessment type Assignment (group) Assignment	nulate conclusions re eport in accordance of the available equipment full or partial result s. Assessment description Report on practical work Report on	elating to the rest with the applicab eent that adjustin s in relation to th information Weighting Factor (%)	earch question a le guidelines/ st g the settings le e assignment/re Minimum score	and using these to make a candard. eads to desired effects. esearch question. Critically Test opportunities (block codes)		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming : 1.2f Summarish reflecting on the Compulsory liter Test code	research results to form ow-up steps. If the results into one re- on trouble shooting) so skilled in operating in g and interpreting the reliability of the result ature: Assessment type Assignment (group)	nulate conclusions re eport in accordance of the available equipme e full or partial result s. Assessment description Report on practical work Report on troubleshooting	elating to the rese with the applicab ment that adjustin s in relation to th information Weighting Factor (%) 40% 60%	earch question a le guidelines/ st g the settings le e assignment/re Minimum score 5.5	and using these to make a candard. eads to desired effects. esearch question. Critically Test opportunities (block codes) B1.9, B2.3		
1.2g Using the r proposal for follo 1.2h Combining TOETS02 (report 2.2c Becoming : 1.2f Summarish reflecting on the Compulsory liter Test code	research results to form ow-up steps. If the results into one re- on trouble shooting) so skilled in operating in and interpreting the reliability of the result ature: Assessment type Assignment (group) Assignment	nulate conclusions re eport in accordance of the available equipme e full or partial result s. Assessment description Report on practical work Report on troubleshooting Practical	elating to the rest with the applicab ment that adjustin s in relation to th information Weighting Factor (%) 40% 60% excercise	earch question a le guidelines/ st g the settings le e assignment/re Minimum score 5.5 5.5	and using these to make a candard. eads to desired effects. esearch question. Critically Test opportunities (block codes) B1.9, B2.3		

Block / Semeste	er: S1							
CU76001V1	CU76001V1 Title: Polymer chemistry & analysis							
Course information								
Amount of stud	y credits:		Language:					
5 English								
Conditions for c	ourse participation:							
None.								
Conditions for t	est participation:							
None.								
Brief description	n of course content:							
This course prov	vides an introduction to	the chemical structu	ire of the most con	nmon polymer	rs, formation mechanisms			
and their physic	al properties. In addition	n, you will also discu	ss polymer process	ing technique	s and analytical techniques.			
Special attention	n is dedicated to analysis	s by means of Size Ex	clusion Chromato	graphy. Separa	ations techniques and			
especially troub	leshooting are highlighte	ed. Part of the cours	e is an on-site prac	tical in a comp	bany.			
Course learning	outcomes:							
1.1c Explaining	g the relationship betwe	en the research que	stion provided, sub	o-questions an	d research activities.			
		-	activities of a simp	le research as	signment according to a			
•	l, including the planning							
	g the results into one re	•		-				
	g measurement results p an approach and explai	· ·						
-			•		to assess their suitability			
0	right equipment and/or	•		·	,			
8.1d Seeking ir	nformation in order to ir	nprove his own perf	ormance.					
Compulsory lite								
Chemistry of po	lymers,, Nicholson, John			5				
Test and	Accession on the sec		information	Minimatura	Test ennertunities			
Test code	Assessment type	Assessment description	Weighting Factor	Minimum score	Test opportunities (block codes)			
		uescription	(%)	30016	(DIOCK COUES)			
TOETS01 (VT)	Written	Polymer	100%	5.5	B1.9, B2.10			
	knowledge test	chemistry &	10070	5.5				
	Knowledge test	analysis - Exam						
		undrysis - LAalli						

Block / Semester:	\$1					
CU76002	02 Title: Circular Chemistry					
		Course in	formation			
Amount of study	credits:		Language:			
2.5			English			
Conditions for cou	urse participation:					
None.						
Conditions for tes	t participation:					
Complete the forr	native assignment and	l formative literature	e review assignmer	nt of this cours	e.	
Brief description	of course content:					
The solution to rising fossil fuels prices, depletion of raw materials and the reduction of greenhouse gases is the development of green chemicals and sustainable production processes. This course is an introduction to the biobased economy, biobased products and biobased chemical techniques. With regards to the importance of the transition of an economy based on oil to a circular and biobased economy awareness will be created. Together we will discuss the consequences of making choices and the ethical behavior of the student. All knowledge acquired in previous Chemistry courses will be useful during this course. The principles of Green Chemistry will be discussed. Guest speakers will provide the link with practice. Because the subject of Biobased Chemistry is in development, you will frequently use peer reviewed literature. Course learning outcomes: 8.1c Communicating with others about professional and ethical dilemmas and identifying professional and ethical						
dilemmas.	of any professional ar	nd ethical dilemmas	and giving his onin	ion on them		
Compulsory litera		ia ethica aicininas		ion on them.		
company need		Assessment	information			
Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)	
TOETS01 (VT)	Written knowledge test	Final exam	100%	5.5	B2.8, B2.10	

CU76006V1	Title: Circular Chem	istry practice				
			formation			
Amount of study	/ credits:		Language:			
5			English			
Conditions for co	ourse participation:		0			
None.						
Conditions for te	est participation:					
Completion of th	e scheduled practical e	exercise is conditiona	I for participation	(article 6.3 par	ragraph 4 CER HZ).	
Brief description	of course content:			· ·		
In a practical ass	ignment you will apply	your acquired knowl	ledge and deepen i	it further. You	will investigate regional	
•	• • • • • •		-		n collaboration with the	
					elop a protocol to extract	
		-			ed by the teacher and get	
	aking a plan of apprao					
internship and fi			0			
Course learning	outcomes:					
-		sub-questions and re	search activities re	garding the re	search to be carried out	
 1.2c Formulating, under supervision, sub-questions and research activities regarding the research to be carried out. 1.2d Preparing a work plan in consultation, drawing up the plan independently, taking account of any preconditions. 						
1.2d Preparing	a work plan in consulta	•		0 0		
	a work plan in consultan accordance with the v	tion, drawing up the	e plan independent	ly, taking acco	ount of any preconditions.	
1.2e Working in	n accordance with the v	ation, drawing up the work plan when carr	e plan independent ying out the assign	ly, taking acco ment. Implem	ount of any preconditions.	
1.2e Working in effectively and e	n accordance with the v	ation, drawing up the work plan when carr	e plan independent ying out the assign	ly, taking acco ment. Implem	ount of any preconditions. enting the work plan	
1.2e Working in effectively and e Applying relevan	n accordance with the v fficiently and determin t knowledge or skills.	ation, drawing up the work plan when carr ing whether interim	e plan independent ying out the assign adjustments are ne	ly, taking acco ment. Implem ecessary on th	ount of any preconditions. enting the work plan	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo	n accordance with the w fficiently and determin t knowledge or skills. research results to forn ow-up steps.	ation, drawing up the work plan when carr ing whether interim nulate conclusions re	e plan independent ying out the assign adjustments are no elating to the resea	Iy, taking accoment. Implem ecessary on th arch question a	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for folk 1.2i Acting as a	n accordance with the v fficiently and determin t knowledge or skills. research results to forn ow-up steps. full team member in th	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe	Iy, taking accoment. Implem ecessary on th arch question a ere feedback a	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned	n accordance with the v fficiently and determin t knowledge or skills. research results to forn ow-up steps. full team member in th d choices and effective of	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe	Iy, taking accoment. Implem ecessary on th arch question a ere feedback a	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s	n accordance with the v fficiently and determin t knowledge or skills. research results to form ow-up steps. full team member in th d choices and effective of ituation.	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond	e plan independent ying out the assign adjustments are no elating to the resea genvironment, whe lucting the research	IV, taking accomment. Implem ecessary on th arch question a ere feedback a h. Being able t	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette o match communication o	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming	n accordance with the v fficiently and determin t knowledge or skills. research results to form ow-up steps. full team member in th d choices and effective ituation. so skilled in operating f	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm	e plan independent ying out the assign adjustments are no elating to the resea genvironment, whe lucting the research eent that adjusting	IV, taking accomment. Implem ecessary on th arch question a ere feedback a h. Being able t the settings le	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication of eads to desired effects.	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing	n accordance with the v fficiently and determin t knowledge or skills. research results to form ow-up steps. full team member in th d choices and effective ituation. so skilled in operating to a schedule for implement	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe lucting the research nent that adjusting oproach, conductin	IV, taking accomment. Implem ecessary on th arch question a ere feedback a h. Being able t the settings le g the experim	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication o eads to desired effects. ent and obtaining	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing reproducible res	n accordance with the v fficiently and determin t knowledge or skills. research results to form ow-up steps. full team member in th d choices and effective ituation. so skilled in operating to a schedule for implement ults within the specified	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap d time and maintaini	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe lucting the research that adjusting oproach, conductin ng accurate and cle	ily, taking acco ment. Implem ecessary on th arch question a ere feedback a h. Being able t the settings le g the experim ear documents	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication o eads to desired effects. ent and obtaining ation.	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing reproducible res 2.2e Assessing	n accordance with the v fficiently and determin t knowledge or skills. research results to form ow-up steps. full team member in th d choices and effective ituation. so skilled in operating to a schedule for implement	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap d time and maintaini can be implemented	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe lucting the research pent that adjusting pproach, conductin ng accurate and cle l according to HSE,	ely, taking acco ment. Implem ecessary on th arch question a ere feedback a h. Being able t the settings le g the experim ear documenta ethical and su	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication o eads to desired effects. ent and obtaining ation.	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing reproducible res 2.2e Assessing	n accordance with the v fficiently and determini t knowledge or skills. research results to form ow-up steps. full team member in the d choices and effective of ituation. so skilled in operating to a schedule for implement ults within the specified whether the approach re of the importance of	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap d time and maintaini can be implemented	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe lucting the research pent that adjusting pproach, conductin ng accurate and cle l according to HSE,	ely, taking acco ment. Implem ecessary on th arch question a ere feedback a h. Being able t the settings le g the experim ear documenta ethical and su	ount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication o eads to desired effects. ent and obtaining ation.	
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1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing reproducible res 2.2e Assessing 6.1d Being awa	n accordance with the v fficiently and determini t knowledge or skills. research results to form ow-up steps. full team member in the d choices and effective of ituation. so skilled in operating to a schedule for implement ults within the specified whether the approach re of the importance of	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap d time and maintaini can be implemented f continuously develo Assessment	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe lucting the research that adjusting pproach, conductin ng accurate and cle d according to HSE, oping his expertise information Weighting	IV, taking accomment. Implem ecessary on the arch question a ere feedback a h. Being able t the settings le g the experim ear documenta ethical and su Minimum	bunt of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication of eads to desired effects. ent and obtaining ation. Istainability standards.	
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1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing reproducible res 2.2e Assessing 6.1d Being awa Compulsory liter	n accordance with the v fficiently and determinin t knowledge or skills. research results to form ow-up steps. full team member in the d choices and effective of ituation. so skilled in operating to a schedule for implement ults within the specified whether the approach re of the importance of rature: Assessment type Assignment	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap d time and maintaini can be implemented f continuously develor Assessment description Report practical	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe lucting the research that adjusting pproach, conductin ng accurate and cle d according to HSE, oping his expertise information Weighting Factor	IV, taking accomment. Implem ecessary on the arch question a ere feedback a h. Being able t the settings le g the experim ear documenta ethical and su Minimum	bunt of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication of eads to desired effects. ent and obtaining ation. Istainability standards.	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for folk 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing reproducible res 2.2e Assessing 6.1d Being awa Compulsory liter	n accordance with the v fficiently and determin t knowledge or skills. research results to form ow-up steps. full team member in the d choices and effective of ituation. so skilled in operating to a schedule for implement ults within the specified whether the approach are of the importance of rature:	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap d time and maintaini can be implemented f continuously develo Assessment description Report practical work	e plan independent ying out the assign adjustments are no elating to the resea ; environment, whe lucting the research that adjusting pproach, conductin ng accurate and cle d according to HSE, oping his expertise information Weighting Factor (%) 100%	IV, taking accomment. Implem ecessary on the arch question a ere feedback a h. Being able t the settings le g the experim ear documenta ethical and su 	pount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication of eads to desired effects. ent and obtaining ation. istainability standards.	
1.2e Working in effectively and e Applying relevan 1.2g Using the proposal for follo 1.2i Acting as a results, reasoned progress to the s 2.2c Becoming 2.2d Preparing reproducible res 2.2e Assessing 6.1d Being awa	n accordance with the v fficiently and determinin t knowledge or skills. research results to form ow-up steps. full team member in the d choices and effective of ituation. so skilled in operating to a schedule for implement ults within the specified whether the approach re of the importance of rature: Assessment type Assignment	ation, drawing up the work plan when carr ing whether interim nulate conclusions re he student's working coordination in cond the available equipm enting a protocol/ ap d time and maintaini can be implemented f continuously develo Assessment description Report practical work Practical	e plan independent ying out the assign adjustments are no elating to the resea (environment, whe lucting the research ent that adjusting poroach, conductin ng accurate and cle d according to HSE, oping his expertise information Weighting Factor (%) 100% excercise	IV, taking accomment. Implem ecessary on the arch question a ere feedback a h. Being able t the settings le g the experim ear documenta ethical and su score 5.5	pount of any preconditions. enting the work plan e basis of interim results. and using these to make a and reflection lead to bette to match communication of eads to desired effects. ent and obtaining ation. istainability standards.	

Block / Semester	: S1				
CU76007 Title: Advanced Chromatography					
		Course in	formation		
Amount of study	credits:		Language:		
5			English		
Conditions for co	urse participation:				
None.					
Conditions for te	st participation:				
None.					
Brief description	of course content:				
This course is a fo	llow-up of the separat	tion part of block 7,8	and 9. The focus	is solving troub	leshooting casus from
practical situation	is, adding new knowle	dge of advanced leve	el such new develo	opments in chro	omatography and two-
dimensional chro	matography (GCxGC a	nd LCxLC) in combina	ation to lab visits a	and guest lectur	es to international
companies such D	Oow Benelux, Sabic and	d Restek.			
Course learning o	outcomes:				
TOETS01					
	measurement results p				t obtained is realistic.
	ne reliability of a result				
	the relationship betwe				
-	ght equipment and/or	-	allable methods a	nd techniques t	o assess their suitability
and choose the h	gint equipment and/or	device settings.			
TOETS02					
2.2b Having suff	icient knowledge and	understanding of ava	ailable methods a	nd techniques t	o assess their suitability
and choose the ri	ght equipment and/or	device settings.			
1.1h Reporting	orally and/or in writing	g on the assignment i	in accordance wit	n specified guid	elines.
Compulsory litera	ature:				
T		1	information	Det ::	T
Test code	Assessment type	Assessment	Weighting Factor	Minimum	Test opportunities
		description	(%)	score	(block codes)
TOETS01 (VT)	Written	Advanced	70%	5.5	B2.8, B2.10
	knowledge test	Chromatograph	7070	5.5	D2.0, D2.10
	KIOWIEuge lest				
		y - Written			
		exam			
TOETS02 (VT)	Presentation (group)	Advanced	30%	5.5	B2.9, B3.3

y - Presentation

Block / Semester	r: S1							
CU76008 Title: Circular chemistry & Biopolymers								
		Course	information					
Amount of study credits: Language:								
2.5	2.5 English							
Conditions for co	ourse participation:							
None.								
Conditions for te	est participation:							
None.								
Brief description	of course content:							
You will study in	a specific topic of bioba	ased chemistry (e.	g. biodiesel, packin	g material, biop	olymers, biobased colors,			
etc.). You will co	mpare fossil fuel produ	cts with products t	hat are produced	in a biobased wa	ay and you are able to name			
the pros and con	s. You will study compa	anies that produce	biobased product	s. By means of li	terature research, you			
increase your kn	owledge about the top	ic you have chosen	. For completion y	ou will write a li	terature review on your			
biobased chemis	try topic with the aim t	hat your fellow stu	idents can use this	review as refer	ence work. In addition, you			
share the knowle	edge gained with your f	ellow students by	giving a presentati	on. After this pr	esentation, your findings			
will be discussed	with both teacher and	fellow students.						
Course learning	outcomes:							
	the relationship betwe ficient knowledge and	•	•	•	nd research activities. to assess their suitability			
	ight equipment and/or	-						
2.2f Assessing t	he reliability of a result	t on the basis of an	(e.g. statistical) ar	nalysis provided.				
Compulsory liter	ature:	A						
Test code	Assessment type	Assessment	nt information Weighting	Minimum	Test opportunities			
lest tode	Assessment type	description	Factor (%)	score	(block codes)			
TOETS01 (VT)	Presentation (group)	Literature review &	100%	5.5	B2.9, B3.3			

Presentation

Block / Semeste	Title: Professionaliz	ation block 9 & 10			
01303373	Thee. Trolessionaliz		formation		
Amount of study	v crodite:	Course in	Language:		
2.5	y creatts.		English		
-	ourse participation:		LIIgiisii		
	ouise participation.				
None.					
	est participation:				
None.					
•	n of course content:				
	prises the following act	vities:			
- Study progress					
- Orientation on	•				
- Personal devel	•				
 Just in time wo Finding a suitat 	•				
- Guest lectures					
Course learning	outcomes:				
e e		earning objective D	iscussing the learn	ing strategy ar	nd the ensuing results; being
•	iction of a learning obje		0	0 0,	
	g any need to adjust his		-		
8.2d Seeking ir	formation in order to in	nprove his own per	formance.		
	-	-	ng aware of the eff	fect of his own	attitude to work on others
	embers in the case of a	project.			
Compulsory lite	rature:				
	1		information		1 - · · · · ·
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities
		description	Factor (%)	score	(block codes)
					D D D D 40
TOETS01 (VT)	Portfolio	Individual	100%	5.5	B2.9, B2.10
		reflection			

Specialisation Life Sciences

CU76003V1	Title: Immunology p	oractice				
Course information						
Amount of study	credits:		Language:			
5			English			
Conditions for co	urse participation:					
None.						
Conditions for te	st participation:					
	e scheduled practical e	xercise is conditiona	I for participation	n (article 6.3 par	agraph 4 CER HZ).	
•	of course content:					
Experiments on m	hicrobiology					
se • In nu	lected bacteriophage. duction and repressior	n of beta-galactosida s over time under th	se: We want to k	now how the b	ure of E.coli infected with a galactosidase-activity per racticing your planning skills	
Experiments on ir	nmunochemistry:					
a t ar • SF Eli	fixed anti-body will bin enzyme that will conv E: You will analyze diff	d to an antigen/anti /ert substrate in to a ferent blood sample ne gel results you wil	body if present ir signal emitting p on their albumin	n a sample. A se roduct. and globuline c	ELISA-assay. In the ELISA we condary anti-body is linked content by Serum Protein the test subject to the SPE	
Course learning o	utcomes:					
1.2b Gaining an	insight into the proble	em and the professio	nal aspects of the	e research by st	udying the literature or	
1.2e Working in	a work plan in consulta accordance with the v	vork plan when carr	ying out the assig	nment. Implem		
	knowledge or skills.	ing whether interim	aujustments are i	necessary on th	e basis of interim results.	
	-	full or partial result	s in relation to th	e assignment/re	esearch question. Critically	
	eliability of the results				,	
1.2g Using the r	esearch results to forn	nulate conclusions re	elating to the rese	earch question a	and using these to make a	
proposal for follo	· · ·					
	the results into one re schedule for impleme					
	Its within the specified				_	
	ons to establish wheth		-			
	allocate tasks and wor					
	bachable and accessibl any need to adjust his					
					attitude to work on others	
	mbers in the case of a		0			
Compulsory litera	ature:					
			information			
Fest code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)	
TOETS01 (VT)	Assignment (group)	Report practical work	100%	5.5	B1.9, B2.3	
	(0)		excercise			
	Bractical exercise	1		ion of volated a		
PRAKT-OEF (VT)	Practical excercise	The practical call	lise is a complian	ion of related si	kills training during the	

Block / Semester							
CU76004	Title: Immunology 1						
		Course in	formation				
Amount of study	credits:		Language:				
5			English				
Conditions for co	urse participation:						
None.							
Conditions for tes	st participation:						
None.							
Brief description	of course content:						
unicellular bacter the structure and	function of proteins a	cation in mammals. nd how to study the	In this course we w m. Furthermore th	vill deal with this course addr	ne basic chemistry of life,		
assignment. 1.2d Preparing a 2.2a Choosing a 2.2b Having suff and choose the rig TOETSO2 (Bch3) 1.2b Gaining an sources the stude 2.2a Choosing a Compulsory litera	problem in consultation a work plan in consultation n approach and explain ficient knowledge and of ght equipment and/or insight into the proble ont has selected. In approach and explain ature:	tion, drawing up the ning why it is a suital understanding of ava device settings. Im and the professio ning why it is a suital	plan independent ole way of achievin ailable methods an nal aspects of the ole way of achievin	ly, taking acco ng the objective d techniques t research by stu	to assess their suitability udying the literature or e.		
Biochemistry and Molecular Biology, Elliot, D. Elliot, W. Papachristodoulou, L., 6th edition, ISBN: 9780198768111							
, unu	Assessment information						
•					T		
Test code	Assessment type	Assessment Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)		

Biochemistry 3 -

Written exam

50%

5.5

B1.9, B2.10

TOETS02 (VT)

Written

knowledge test

Block / Semester:	\$1				
CU13416V6	Title: Biotechnology				
		Course in	formation		
Amount of study	credits:		Language:		
2.5			English		
Conditions for con	urse participation:				
None.					
Conditions for tes	t participation:				
None.					
Brief description	of course content:				
Subjects from the	previous life science of	ourses will be reinte	rpreted in the con	text of the dive	erse and multidisciplinary
biotechnological v	vorkforce that the stu	dents will become pa	art of. Biotechnolo	gy draws know	ledge and expertise from
many basic scienc	es and combines that	knowledge in a wide	array of application	ons.	
Course learning o	utcomes:				
0	0	m and the professio	nal aspects of the	research by stu	udying the literature or
sources the stude			and at the plate and		
Compulsory litera	of any professional a	nd ethical dilemmas	and giving his opin	lion on them.	
comparsory intera	iture.	Assessment	information		
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities
		description	Factor	score	(block codes)
			(%)		
TOETS01 (VT)	Portfolio	Active	100%	5.5	B1.9, B2.3
		participation,			
		including			
		preparation and			
		reflection			

CU76009V1	Title: Molecular Bio	logy toolbox			
		Course in	formation		
Amount of stud	y credits:		Language:		
5			English		
Conditions for c	ourse participation:		•		
None.					
Conditions for t	est participation:				
Completion of t	ne scheduled practical e	exercise is conditiona	I for participation (article 6.3 par	agraph 4 CER HZ).
Brief description	n of course content:				
In this course yo	u will develop more adv	vanced skills in mole	cular biology resea	rch; starting w	ith protocol development,
up to executing	experiments of your ow	n mini project. The t	echniques that you	u will learn are	e.g. recombinant DNA
technology, gen	etic screening, purificati	ion and (activity) ana	alysis of proteins, m	nammalian cel	l culturing, and
transfection.					
Course learning	outcomes:				
1.2a Analyzing	a problem in consultati	on and in a coordina	ted way and transl	lating it into th	e objectives of the researc
assignment.				-	-
1.2b Gaining a	n insight into the proble	em and the professio	nal aspects of the	research by stu	udying the literature or
sources the stud	lent has selected.				
1.2c Formulati	ng, under supervision, s	ub-questions and re	search activities re	garding the re	search to be carried out.
1.2d Preparing	a work plan in consulta	tion, drawing up the	e plan independent	ly, taking acco	unt of any preconditions.
1.2e Working i	n accordance with the v	vork plan when carry	ying out the assign	ment. Implem	enting the work plan
effectively and e	fficiently and determini	ing whether interim	adjustments are ne	ecessary on the	e basis of interim results.
	nt knowledge or skills.	C C		•	
	0	nulate conclusions re	elating to the resea	rch question a	and using these to make a
proposal for foll			0		
	g the results into one re	port in accordance v	with the applicable	guidelines/ st	andard.
	-			-	to assess their suitability
•	right equipment and/or	0			,
	a schedule for impleme	•	proach. conducting	g the experime	ent and obtaining
	ults within the specified				Ŭ
	isons to establish wheth		-		
Compulsory lite	rature:				
			information		-
	Assessment type	Assessment	Weighting	Minimum	Test opportunities
Test code					
Test code		description	Factor	score	(block codes)
Test code		description	Factor (%)	score	
	Assignment	description Research report		score 5.5	
	-		(%)		(block codes)
	Assignment (group)	Research report	(%) 100%		(block codes)
TOETS01 (VT)	(group)	Research report Practical	(%) 100% excercise	5.5	(block codes)

Block / Semester: S1						
CU76010	Title: Immunology 2 & DNA 2					
	Course information					
Amount of study of	credits:	Language:				
5		English				
Conditions for cou	urse participation:					
None.						
Conditions for tes	t participation:					
None.						
Brief description of	Brief description of course content:					
•.		uses, and the mechanisms by which they cause disease. In tion of our immune system to invading microorganisms.				

DNA2. The completion of the Human Genome Project (HUGO), in which the entire human DNA sequence was determined, marked the beginning of a new era of scientific and technological development on the field of genetics. The speed of genetic sequencing techniques has increased, and the accompanying costs have plummeted. Sequencing the first human genome took 10 years and costed nearly \$3,000,000. Nowadays, over a decade after its completion, the same procedure takes roughly a week at a cost of \$10,000. The knowledge we have gained about human genetic diversity enables us to determine not only gender but also geographic origin, hair and eye colour of unidentified persons (CSI). Screening unborn children for genetic diseases (e.g. Down Syndrome) can now be performed by extracting foetal DNA from the blood of the mother instead of taking a sample of amniotic fluid, which entails the risk of inducing abortion. We can use a genetic profile to determine whether someone is at risk of developing certain forms of cancer (e.g. breast cancer). Besides human genetics, genomic screens are now common practice in breeding new variants of plants that are resistant against drought or pests. Genetic engineering has produced cotton plants that produce their own insecticides, and it enables us to produce human insulin in bioreactors to provide therapeutics for the treatment of diabetic patients. Genetics is everywhere in our society, and in this course we will study its principles, techniques, and application from basic single gene cloning to genome wide screening, and whole genome sequencing.

Course learning outcomes:

TOETS01 (Imm2 - written test)

1.2a Analysing a problem in consultation and in a coordinated way and translating it into the objectives of the research assignment.

- 1.2d Preparing a work plan in consultation, drawing up the plan independently, taking account of any preconditions.
- 2.2a Choosing an approach and explaining why it is a suitable way of achieving the objective.

2.2b Having sufficient knowledge and understanding of available methods and techniques to assess their suitability and choose the right equipment and/or device settings.

TOETS02 (Imm2 - presentation)

- 1.1b Gaining an insight into the professional aspects of the research by studying the literature or sources provided.
- 6.1.c explaining things clearly
- 6.1d Being aware of the importance of continuously developing his expertise.
- 8.2b Using feedback on his own performance to adapt to the working environment.

TOETS03 (DNA2)

1.2b Gaining an insight into the problem and the professional aspects of the research by studying the literature or sources the student has selected.

- 2.2a Choosing an approach and explaining why it is a suitable way of achieving the objective.
- 2.2b Assessing the suitability of methods and protocols and resolving experimental problems (troubleshooting).

Compulsory literature:

From Genes to Genomes: Concepts and Applications of DNA Technology (softcover), Plant, N.D., Schantz, M. Von, Dale, J.W., 3rd edition, ISBN: 9780470683859

Assessment information

Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)
TOETS01 (VT)	Written knowledge test	Immunology 2 - Written exam	40%	5.5	B2.8, B2.10
TOETS02 (VT)	Presentation (group)	Immunology 2 – Presentation	10%	5.5	B2.9, B3.3
TOETS03 (VT)	Written knowledge test	DNA2 - Written exam	50%	5.5	B2.8, B2.10

Block / Semester:	Block / Semester: S1						
CU13415V6 Title: Bioinformatics							
	•	Course in	formation				
Amount of study	credits:		Language:				
2.5			English				
Conditions for co	urse participation:						
None.							
Conditions for tes	t participation:						
None.							
Brief description	of course content:						
			-		e by which sequences can		
					ed to make sense of it all,		
	-		-		a – an achievement in itself		
		•			ilarities and differences,		
-	vance of sequence var						
	-	-			fic discipline that combines		
		0,,,	•	•	practical part, asking the		
following question	ns: 'What can I actually	y learn from this seq	uence?' and 'How	on earth shoul	d I begin?'		
Course learning o							
Ŭ	the full or partial resu	•		•••			
1.2g Summarisi	ng and interpreting th	e full or partial result	ts in relation to the	e assignment/r	esearch question.		
Compulsory litera	iture:	Assossment	information				
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities		
i cou cou c	Assessment type	description	Factor	score	(block codes)		
		•	(%)		· · ·		
TOETS01 (VT)	Presentation	Oral	100%	5.5	B2.9, B3.3		
	(individual)	presentation					
		and written					
		assignments					

CU13633V5	Title: Professionaliz	Title: Professionalization block 9 & 10						
Course information								
Amount of study credits: Language:								
2.5			English					
Conditions for c	ourse participation:							
None.								
Conditions for t	est participation:							
None.								
Brief description	n of course content:							
This course com	prises the following act	ivities:						
- Study progress								
- Orientation on								
- Personal devel	•							
- Just in time wo								
 Finding a suita 	ole internship							
- Guest lectures								
Course learning	outcomes:							
8.2a Working	owards an established	learning objective.	Discussing the lear	ning strategy a	nd the ensuing results; being			
aware of the fur	nction of a learning obje	ctive and how to u	se it in his learning	strategy.				
8.2b Identifyin	g any need to adjust his	own performance	in the academic er	nvironment.				
-	nformation in order to in	•						
			eing aware of the e	ffect of his own	attitude to work on others			
	embers in the case of a	project.						
Compulsory lite	rature:							
	1		nt information	1	1			
Test code	Assessment type	Assessment	Weighting	Minimum	Test opportunities			
		description	Factor	score	(block codes)			
			(%)					
TOETS01 (VT)	Portfolio	Individual	100%	5.5	B2.9, B2.10			

Minor

CU05600V12	r: S2 Title: Research minor	
00300012		rse information
Amount of stud		Language:
30	creats.	
50		English
		Dutch
	ourse participation:	
See article 3.8 pa	aragraph 4 CER HZ.	
Conditions for to	est participation:	
None.		
Brief descriptior	of course content:	
In the Chemistry	research minor, you will learn in the f	amiliar environment of the HZ how to conduct assignment-led
research. The as	signment may have been provided by	an internal research group such as OG Aquaculture or an external
		esponsible for the complete assignment. This includes defining
		senting and discussing results, and writing a report.
Course learning		
-	Succines.	
TOETS01 1 2a Analysing a	problem in consultation and in a coor	dinated way and translating it into the objectives of the research
assignment.		
0	nsight into the problem and the profe	ssional aspects of the research by studying the literature or
	ent has selected.	
1.2c Formulating	, under supervision, sub-questions an	d research activities regarding the research to be carried out.
		the plan independently, taking account of any preconditions.
		carrying out the assignment. Implementing the work plan
effectively and e	fficiently and determining whether int	terim adjustments are necessary on the basis of interim results.
	t knowledge or skills.	
		sults in relation to the assignment/research question. Critically
	reliability of the results.	
		ns relating to the research question and using these to make a
proposal for foll		
		nce with the applicable guidelines/ standard.
		king environment, where feedback and reflection lead to better
		conducting the research. Being able to match communication on
progress to the s		uitable way of achieving the objective.
		of available methods and techniques to assess their suitability
-	ight equipment and/or device settings	
		ipment that adjusting the settings leads to desired effects.
-		I/ approach, conducting the experiment and obtaining
		ntaining accurate and clear documentation.
	e reliability of a result on the basis of a	
-		to the experiment requires improvement.
TOETS02		
	o the client and repeating the questio	n in your own words.
-	technical knowledge provided to prop	•
5.1c To use the		ning strategy in consultation/without assistance and reflecting on
8.2a Determin		
8.2a Determini the result. 8.2b Using feed	back on his own performance to adap	
8.2a Determini the result. 8.2b Using feed	onclusions on his actions and if necess	

Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)
TOETS01 (VT)	Assignment (group)	Report, presentation and defence	60%	5.5	Not applicable
TOETS02 (VT)	Portfolio	Portfolio	40%	5.5	Not applicable

Internship

English Conditions for course participation: See article 2.2.8 IR CER HZ. Conditions for test participation: The in-company functioning (appendix 4 of manual 'Internship') must be graded with at least 5.5. At insufficient level, the internship must be done all over again (at same or different location). Brief description of course content: Carry out one or more assignments that help you acquire the competences (learning objectives) recorded in the internship plan. Course learning outcomes: TOETSO1 1.3.6 Analysing an insight into the problem and the professional aspects of the research by studying the literature or sources the student has selected. 1.3.a Analysing, independently, a problem provided and translating it into the objective of the research assignment. 1.3.1 Commutating, without assitance, sub-questions and research activities regarding the research assignment. 1.3.a Analysing a problem in consultation and in a coordinated way and translating it into the objectives of the research acquiring relevant knowledge and putting it into practice. 1.3.4 Implementing a complex work plan effectively and efficiently and updating it as necessary in between times. Acquiring relevant knowledge and putting it into practice. 1.3.7 Logically and clearly combining the full or partial results and interpreting them in relation to the research aquestion. Performing an analysis of the reliability of the results. 1.4.6 Ubing paroachable and accessible for employees, fellow	Block / Semester:					
Course information Amount of study credits: Laguage: Dutch English Canditions for course participation: English Generations for test participation: English Conditions for course participation: English Conditions for test participation: English Conditions for test participation: English Conditions for test participation: English The in-company functioning (appendix 4 of manual 'Internship') must be graded with at least 5.5. At insufficient level, the internship must be done all over again (at same or different location). Brief description of course content: Course learning outcomes: COIFS01 I.2b. Gaining an insight into the problem and the professional aspects of the research by studying the literature or sources the student has selected. 1.3a Analysing, independently, a problem provided and translating it into the objective of the research assignment. 1.3c. Formulation, without assistance, sub-questions and research activities regarding the research to be carried out. 1.3b Reporting on the research in accordance with the standard applicable in the professional field. TOETS02 1.2a. Analysing a problem in consultation and in a coordinated way and translating it into the objectives of the research assignment. 1.3c Consultation and particites uprestrip the full or partial results and interpreting	-		ompany			
Amount of study credits: Language: Dutch 27.5 Dutch English English Conditions for course participation: English See article 2.2.8 IR CER HZ. Conditions for test participation: The in-company functioning (appendix 4 of manual 'Internship') must be graded with at least 5.5. At insufficient level, the internship must be done all over again (at same or different location). Brief description of course content: Carry outone or more assignments that help you acquire the competences (learning objectives) recorded in the internship plan. Course learning outcomes: Total in a insight into the problem and the professional aspects of the research by studying the literature or sources the student has selected. 1.36 Analysing, independently, a problem provided and translating it into the objective of the research assignment. 1.32 Analysing a problem in consultation and in a coordinated way and translating it into the objectives of the research assignment. 1.27 Summarising and interpreting the full or partial results in relation to the assignment/research question. Critically reflecting on the reliability of the results. 1.28 Implementing a complex work plan effectively and efficiently and updating it as necessary in between times. 1.29 Analysing of problem in consultation and in a coordinated way and translating it into the research question. Critically reflecting on the reliabi		The mension of the		formation		
English English English Conditions for course participation: The in-company functioning (appendix 4 of manual 'Internship') must be graded with at least 5.5. At insufficient level, the internship must be done all over again (at same or different location). Brief description of course content: Carry out one or more assignments that help you acquire the competences (learning objectives) recorded in the internship plan. Course learning outcomes: TOETSO1 1.2.5 Gaining an insight into the problem and the professional aspects of the research by studying the literature or sources the student has selected. 1.3.4 Analysing, independently, a problem provided and translating it into the objective of the research to be carried out. 1.3.4 Convision on the research in accordance with the standard applicable in the professional field. TOETSO2 1.2.a Analysing a problem in consultation and in a coordinated way and translating it into the objectives of the research question. Critically reflecting on the reliability of the results. 1.3.7 Life Source colspan="2">Course learning objectives of the research question. Profroming an analysis of the reliability of the results. Course learning on angity into the problem in consultation and in a coord	Amount of study	credits:		1		
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				Factor		
	TOETS01 (VT)	Assignment	Internship	60%	5.5	Not applicable
		-	-			

TOETS02 (VT)	Portfolio	Final Evaluation (portfolio with evidence)	20%	5.5	Not applicable
TOETS03 (VT)	(Workplace) Assessment	Company evaluation	20%	5.5	Not applicable

Final Thesis

Block / Semester		
Block / Semester		
CU06726V16	Title: Final Thesis & project	formation
Amount of study 30		Iformation Language: English Dutch
Conditions for co	urse participation:	1
See article 2.2.11	IR CER HZ.	
		esis') must be graded with at least 5,5. At insufficient level, ame or different location).
-	of course content: a: complex, practical assignment in complex	x situation, independent research, select from relevant
1.3b Selecting a problem in greate 1.3c Formulatin 1.3g Using the r proposals for follo 1.3h Reporting of 1.3i Acting as a Communicating in 2.3a Formulatin 2.3b Choosing of 2.3f Choosing a	Ind obtaining, without assistance, scientific er depth, thereby validating the reliability of g, without assistance, sub-questions and r research results to formulate and interpret ow-up research based on the conclusions. On the research in accordance with the sta full member and working as part of a team independently about the relevant substant or developing suitable methods and technic statistical or other analysis for assessing th	esearch activities regarding the research to be carried out. conclusions relating to the research question. Making ndard applicable in the professional field. n which also contains staff from other professional field(s). ive aspects of the progress.
and precondition 1.3e Implement Acquiring relevan 1.3f Logically an question. Perform 2.3c Being capa order to recogniz 4.1a Demonstra 5.1a Listening to 7.1d Being hone 8.2a Determining the result. 8.2b Using feed 8.2d Taking on the 8.2d State of the second 8.2d State of the second 9.2d	s. ting a complex work plan effectively and eff the knowledge and putting it into practice. Ind clearly combining the full or partial resu- ning an analysis of the reliability of the resu- ble of learning independently about the po- te experimental problems and be able to ac- ate general knowledge of the context in who the client and repeating the question in y- est and reliable towards employees, fellow ng his own learning objective and learning s- back on his own performance to adapt to the	ossibilities and limitations of the equipment to be used in ct accordingly. hich relevant management systems are set up. your own words. students and lecturers. strategy in consultation/without assistance and reflecting on the working environment. ussing his own performance with colleagues.
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order to recognize experimental problems and be able to act accordingly.

2.3d Preparing a schedule for a number of experiments, conducting them and obtaining reproducible results within the specified time and maintaining accurate and clear documentation.

4.1a Demonstrate general knowledge of the context in which relevant management systems are set up.

Compulsory liter	Compulsory literature:					
Assessment information						
Test code	Assessment type	Assessment description	Weighting Factor (%)	Minimum score	Test opportunities (block codes)	
TOETS01 (VT)	Assignment (individual)	Final assessment of research competency	60%	5.5	Not applicable	
TOETS02 (VT)	Portfolio	Final assessment of performance and prof	20%	5.5	Not applicable	
TOETS03 (VT)	(Workplace) Assessment	Company evaluation	20%	5.5	Not applicable	

Free Composition Course

Block / Semester	Block / Semester: S1							
Block / Semester: S2								
CH-HZP-YEAR3- Title: HZ Personality year 3								
22								
Course information								
Amount of study	credits:		Language:					
2.5			Dutch					
			English					
Conditions for co	urse participation:							
None.								
Conditions for te	t participation:							
None.								
Brief description	of course content:							
Within HZ Person	ality you will work on s	kills that you think a	re important for y	our personal a	nd			
•	lopment. You design tl			the approach y	ou have chosen, and			
the insights obtai	ned. Your study career	coach will guide you	u in this.					
HZ Personality has three connected levels: you, others, the world. During your study time at HZ you will have to work at								
			0,					
least one time on	each of these levels in	order to broaden ye	our view and expen	riences on eve	ry level. The levels are			
least one time on translated into th	ree themes:Personal d	order to broaden ye	our view and expen	riences on eve	ry level. The levels are			
least one time on translated into th Course learning of	ree themes:Personal d utcomes:	order to broaden yo evelopment, Comm	our view and expendent of the second se	riences on even	ry level. The levels are ble development			
least one time on translated into th Course learning o Developing skills	ree themes:Personal d utcomes: and attitudes to achiev	order to broaden yo evelopment, Comm e personal and profe	our view and expendent of the second se	riences on even	ry level. The levels are ble development			
least one time on translated into th Course learning o Developing skills a sustainable devel	ree themes:Personal d utcomes: and attitudes to achiev opment goals and com	order to broaden yo evelopment, Comm e personal and profe	our view and expendent of the second se	riences on even	ry level. The levels are ble development			
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Block / Semester: S1								
Block / Semester: S2								
CH-HZP-YEAR4-	Title: HZ Personality	year 4						
22								
Course information								
Amount of study credits:			Language:					
2.5			Dutch					
			English					
Conditions for cou	urse participation:							
None.								
Conditions for tes	t participation:							
None.								
Brief description	of course content:							
Within HZ Persona	ality you will work on s	kills that you think a	re important for y	our personal a	nd			
	lopment. You design th			the approach y	ou have chosen, and			
the insights obtain	ned. Your study career	coach will guide you	ı in this.					
		· · · ·		•	HZ you will have to work at			
	each of these levels in		•		•			
Course learning o	ee themes:Personal d	evelopment, comm	unity development		ne development			
J. J		e personal and profe	assional goals. Carr	wing out activit	ties that contribute to			
		•		ying out activity				
sustainable development goals and community goals.								
Compulsory litera	Compulsory literature: Assessment information							
Compulsory litera	ture:	Assessment	information					
Compulsory litera	I	Assessment Assessment		Minimum	Test opportunities			
· ·	Assessment type		information Weighting Factor	Minimum score	Test opportunities (block codes)			
· ·	I	Assessment	Weighting					
· ·	I	Assessment	Weighting Factor					