MINORS GUIDE 2023-2024

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UNIVERSITY OF APPLIED SCIENCES

MINORS GUIDE

EDUCATION, RESEARCH & QUALITY ASSURANCE OFFICE

APRIL 2023

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The minors guide provides information about the minors offered at HZ, including the stipulations and the procedures connected with selecting a minor.

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1 THE MINOR AS PART OF YOUR STUDIES

This chapter defines terms and explains key provisions on minors.

1.1 THE MINOR AS A CONCEPT

A minor is part of your studies at a university of applied sciences. You usually take a minor in the third or fourth year of your studies. The minor is a 30-credit[1] (ECTS) coherent part of your study programme. A minor is meant to deepen or broaden your knowledge and skills. A minor is meant to develop and broaden your view on a specific, specialist aspect of your future profession. For instance, increasing your view on societies and focusing on more general topics related to your future field of work.

1.2 CHOOSING AN HZ MINOR

HZ students are obliged to choose one of the minors offered by our university. The overview of all HZ minors can be found in chapter three. Also, all information for HZ students is available on the HZ website. In chapter two of this guide, and on the HZ website, you will find information on how to choose and apply for a minor.

HZ stipulates that your minor must match both your study choice and your study career. These stipulations are verified when you apply for a minor. Furthermore, as an HZ student, you need to have completed your propaedeutic phase and you must have completed, a minimum of 30 credits in the main phase before you can take a minor. These and other stipulations regarding minors are set out in article 3.7 of the HZ Education and Examination Regulations (CER, available on the HZ website) and in this guide. Further conditions may also be described in your implementing regulations (UR) of your study programme.

1.3 CHOOSING AN EXTERNAL MINOR

You might want to take a minor at a different university of applied sciences, either in the Netherlands or abroad. For this it is required to obtain prior permission from the (departmental) examination board in writing: you cannot simply join an external minor. You have to justify the following:

- the learning outcomes of the minor;
- the level of the minor to be selected;
- That your selected minor matches your study programme and career choice.

More information about obtaining permission to take a minor outside HZ ('external minor') can be found in chapter 2 of this minor-guide. Furthermore, as an HZ student, you need to have completed your propaedeutic phase and on top of that you must have completed, at a minimum, 30 credits in the main phase before you can take a minor.

The offer of and information on minors from other universities of applied sciences in the Netherlands can be found via the website www.kiesopmaat.nl. Above all, read the frequently asked questions on the Kies op Maat website where it is made clear that the decision of the partial examination committee is decisive.

Please contact the International Office when you want to take a minor with a foreign institution of higher education. Be sure to start your orientation early because there are also specific requirements (e.g., language requirements) that you have to meet in your educational programme in previous academic years. For more information, see chapter 2.5 of this guide.

[1] Minors are worth either 15 ECTS or 30 ECTS. The total for the minor of your study programme comprises 30 ECTS, which can be achieved by taking either two minors worth 15 EC or one minor worth 30 ECTS.

2 INFORMATION AND REGISTRATION

If you want to select a minor, information, guidance and the procedure you have to follow play an important role. These issues are outlined in this chapter.

2.1 INFORMATION

This HZ Minors Guide comprises the most important information about minors. The implementation regulations (belonging to the Education and Examination Regulations, OER) of your study programme may also describe further conditions to start a minor programme in your study programme. The CER and implementation regulations can be found on the HZ website.

It goes without saying that you would like some information about the minors. The best way to get this information is to study the information published on the HZ Minors page. All HZ minors are described there. On it you will also find information about general rules and procedures. Specific information moments are organised concerning minors abroad: see HZ Website of the International Office for this purpose. Your study programme may also organise specific meetings.

2.2 SUPPORT WHEN SELECTING A MINOR

It is important to start orientating early if you want to take a minor as an HZ student, at least a year in advance for the HZ minors, and 18 months beforehand when taking the minor abroad. It is a good idea to be fully informed about the minor of your choice: you can achieve this by studying this minors guide and the information on the HZ website. You can contact the owner to obtain further information (see the specific information at the individual minors).

If you want to go abroad to take a minor, please contact HZ International Office (see also chapter 2.5). When taking *a minor abroad, please note that you often have to start initial preparations more than a year in advance of starting the minor*. For further information about taking a minor abroad, please see the information on the HZ website (https://hz.nl/studeren/voltijd-studeren/naar-het-buitenland).

If, despite all available information, you are still unable to make a choice, you can turn to your study career coach. Talking to several minor owners can also help. Of course, you can also approach senior students to ask about their experiences.

2.3 APPLYING AND REGISTERING FOR AN HZ MINOR

The actual start of a minor at HZ always depends on the number of registered students for this minor. If there appears to be too little interest in a minor, it may be cancelled. You need to register for an HZ minor via the HZ website in time, which will direct you to Osiris. The deadlines for application can be found on that particular page. The study programme will eventually inform you whether you have been selected for the minor of your choice.

The stipulations for taking a minor can be found in the Course and Examination Regulations (CER) of HZ, article 3.7 and in the implementation regulation of the CER of your programme, article 2.2.9. As an HZ student, you must have completed your propaedeutic phase and you must have completed, a minimum 30 credits in the main phase before you can take a minor. If, as an HZ student, you choose a minor from the internal HZ offer, you do not need to request permission from the departmental examination board. Please note that the bachelor's programmes might have further conditions for taking a minor. Check this with your study career coach (SLC) and with the owner of the minor.

2.4 APPLYING AND REGISTERING FOR AN EXTERNAL MINOR VIA KIES OP MAAT

As mentioned earlier in this guide, you can also take a minor at another institution of higher education in the Netherlands. You can find further information about this via the website http://www.kiesopmaat.nl/. Consult your study career coach and discuss the justification for your choice with him or her. You must be able to demonstrate that the minor you have selected provides greater depth and breadth to your bachelor's programme. This is sometimes simple, though in other cases it requires greater justification. Please note that, as an HZ student, you must have passed the propaedeutic phase and have completed, at a minimum, 30 credits in the main phase before you can take part in a minor.

Every minor published on Kies op Maat states the deadline for registration. Keep this in mind when you are still orientating on an external minor. Once you have made a choice via Kies op Maat, you can create a learning agreement on site[2]. The learning agreement should be printed off and then signed. The agreement must be sent to the departmental examination board by e-mail, along with a motivation letter and the details of the module (downloadable in Kies op Maat).

The email addresses of the departmental examination boards (DEX) can be found in section 2.8 and on MyHZ. Instructions for writing a motivation letter can be found in section 2.6.

2.5 APPLYING FOR A MINOR ABROAD

As mentioned earlier in chapter 1.3 of this guide, HZ students can also take a minor at an institution of higher education abroad. To this end, you must have completed your propaedeutic phase and have completed, at a minimum, 30 credits in the main phase at the beginning of a minor. For the sake of completeness: if you are not registered as an HZ student, you cannot take a minor abroad via HZ.

Courses which together form a minor can only be taken at the partner institutions of HZ. You need permission from the Board of Exams to participate in a minor abroad and for the courses you want to take at the partner institution. The requirements and the steps to be taken are described on MyHZ: https://hz.nl/en/secure/for-students/study-internship-abroad/study-abroad-minor.

Want to know about partner institutions of HZ? Take a look at MyHZ under 'Orientation'.

The email addresses of the departmental examination boards (DEX) can be found in section 2.8 and on MyHZ. Instructions on how to write a motivation letter can be found in section 2.6.

2.6 WRITING A MOTIVATION LETTER

The following should be included in your motivation letter:

- Your reasons for taking an external minor;
- The learning outcomes of the minor;
- The level of the minor of your choice;
- How the minor of your choice fits with your Bachelor's programme and career choice.

Do not forget to include your contact details your motivation letter.

The departmental examination board will pay particular attention to the following when considering your application:

- whether the outcomes and level of the minor concerned are sufficiently justified, and

[2] On Kies op Maat, select the minor of your choice, and click the 'Apply' button. A learning agreement will then be created for you.

- Whether the outcomes and level of the minor concerned can also be achieved with an HZ minor.

The application for external minors is not always approved. There are a number of reasons for rejecting a minor. The most common include:

- The minor programme does not provide the required 30 credits ECTS;
- The minor programme is not offered at the desired level;
- The minor programme overlaps with the regular Bachelor's programme;
- The minor programme does not demonstrably lead to a broadening and/or deepening of your competences;
- The minor programme does not represent a coherent whole, but is a collection of separate courses;
- The minor programme details do not differ essentially form an HZ minor, whereby the need to take an external minor cannot be demonstrated;
- Your request is incomplete.

Once you have obtained approval of the departmental examination board, please send the signed learning agreement to the institution where you want to take the minor (its address can be found on the learning agreement). If this host institution also agrees with your application. You can eventually register once the host institution has accepted your application. The host institution will tell you how to register. In appendix 1, you will find an explanation of the roles and responsibilities of the (departmental)examination board of your own bachelor's programme and the programme management of the institution where you want to take a minor.

2.7 PARTIES INVOLVED WHEN REGISTERING FOR AN EXTERNAL MINOR

If, as an HZ student, you choose a minor at another university of applied sciences, or if you choose a minor at the HZ as a non-HZ student, you will have to deal with various parties who have a say in your choice of minor. The main parties you will have to deal with are the course programme management and the (departmental) examination board:

- Courses from Business, Vitality & Hospitality domain: dex.bvh@hz.nl
- Courses from Health, Education & Welfare domain: dex.hew@hz.nl
- Courses from Technology, Water & Environment domain - Middelburg location: dex.twe-m@hz.nl
- Courses from Technology, Water & Environment domain - Vlissingen location: dex.twe-v@hz.nl

The roles and responsibilities of these parties are stated below (text was drafted based on texts on the Kies op Maat website).

Departmental examination board (DEX) of your own bachelor's programme

The examination board of the 'home' institution (the institution where you take your study programme):

- has access to your study results;
- determines whether the elective course fits your portfolio;
- determines whether the elective course is allowed to have the status of the module (subject or minor) of your own institute and, as such, counts as study result;
- supports the study advisor in the decision making about the learning agreement. In doing so, they formally grant you permission to take the elective course;
- Grants permission, if necessary, to the host institution to review your portfolio. For instance, when formal entry requirements must be met;
- Monitors the processing of the final study results in the student tracking system;
- Takes into account that study fees will be settled with the host institution.

In order to carry out these tasks properly, the Departmental Board of Examiners (DEX) uses the learning agreement and corresponding appendices that contain all relevant information with regard to the module that you will follow.

Programme management of the host institution

The programme management of the host institution (the institution where you want to take a minor) ensures that the covenant agreed with the participating institutions is properly implemented. This involves the quality of the information provided, the organisation of the education (tutor duties), the correct provision of information (information manager duties). The education management plays an important facilitating role here.

Management at the host institution:

- Determines if the learning agreement is signed by the exam committee of your own institute.
- Determines if you meet the established admission requirements.
- Ensures that your own institute participates in the partnership with regard to Kies Op Maat (because of the required procedures)
- Ensures or monitors your registration.
- Contributes to the provision of information to other parties in the own institute (the central contact person, exam committee, student administration and financial administration);
- Ensures that teachers and other parties involved are informed.

2.8 COMPLETING YOUR MINOR AND OBTAINING YOUR CREDITS

After completing the ***external minor via Kies op Maat,*** you need to request the host institution to email the proof of completion (e.g., a transcript or a certificate) directly to the departmebtal examination board belonging to your bachelor's programme, so that the departmental examination board can award credits for your minor.

- Study Programmes from Business, Vitality & Hospitality domain: dex.bvh@hz.nl
- Study Programmes from Health, Education & Welfare domain: dex.hew@hz.nl
- Study Programmes from Technology, Water & Environment domain - Middelburg location: dex.twe-m@hz.nl
- Study Programmes from Technology, Water & Environment domain - Vlissingen location: dex.twe-v@hz.nl

External minors abroad are completed and processed via the International Office. The International Office receives the Transcript of Records (ToR) from the host institution. They forward this to the SLC/minor coordinator. The latter checks whether the subjects on the ToR correspond with the subjects on the approved Learning Agreement, calculates the weighted average and forwards the ToR with his calculation to the DEX. At the next meeting, the DEX decides on the allocation of credits for the external minor. The result is entered into Osiris and the student can view it here.

3 STUDENTS COMING FROM OTHER INSTITUTIONS

As a non-HZ student, you can also take HZ minors. The minors on offer at HZ for which you can register as a non-HZ student can be found on the website www.kiesopmaat.nl. It goes without saying that as a non-HZ student you cannot take HZ minors that are not listed on Kies op Maat.

If you want to take an HZ minor, the first step is to select one from Kies op Maat. You then arrange a meeting with the minor owner or with the bachelor's programme coordinator for the programme that provides the minor. In chapter 4 you can find additional information about the roles and responsibilities of the departmental examination board of your own bachelor's programme and the programme management of the institution where you intend to take the minor. During this meeting, it will be determined if you have the required prior knowledge to successfully take the HZ minor. Do not forget that it cannot be guaranteed that a specific minor will actually take place. We cannot always guarantee you a place even when a specific minor goes ahead. Some bachelor's programmes give priority to their own HZ students.

You then choose the minor you want from the Kies op Maat website and click on the 'Apply' button. A learning agreement is now created. Print this out and take it to your study advisor at your own institute who will help you to obtain approval from your examination board. Once you have obtained approval, send the signed learning agreement to HZ (you will find the address on the learning agreement). You can eventually register once HZ has approved your application.

Register with the HZ Bachelor's programme to which the minor is linked via Studielink, and then submit a *'Bewijs van Betaald Collegegeld'* [proof of payment of tuition fees] (for the benefit of a second registration to HZ) to the HZ Student Office Telephone number student administration: 0118 - 489 170 and e-mail: csa@hz.nl.

You can request this document from the student administration department at your own university of applied sciences. Information about the starting date of the minor, your timetable, the literature list, etc., will be sent to you via the minor owner or the bachelor's programme coordinator, as well as being published on our digital learning environment.

Questions? Please contact HZ student administration: 0118-489170 and e-mail csa@hz.nl.

4 HZ MINORS

This HZ website always provides a current overview of all minors offered by HZ. The minors on offer are listed per semester. If you want to start a minor in September, you need to select a semester 1 minor. If you want to start a minor in February, you will choose one of the semester 2 minors. The specific starting dates can be found on the HZ annual schedule on the HZ website.

A distinction is made on the minor overview page between minors that are taught in Dutch and minors that are taught in English. On top of that, the study load of the minors is indicated in credits: either 15 or 30 credits. If you choose a 30-credit minor, you need to take 1 minor in total. If you choose 15-credit minors, you need to take 2 minors in total. For each minor, certain conditions may apply to participate: you can find that information on the specific minor pages on the HZ website.

As indicated in the previous chapter of this guide, you can also take a minor at a different university of applied sciences. You can find all minor programmes from educational institutes in the Netherlands at kiesopmaat.nl.

4.1 APPLIED DATA SCIENCE

Basic data	
Name minor	Applied Data Science
Minor coordinator	Manuel Magallon Drijfholt
E-mail address minor coordinator	manuel.magallon.drijfholt@hz.nl
Course code	MI00016
Max. number of participants	1 class (maximum of 30 students)
Credits (ECTS)	30 ECTS
Teaching period	Semester 2
Format:	Full-time
Language	English
Special entry requirements	1st year certificate, programming knowledge, experience with CRISP-dm methodology
Type of minor	In-depth

Educational information	
Contribution to SDG	all
Concise description	In this minor, you are going to learn about advanced machine learning and deep learning. It is an applied minor, so you will apply your new knowledge and develop the skills to make it work in practice. The deep learning practice consists of participating in two competitions on the Kaggle platform, www.kaggle.com. You start with recognition of hand written digits, and then progress to image classification. For advanced machine learning, you will contribute to a real project. To let the minor results contribute to our research, we focus on a project that is running at the same time as the minor. Therefore, the subject of this project is different from year to year. In cooperation with other researchers, you will try to contribute to our knowledge and tools - by applying advanced machine learning techniques.
Learning outcomes	1. You set up a data Science process 2. You collect and address relevant data 3. You perform data analysis 4. You evaluate & deploy results of the data science process
Mandatory literature	N/A
Schedule	Two active class days & two project days

Assessment				
	Test name	**Test type**	**Weighting**	**Passing Grade**
TEST1	Portfolio	Portfolio + interview	100%	5.5

Findability	
Study programme	All
Location	HZ University of Applied Sciences, Middelburg
Domain (DEX)	Technology, Water & Environment
Key words	Data, data science, machine learning, ai, artificial intelligence

4.2 BIO-BASED BUILDING RESEARCH (BFFTF)

Basic data	
Name minor	Becoming Fit for the Future project: Bio-based Building research
Minor coordinator	Marianna Coelho
E-mail address minor coordinator	Marianna.coelho@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester	Semester 1 & 2
Format	Full-time
Language	Dutch or English
Special entry requirements	None
Type of minor	Multi-disciplinary

Educational information	
Contribution to SDG	4, 9, 12, 13. Develop of innovative bio-based materials for construction.
Concise description	Students are in contact with innovative ideas for construction, working with bio-based materials. They also work together with industrial partners. Within the Bio-based Building research group, students and lecturer-researchers from HZ and Avans carry out joint research. They deal with both construction and civil engineering applications, with a strong emphasis on the materials side. The aims of the research group are: -Strengthening , expanding and upscaling existing bio-based construction products; -Developing , testing and using new product(s) (ideas); -Research into market applications; Here one might consider, for example, research into structural properties, the validation of health claims regarding innovations initiated by the construction sector and also by inexpensive agro-residues. New materials offer new design opportunities, with mechanization and cost price reduction being real requirements in order in the end to achieve a lower cost price and larger-scale production. You can -Do research about (new) bio-based materials, structural properties and health claims of innovations -Contribute to strengthening, expanding and upscaling existing bio-based construction products -Develop , test and use new product(s) (ideas) -Do research into market applications
Learning outcomes	1. You work together on the project and jointly find solutions based on a professional and proactive attitude. Details: you collaborate, take responsibility and think critically, your actions are based on critical reflections, you want to understand, validate and achieve, you are constructive, respectful, reliable, curious, creative, and objective, you present yourself professionally and with proper etiquette, and you want to share your results and lessons learned. 2. You view and understand the challenge from different perspectives. Details: you find relevant, reliable and up-to-date information, analyse and apply it in a systematic way and conduct a literature review. You collaborate with stakeholders to identify the challenge. You present the challenge clearly and well-founded. 3. You design, execute, monitor, interpret and/or validate the professional end product (result) systematically. Details: in a structured manner you collaborate to develop, and possibly adjust the development of, a validated Professional product.

	4. You propose a desirable follow-up, and critically evaluate the professional product and the associated development process. Details: you identify good practices and lessons learned. You reflect at your own role (me), the one of your team and stakeholders (we) and the results of your project (it). 5. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Details: you describe the project process to achieving the results clearly and well-structured. You share the results in relevant ways, e.g. via a Body of Knowledge and Skills. 6. You work with a bio-based solution for construction. Details: you understand what a bio-based solution/materials is and you provide insights for new ideas.
Mandatory literature	The search for literature is part of the minor.
Schedule	One weekly meeting to follow the development of research together with other colleagues from the research group and/or industrial partners.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	interview	75%	5,5
TEST2	Professional skills and project-related goal	interview	25%	5,5

Findability	
Study programme	Civil engineering, Engineering, Construction, Chemistry (depending on the content)
Location	HZ University of Applied Sciences, Middelburg
Domain (DEX)	Technology, Water & Environment
Key words	
Mandatory literature	N/A
Grid	During this block, there are four (online) inspiration sessions on Monday evenings.

4.3 BUSINESS ANALYTICS PART I

Basic data	
Name minor	Business Analytics part I
Minor coordinator	Ralph van der Wekke
E-mail address minor coordinator	r.van.der.wekke@hz.nl
Course code	MI00021A
Max. number of participants	2 classes (maximum 60 students)
Credits (ECTS)	15 ECTS
Semester:	Semester 1 & 2
Format:	Part-time
Language	Dutch or English
Special entry requirements	No
Type of minor	In-depth and/or broadening

Educational information	
Contribution to SDG	Data science can contribute to the United Nations Sustainable Development Goals (SDGs) in several ways. Below are some examples: Healthcare (SDG 3): Data science can help improve healthcare by analysing health data, predicting disease and identifying risk factors. Thus, based on these insights, measures can be taken to improve public health. Sustainable cities and communities (SDG 11): Data science can contribute to sustainable cities and communities by analysing data on traffic flows, air quality and energy consumption. Thus, this data can be used to develop smart solutions that contribute to a more sustainable and liveable environment. Climate action (SDG 13): Data science can contribute to climate action by analysing data on greenhouse gas emissions, monitoring global warming and predicting natural disasters. Based on these insights, action can be taken to reduce the impact of climate change. Gender equality (SDG 5): Data science can contribute to gender equality by analysing data on women's participation in the labour market, the gender pay gap and other aspects of gender inequality. Thus, this data can be used to develop policies that contribute to greater gender equality. These are just a few examples of how data science can contribute to the SDGs. Through data science, we can make better decisions and take targeted actions to contribute to a more sustainable future for all.
Concise description	Do you want to know how data can help solve complex problems and make decisions? Then a minor in data science and Python is really for you! During this minor, you will learn how to collect, analyse and visualise data using Python, one of the most popular programming languages in the data science community. You will learn how to use data to gain valuable insights and help companies make better decisions. In the first part of the minor, you will work through a Data Scientist career from DataCamp. With a portfolio containing your reflection, the DataCamp certificate and a CRISP-DM report and Jupyter Notebook file of a concluding assignment, you complete this part of the course. During this block, there will be (online) inspiration sessions and a process supervisor will keep a finger on the pulse. In a world where data plays an increasing role, it is important to have the skills to understand and use this data. A minor in data science and Python will increase your job opportunities and allow you to contribute to innovative projects in various sectors. Don't wait any longer and register for this inspiring minor today!

Learning outcomes	• You know what ways there are to collect or obtain data. • You know which tools and methods are necessary for data analysis. • You can visualise data in an attractive and compelling way. • You can set up and implement a data analysis approach
Mandatory literature	N/A
Schedule	4 times on Monday evenings from 19:00 - 20:00.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio part 1	Portfolio	100%	5.5

Findability	
Study programme	All
Location	HZ University of Applied Sciences, Vlissingen
Domain (DEX)	Business, Vitality & Hospitality
Key words	Data Analytics, Big Data, Data Science, Data Analysis

4.4 BUSINESS ANALYTICS PART II

Basic data	
Name minor	Business Analytics part II
Minor coordinator	Ralph van der Wekke
E-mail address minor coordinator	r.van.der.wekke@hz.nl
Course code	MI00021B
Max. number of participants	2 classes (maximum 60 students)
Credits (ECTS)	15 ECTS
Semester:	Semester 1 & 2
Format:	Part-time
Language	Dutch or English
Special entry requirements	No
Type of minor	In-depth and/or broadening

Educational information	
Contribution to SDG	Data science can contribute to the United Nations Sustainable Development Goals (SDGs) in several ways. Below are some examples: Healthcare (SDG 3): Data science can help improve healthcare by analysing health data, predicting disease and identifying risk factors. Thus, based on these insights, measures can be taken to improve public health. Sustainable cities and communities (SDG 11): Data science can contribute to sustainable cities and communities by analysing data on traffic flows, air quality and energy consumption. Thus, this data can be used to develop smart solutions that contribute to a more sustainable and liveable environment. Climate action (SDG 13): Data science can contribute to climate action by analysing data on greenhouse gas emissions, monitoring global warming and predicting natural disasters. Based on these insights, action can be taken to reduce the impact of climate change. Gender equality (SDG 5): Data science can contribute to gender equality by analysing data on women's participation in the labour market, the gender pay gap and other aspects of gender inequality. Thus, this data can be used to develop policies that contribute to greater gender equality. These are just a few examples of how data science can contribute to the SDGs. Through data science, we can make better decisions and take targeted actions to contribute to a more sustainable future for all.
Concise description	Do you want to know how data can help solve complex problems and make decisions? Then a minor in data science and Python is really for you! During this minor, you will learn how to collect, analyse and visualise data using Python, one of the most popular programming languages in the data science community. You will learn how to use data to gain valuable insights and help companies make better decisions. In the first part of the minor, you will work through a Data Scientist career from DataCamp. With a portfolio containing your reflection, the DataCamp certificate and a CRISP-DM report and Jupyter Notebook file of a concluding assignment, you complete this part of the course. During this block, there will be (online) inspiration sessions and a process supervisor will keep a finger on the pulse. In a world where data plays an increasing role, it is important to have the skills to understand and use this data. A minor in data science and Python will increase your job opportunities and allow you to contribute to innovative projects in various sectors.

	Don't wait any longer and register for this inspiring minor today!
Learning outcomes	• You know what ways there are to collect or obtain data. • You know which tools and methods are necessary for data analysis. • You can visualise data in an attractive and compelling way. • You can set up and implement a data analysis approach
Mandatory literature	N/A
Schedule	4 times on Monday evening from 19:00 - 20:00

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio part 2	Portfolio	100%	5.5

Findability	
Study programme	All
Location	HZ University of Applied Sciences, Vlissingen
Domain (DEX)	Business, Vitality & Hospitality
Key words	Data Analytics, Big Data, Data Science, Data Analysis

4.5 CIRCULAR ECONOMY (BFFTF)

Basic data	
Name minor	Becoming Fit for the Future project: Circular Economy
Minor coordinator	Ingrid de Vries
E-mail address minor coordinator	Ingrid.de.vries@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	Dutch or English
Special entry requirements	N/A
Type of minor	Multidisciplinary

Educational information	
Contribution to SDG	SDG4, SDG7, SDG11, SDG12, SDG13, SDG15, SDG17
Concise description	At HZ campus Edisonweg, we started to green the outdoor spaces around our school building in 2021. This is of great social value because green spaces offer possibilities to meet, reduce heat stress and flooding in moments of heavy rain, provide better health and wellbeing, more biodiversity and beautification, and represent great economic value. In addition to considering which trees and plants to use, greening these outside spaces also involves thinking about which materials we should use for creating sitting areas, pergolas and other structures we use for creating attractive outside spaces that can be used for relaxing, teaching, studying or meeting fellow students or colleagues. These materials should align with the principles of circular economy. Making our outside spaces and schoolyard more green and attractive also offer us the possibility to share and make visible what we stand for as an educational institute and what kind of research we conduct, for example by showcasing materials that we work on within the Centre of Expertise Bio-based Economy: https://www.coebbe.nl/en/. In addition, we will also look into how we can reuse and recycle materials and nutrients within HZ. For example, can we use different waste streams, such as green waste for making compost, tree trucks from trees cut down in the neighbourhood, or branches from trees that are pollarded, or materials at HZ that are usually being disposed? Many stakeholders are involved in this process of greening and using a schoolyard for multiple use. This process needs the perspectives from participants with different educational and cultural backgrounds. We invite you to join this exciting process by working in a living lab. During the minor Becoming Fit for the Future (BFF) - Circular Economy you are challenged to work in an outdoor environment - using hands, head and heart. You will deliver a real outcome that will contribute to making the school's outside spaces more attractive and green, whilst applying materials that contribute to a circular economy. The minor starts with an exploration phase, that is used to first understand the challenge. You will define your own specific assignment that you will be working on during the minor together with your team of fellow students and stakeholders like the HZ Green Office and HZ Facility Management. The assignment is defined based on your own specific interests and learning goals.

	Examples of questions to focus on are (depending on each member's background and interest): – What kind of design do we need? – What kind of constructions are needed for inviting people to make better use of our outside spaces? – Which bio-circular materials can we best use? – How can we use certain left-over materials within HZ and within the near environment of HZ for refurbishing them into constructions, like furniture or fencing? – How can we use certain nutrients, like green waste, for compost, growing oyster mushrooms or for other applications? – How can we share the story to the public about our research and knowledge at HZ in the area of bio-circular materials, green construction, green engineering and climate adaptation? – How can we showcase the importance of circular agriculture in relation to moving towards a circular economy, by for example showcasing the HZ Food Forest? – To what extent do principles of permaculture align with principles of circular economy? – How do we use materials in educational settings? – What can we learn about the maintenance of the area and the constructions? To understand the challenge, make it possible to work together and succeed the mutual developed goals we offer a programme with workshops, excursions, meetings to feed you with different examples, and background information. During the minor BFF-Circular Economy you will work under the guidance of minor coaches Ingrid de Vries and Carlien Nijdam. Once a week, you will participate in a food forest session at HZ Vlissingen under the guidance of a permaculture expert. We will also visit other places, that provide a good example or creating attractive and green outside spaces by using bio-circular materials. Based on your learning goals and interests, you will also follow specific classes, seminars, or an online course.
Learning outcomes	You work on the challenge to make the HZ outside spaces more green and attractive, based on a professional and proactive attitude. You view and understand the challenge from different perspectives. You design, execute, monitor, interpret and/or validate the professional product (actual outcome) systematically. You propose a desirable follow-up and critically evaluate the professional product and the associated development process. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Project-related goal: you will work on a specific assignment, in relation to a creating one or several constructions according to the principles of circular economy.
Mandatory literature	-
Schedule	Flexible, taking into account the availability of students and coaches

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	interview	75%	5,5
TEST2	Professional skills and project-related goal	interview	25%	5,5

Findability	
Study programme	Social & Societal domain: Pedagogy, Primary school teacher, Social Work I Technical domain: Architecture, Civil Engineering, Chemistry, Engineering, HBO-ICT, Logistics Engineering, Water Management | Economics & Management domain: Business & Management, Communication, Finance & Control, Marketing & Economics
Location	HZ University of Applied Sciences, Vlissingen
Domain (DEX)	HZ Wide
Key words	Circular Economy, Bio-based Economy, Permaculture, Green Construction, Green Spaces, Green Design.
Domain (DEX)	Technology, Water & Environment

4.6 CLIMATE ADAPTATION (BFFTF)

Basic data	
Name minor	Becoming Fit for the Future project: climate adaptation
Minor coordinator	Jean-Marie Buijs
E-mail address minor coordinator	jm.buijs@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	Dutch or English
Special entry requirements	N/A
Type of minor	Multidisciplinary

Educational information	
Contribution to SDG	Goal 13: Take urgent action to combat climate change and its impacts. Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable Reducing the impact of climate adaptation is the core theme of the minor. This is done through projects that contribute to a climate-resilient living environment in the delta.
Concise description	The Minor Climate Adaptation is hosted by research group Resilient Deltas. The research group conducts interdisciplinary applied research about flood risk management and climate adaptation. In the minor you will participate in one of our research projects on these themes. In these projects, we work in close collaboration with authorities, NGOs, business and inhabitants on relevant knowledge and products for a climate proof and resilient delta. In our projects we bring together expertise about water management, spatial planning & design, risk analysis & perceptions, and governance. We study climate change effects, but also the current urban/regional setting and relevant future developments. This is done via risk analysis and perception studies, spatial design, learning from local experiments and multi-stakeholder collaboration. Typical projects are for example: • Spatial adaptation in relation to heat islands and urban flooding • Future flood defences, in relation to flood risk, spatial quality and perceptions In the minor you have the chance to participate in these kind of research projects and learn about innovation in climate adaptation. You will work in close collaboration with a team of students and researchers on specific challenges within the project. In this setting you will become familiar with relevant scientific literature and methods, and practical tips and tricks to apply this in your study and work. Together with researches you design an approach to develop relevant knowledge and products about climate adaptation. You will collaboration with the work field to apply this in practice and co-create new approaches for climate adaptation. We invite students from a variety of disciplines to join the minor Climate adaptation. Students from Water Management and Civil Engineering are welcome to deepen their knowledge and skills about climate adaptation and flood risk management. Also students from e.g. Architecture, ICT, Communication or other programmes can join to broaden their competency with climate adaptation.
Learning outcomes	1. You work together on the project and jointly find solutions based on a professional and proactive attitude. Details: you collaborate, take responsibility and think critically, your actions are based on critical reflections, you want to understand, validate and achieve, you are constructive,

	respectful, reliable, curious, creative, and objective, you present yourself professionally and with proper etiquette, and you want to share your results and lessons learned. 2. You view and understand the challenge from different perspectives. Details: you find relevant, reliable and up-to-date information, analyse and apply it in a systematic way and conduct a literature review. You collaborate with stakeholders to identify the challenge. You present the challenge clearly and well-founded. 3. You design, execute, monitor, interpret and/or validate the professional end product (result) systematically. Details: in a structured manner you collaborate to develop, and possibly adjust the development of, a validated Professional product. 4. You propose a desirable follow-up, and critically evaluate the professional product and the associated development process. Details: you identify good practices and lessons learned. You reflect at your own role (me), the one of your team and stakeholders (we) and the results of your project (it). 5. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Details: you describe the project process to achieving the results clearly and well-structured. You share the results in relevant ways, e.g. via a Body of Knowledge and Skills. 6. Project-related goal. Details: specify.
Mandatory literature	To be determined per research project. No in-house purchase of literature required.
Schedule	- Workshops Becoming Fit for the Future - Project-based planning for the climate adaptation project. At least weekly consultation with researchers involved on the project, in-depth sessions or relevant field meetings based on project planning and ambitions from students - Starting point: students spend most of the week working on the project together at HZ and in practice.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
KEY 1	Portfolio	interview	75%	5,5
KEY 2	Professional skills and project-related goal	interview	25%	5,5

Findability	
Study programme	Water Management, Civil Engineering, GPCM, Communications Depending on project possibly relevant to Architecture, ICT , Economics, Tourism
Location	HZ University of Applied Sciences, Middelburg
Domain (DEX)	Technology, Water & Environment
Key words	Climate adaptation, water safety, water management

4.7 ENERGY TRANSITION (BFFTF)

Basic data	
Name minor	Becoming Fit for the Future project: Energy Transition
Minor coordinator	Wim Huibregtse
E-mail address minor coordinator	Wim.huibregtse@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	English (or Dutch if no international registrations)
Special entry requirements	N/A
Type of minor	Multidisciplinary

Educational information	
Contribution to SDG	**SDG 7 Affordable and sustainable energy** The development and use of energy-saving and renewable energy technologies are an essential means of reducing energy consumption and dependence on fossil fuels. **SDG 13 Climate action** SDG 13 focuses on addressing man-made climate crisis. In 2015, the Paris Agreement was reached, which aims to reduce climate change and its adverse effects. The effects of climate change threaten people and nature.
Concise description	One of the biggest challenges this century is in curbing climate change by reducing greenhouse gas emissions. The transition from conventional to sustainable energy requires a large-scale change at system level, also called transition. Solutions to achieve the energy transition are complex and often location-specific. This requires a multidisciplinary approach. Another reason why the realization of these projects is complex because many stakeholders are involved. These projects have financial, social, technical and creative aspects. For example, a high windmill will have the best return, but will be less readily accepted by local residents. You learn more about • Transition from conventional to sustainable energy tackle climate change • Financial, social, technical and creative aspects • Complex and location-specific issues (multidisciplinary approach, many stakeholders involved) • Develop skills like change making and research capacity in a practically-orientated research project
Learning outcomes	7. You work together on the project and jointly find solutions based on a professional and proactive attitude. Details: you collaborate, take responsibility and think critically, your actions are based on critical reflections, you want to understand, validate and achieve, you are constructive, respectful, reliable, curious, creative, and objective, you present yourself professionally and with proper etiquette, and you want to share your results and lessons learned. 8. You view and understand the challenge from different perspectives. Details: you find relevant, reliable and up-to-date information, analyse and apply it in a systematic way and conduct a literature review. You collaborate with stakeholders to identify the challenge. You present the challenge clearly and well-founded. 9. You design, execute, monitor, interpret and/or validate the professional end product (result) systematically.

	Details: in a structured manner you collaborate to develop, and possibly adjust the development of, a validated Professional product. 10. You propose a desirable follow-up, and critically evaluate the professional product and the associated development process. Details: you identify good practices and lessons learned. You reflect at your own role (me), the one of your team and stakeholders (we) and the results of your project (it). 11. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Details: you describe the project process to achieving the results clearly and well-structured. You share the results in relevant ways, e.g. via a Body of Knowledge and Skills. 12. Project-related goal. Details: specify.
Mandatory literature	N/A
Schedule	Fixed BFftF course days, otherwise by arrangement with supervising lecturer.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	Interview	75%	5,5
TEST2	Professional skills and project-related goal	Interview	25%	5,5

Findability	
Study programme	Economic & technical domain
Location	HZ University of Applied Sciences, Middelburg
Domain (DEX)	Technology, Water & Environment
Key words	Energy transition, climate, energy, sustainable, sustainability, multidisciplinary

4.8 ENTREPRENEURSHIP

Basic data	
Name minor	Entrepreneurship 1 & 2
Minor coordinator	Ruud Scherpenhuizen
E-mail address minor coordinator	r.scherpenhuizen@hz.nl
Course code	MI00023A & MI00023B
Max. number of participants	1 class (maximum 25 students)
Credits (ECTS)	2 x 15 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	English
Special entry requirements	Well-motivated students with an entrepreneurial spirit, who have passed their Propaedeutic year(Basic Year) + 45 ECTS. The maximum number of participants is 25. An intake interview is part of the enrolment procedure.
Type of minor	In-depth / broadening / multidisciplinary

Educational information	
Contribution to SDG	8. Decent work and economic growth
Concise description	In the first and second semester of each school year, HZ University of Applied Sciences offers the Innovative Entrepreneurship minor in collaboration with Dockwize, the innovation hub for entrepreneurship and innovation in Zeeland. This is an English-language minor. This minor consists of two 10-week blocks (=15 ECTS per block). After 10 weeks, you complete your Skills programme and must choose between two follow-up programmes. Students who want to pursue their own business can choose the Kickstart programme. Students who prefer to collaborate with large organisations can choose the Intrapreneurship programme.
Learning outcomes	Starting and running your own business (project) by: • Creating your business plan (project plan) • Implementing and adapting your business plan (project plan). • Successfully implementing a business plan (project plan).
Mandatory literature	Ries, E., & Eric, R. (2017). The Lean Startup (1st edition). Penguin Random House. Fitzpatrick, R. (2013). The Mom Test. Van Haren Publishing. Osterwalder, A., Pigneur, Y., Bernarda, G., Smith, A., & Papadakos, T. (2015). Value Proposition Design. Wiley. Osterwalder, A., & Pigneur, Y. (2018). Business model generation. Spring 2015.
Schedule	• 2 blocks: block 1 Skills progamme, block 2 Kickstart of Intrapreneurship. • Monday session, Tuesday and Wednesday independent work, Thursday coaching session, Friday process feedback and independent work.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Business plan (block 1)	Assignment	60%	5,5
TEST2	Pitch (block 1)	Presentation	40%	5,5
TEST3	Personal progress portfolio (block 2)	Portfolio	100%	5,5

Findability	
Study programme	Suitable for any Study programme, national or international
Location	Dockwize, Edisonweg 41b, 4382 NV Vlissingen
Domain (DEX)	Business, Vitality & Hospitality
Key words	Entrepreneurship, entrepreneur, startup, business plan, innovative.

4.9 GOING GREEN (BFFTF)

Basic data	
Name minor	Becoming Fit for the Future project: Going Green
Minor coordinator	Carlien Nijdam
E-mail address minor coordinator	Carlien.nijdam@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	Dutch or English
Special entry requirements	N/A
Type of minor	Multidisciplinary

Educational information	
Contribution to SDG	SDG2, SDG3, SDG4, SDG6, SDG11, SDG12, SDG13, SDG15, SDG17
Concise description	Greening and using the outdoor environment is a hot topic. There are multiple arguments for greening outside spaces, in this case the focus is on schoolyards. It is of great social value because of possibilities to meet, reducing heat stress and flooding in moments of heavy rain, better health and wellbeing, more biodiversity and beautification, and it represents great economic value. At HZ campus Edisonweg, we started to green our outdoor spaces. We invite you to join this exciting process by working in a living lab. Many stakeholders are involved in this process of greening and using a schoolyard for multiple use. This process needs the perspectives from participants with different educational and cultural backgrounds. During the minor Becoming Fit for the Future (BFF) - Going Green you are challenged to work in an outdoor environment - using hands, head and heart. You will deliver a real outcome that will contribute to making the school's outside spaces more attractive and green. The minor starts with an exploration phase, that is used to first understand the challenge. You will define your own specific assignment that you will be working on during the minor together with your team of fellow students and stakeholders like the HZ Green Office and HZ Facility Management. The assignment is defined based on your own interests and learning goals. Examples of questions to focus on are (depending on each member's background and interest): – What kind of design do we need? – How do we enlarge the biodiversity on the schoolyard? – How can we deal with climate adaptation in the area? – How can we make play (young and old) possible? – What is needed for teaching in Primary education? – What are the pedagogical values that we create? – Which materials can we use? – How do we use it in educational settings? – What can we learn about the maintenance of the area? To understand the challenge, make it possible to work together and succeed the mutual developed goals we offer a programme with workshops, excursions, meetings to feed you with different examples, and background information. During the minor BFF-Going Green you will work under the guidance of minor coaches Ingrid de Vries and Carlien Nijdam. Once a week, you will participate in a food forest session at HZ Vlissingen under the guidance of a permaculture expert. We will also visit other green schoolyards green spaces in urban environments, community gardens and food forests. Based on your learning goals and interests, you will also follow specific classes, seminars, or an online course.

Learning outcomes	You work on the challenge to make the HZ outside spaces more green and attractive, based on a professional and proactive attitude. You view and understand the challenge from different perspectives. You design, execute, monitor, interpret and/or validate the professional product (actual outcome) systematically. You propose a desirable follow-up and critically evaluate the professional product and the associated development process. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Project-related goal: you will work on a specific assignment, in relation to a green learning environment and permaculture.
Mandatory literature	N/A
Schedule	Flexible, taking into account the availability of students and coaches

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	interview	75%	5,5
TEST2	Professional skills and project-related goal	interview	25%	5,5

Findability	
Study programme	Pedagogy, Primary school teacher, Social Work, Architecture, Civil Engineering, Chemistry, Engineering, HBO-ICT, Logistics Engineering, Water Management , Business & Management, Communication, Finance & Control, Marketing & Economics
Location	HZ University of Applied Sciences, Vlissingen
Domain (DEX)	HZ Wide
Key words	Green Spaces, Wellbeing, Permaculture, Deep Ecology

4.10 HZENZOR (BFFTF)

Basic data	
Name minor	Becoming Fit for the Future project: HZenzor
Minor coordinator	Willem Haak
E-mail address minor coordinator	W.Haak@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	Dutch or English (depending on the presence of international students)
Special entry requirements	
Type of minor	multidisciplinary

Educational information	
Contribution to SDG	• Clean water and sanitation (6); • Industry, innovation and infrastructure (9);
Concise description	You have the HZenzor1 and 2: boats of 2 metres long and 40 cm wide. It functions as a platform for sensors to measure all kind of properties in the water quality. The boat has to be enhanced to make it easier to execute the measurements. Next the waypoint sailing needs to be enhanced, so many experiments need to be done and improvements suggested in mechatronic and programming. - Testing - Enhancing and building
Learning outcomes	1. You work together on the project and jointly find solutions based on a professional and proactive attitude. Details: you collaborate, take responsibility and think critically, your actions are based on critical reflections, you want to understand, validate and achieve, you are constructive, respectful, reliable, curious, creative, and objective, you present yourself professionally and with proper etiquette, and you want to share your results and lessons learned. 2. You view and understand the challenge from different perspectives. Details: you find relevant, reliable and up-to-date information, analyse and apply it in a systematic way and conduct a literature review. You collaborate with stakeholders to identify the challenge. You present the challenge clearly and well-founded. 3. You design, execute, monitor, interpret and/or validate the professional end product (result) systematically. Details: in a structured manner you collaborate to develop, and possibly adjust the development of, a validated Professional product. 4. You propose a desirable follow-up, and critically evaluate the professional product and the associated development process. Details: you identify good practices and lessons learned. You reflect at your own role (me), the one of your team and stakeholders (we) and the results of your project (it). 5. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Details: you describe the project process to achieving the results clearly and well-structured. You share the results in relevant ways, e.g. via a Body of Knowledge and Skills. 6. Project-related goal. Details: specify.

Mandatory literature	Any sources
Schedule	Full-time presence is normal

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST 1	Portfolio	interview	75%	5,5
TEST 2	Professional skills and project-related goal	interview	25%	5,5

Findability	
Study programme	Experience with Water Management, ICT, Engineering, Civil Engineering, Chemistry, Finance and Control
Location	HZ University of Applied Sciences, Middelburg
Domain (DEX)	Technology, Water & Environment
Key words	Water sensors, sensors, autonomous sailing, bio-based materials, testing.
Schedule	40 office hours in regular weeks. In the competition period depending on the situation.

4.11 HZ INNOVATION STUDIO 1

Basic data	
Name minor	HZ Innovation Studio 1
Minor coordinator	Timo Derriks
E-mail address minor coordinator	t.derriks@hz.nl
Course code	MI00001A
Max. number of participants	2 classes (maximum 60 students)
Credits (ECTS)	Maximum 30 ECTS
Semester:	Semester 1 & 2 (both first 10 weeks and spread over 1 semester if desired)
Format:	Full-time & part-time
Language	English or Dutch
Special entry requirements	N/A
Type of minor	Multidisciplinary / Interdisciplinary

Educational information	
Contribution to SDG	Opportunity to work on all sorts, but especially those that are more directly/logically related to regenerating the province of Zeeland and the possible achievement in the minor, these are: 3, 4, 8, 9, 10, **11, 12**, 13, 14, 15, 17
Concise description	In the HZ Innovation Studio - The Garage, students work in teams with students and other stakeholders from different backgrounds on projects that will help Zeeland move forward. They use the design thinking method through our own toolkit 'Road to Regeneration'. We offer an inspiring community with fun social activities. At The Garage, students do not work for a client but with one: co-creation and collaborative learning are encouraged and expected.
Learning outcomes	• In the HZ Innovation Studio, we are design thinkers and doers. This means that you synthesize the assigned project to (parts of) the process of design thinking, make use of various tools and templates withing particular steps and share the output in a clear manner. You show your understanding of how several design thinking tools can be applied, and how the tools contribute to the project's process and output. • In the HZ Innovation Studio, we co-create by connecting with others. This implies that we create a collaborative environment in which everybody feels at ease to share thoughts and opinions. By investing time in getting to know and understand all associated stakeholders of the project (groups) you are stimulated in using various backgrounds and perspectives for the benefit of the output and process. • In the HZ Innovation Studio, we rely on an investigative attitude. This means that you are aware of opportunities within the process to conduct relevant research. Consequently, you collect and analyse data using methods that are suitable for the required insights. Desk and/or field research is carried out in a logical manner, of which its traceable output is transferred to the projects' processes in a meaningful way. • In the HZ Innovation Studio, we encourage you to take leadership in your own development. Actively, you give and receive feedback of stakeholders on your own functioning. You use the recognised opportunities to experiment with different perspectives and worldviews, take responsibility for decisions and behaviour, put effort in getting to know yourself better and carry out activities that help you grow as a person and as a professional. • In the HZ Innovation Studio, we enable you to train boundary crossing competences. You are invited to understand the learning mechanisms related to collaboration with those persons outside one's own (scientific) domain, institute, culture or context. We challenge you to address matters of process in the mechanisms of identification, coordination, reflection and transformation.

Mandatory literature	None required, we have our own library in the innovation studio. These are/were used the most: Lewrick, M., Link, P., & Leifer, L. (2020). *The design thinking toolbox: A guide to mastering the most popular and valuable innovation methods*. John Wiley & Sons. Borges, C. C., & McNamee, S. (2022). *Design thinking and social construction: a practical guide to innovation in research*. BIS Publishers.
Schedule	No schedule/classroom. Own space, minimum 6-day attendance at The Garage

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	Portfolio	75%	5,5
TEST2	Presentation and discussion	Oral	25%	5,5

Findability	
Study programme	All
Location	HZ University of Applied Sciences, Vlissingen
Domain (DEX)	Business, Vitality & Hospitality
Key words	Design thinking, interdisciplinary learning, co-creation, regeneration, wellbeing economy

4.12 HZ INNOVATION STUDIO 2

Basic data	
Name minor	HZ Innovation Studio 1
Minor coordinator	Timo Derriks
E-mail address minor coordinator	t.derriks@hz.nl
Course code	MI00001B
Max. number of participants	2 classes (maximum 60 students)
Credits (ECTS)	Maximum 30 ECTS
Semester:	Semester 1 & 2 (both first 10 weeks and spread over 1 semester if desired)
Format:	Full-time & part-time
Language	English or Dutch
Special entry requirements	N/A
Type of minor	Multidisciplinary / Interdisciplinary

Educational information	
Contribution to SDG	Opportunity to work on all sorts, but especially those that are more directly/logically related to regenerating province of Zeeland and the possible achievement in the minor, these are: 3, 4, 8, 9, 10, **11, 12**, 13, 14, 15, 17
Concise description	In the HZ Innovation Studio - The Garage, students work in teams with students and other stakeholders from different backgrounds on projects that will help Zeeland move forward. They use the design thinking method through our own toolkit 'Road to Regeneration'. We offer an inspiring community with fun social activities. At The Garage, students do not work for a client but with one: co-creation and collaborative learning are encouraged and expected.
Learning outcomes	• In the HZ Innovation Studio, we are design thinkers and doers. This means that you synthesize the assigned project to (parts of) the process of design thinking, make use of various tools and templates withing particular steps and share the output in a clear manner. You show your understanding of how several design thinking tools can be applied, and how the tools contribute to the project's process and output. • In the HZ Innovation Studio, we co-create by connecting with others. This implies that we create a collaborative environment in which everybody feels at ease to share thoughts and opinions. By investing time in getting to know and understand all associated stakeholders of the project (groups) you are stimulated in using various backgrounds and perspectives for the benefit of the output and process. • In the HZ Innovation Studio, we rely on an investigative attitude. This means that you are aware of opportunities within the process to conduct relevant research. Consequently, you collect and analyse data using methods that are suitable for the required insights. Desk and/or field research is carried out in a logical manner, of which its traceable output is transferred to the projects' processes in a meaningful way. • In the HZ Innovation Studio, we encourage you to take leadership in your own development. Actively, you give and receive feedback of stakeholders on your own functioning. You use the recognised opportunities to experiment with different perspectives and worldviews, take responsibility for decisions and behaviour, put effort in getting to know yourself better and carry out activities that help you grow as a person and as a professional. • In the HZ Innovation Studio, we enable you to train boundary crossing competences. You are invited to understand the learning mechanisms related to collaboration with those persons outside one's own (scientific) domain, institute, culture or context. We challenge you to address matters of process in the mechanisms of identification, coordination, reflection and transformation.

Mandatory literature	None required, we have our own library in the innovation studio. These are/were used the most: Lewrick, M., Link, P., & Leifer, L. (2020). *The design thinking toolbox: A guide to mastering the most popular and valuable innovation methods*. John Wiley & Sons. Borges, C. C., & McNamee, S. (2022). *Design thinking and social construction: a practical guide to innovation in research*. BIS Publishers.
Schedule	No schedule/classroom. Own space, minimum 6-day attendance at The Garage

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	Portfolio	75%	5,5
TEST2	Audio-visual reflection	Presentation	25%	5,5

Findability	
Study programme	All
Location	HZ University of Applied Sciences, Vlissingen
Domain (DEX)	Business, Vitality & Hospitality
Key words	Design thinking, interdisciplinary learning, co-creation, regeneration, wellbeing economy

4.13 INTERNATIONAL PRACTICE

Basic data	
Name minor	International practice
Minor coordinator	Henriëtte op den Brouw
E-mail address minor coordinator	hbrouw@hz.nl
Course code	MI00004
Max. number of participants	2 classes (maximum 60 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 2
Format:	Full-time & part-time
Language	English
Special entry requirements	Year 1 and 2 of study completed. Pabo: all work placements satisfactory
Type of minor	Broadening

Educational information	
Contribution to SDG	Also depending on the programme from which a student participates; SDGs to consider include quality education, reducing inequality, good health and well-being and partnership to achieve goals.
Concise description	International orientation and world citizenship
Learning outcomes	1. The student has an open, curious and unbiased attitude towards people from other cultural backgrounds and is open to unfamiliar or unclear situations and uncertainty. 2. Students have a comprehensive knowledge of those cultural elements that affect both their own mode of interaction and that of others. 3. The student can deal with a variety of situations and acquire knowledge about different lifestyles, cultural determinants and practices and assimilate them in such a way as to achieve constructive intercultural interaction. 4. The student examines his or her own socialisation, self-image and motivation and questions taken for granted. 5. The student shows guts, actively approaches other, new and strange contacts and expands his or her relationships and networks. 6. The student actively explores intercultural differences and similarities in verbal and non-verbal communication and tailors his or her mode of communication accordingly. 7. The student demonstrates verbal and non-verbal cultural sensitivity. 8. The student is able to collaborate in a multidisciplinary team. 9. Students see facts and events in an international context, see the wider consequences of local events and see how the local situation is affected by the wider, international context. 10. The student can formulate, adopt and express points of view on international issues, such as migration, sustainability and human rights. 11. The student is curious about and self-explores the lifeworld of "strange others". 12. The student actively moves into the world of life and experiences of other cultural, foreign groups. The student clarifies and analyses issues of various groups, and formulates recommendations.
Mandatory literature	▪ Baarda, B., Bakker, E., Julsing, M., Fischer, T., Peters. V., & Van der Velden, T. (2013). *Basisboek Kwalitatief Onderzoek: Handleiding voor het opzetten en uitvoeren van kwalitatief onderzoek (3rd ed.).* Noordhoff Publishers B.V. ▪ Cox, K., et al (ed), (2012). *Evidence-based practice for nurses. Methodology and implementation.* Publisher Lemma.

	▪ Loeffen, T., Tigchelaar, H. (2013). *Returning Insight, creative with diversity for social professionals.* Publisher Coutinho Verhoeven, N. (2014). *What is research? Practice book for methods and techniques (5th ed.).* Boom Lemma Publishers
Schedule	Workshops during the first four weeks of the semester, then practical experience abroad for a minimum of 12 weeks.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Orientation report	Report	10%	5,5
TEST2	Practical assignments	Report	20%	5,5
TEST3	Final product	Report	40%	5,5
TEST4	Reflection report with final presentation	Report with presentation	30%	5,5

Findability	
Study programme	Social Work, Nursing, Primary Education Teacher, Pedagogy, Sports Studies - HZ-wide, all courses was the intention, right? Just discussed with Rinke that she had recorded it that way.
Location	Vlissingen
Domain (DEX)	Health, Education & Wellbeing / Business, Vitality & Hospitality
Key words	Internationalisation, Foreign experience

4.14 MARINE BIOBASED CHEMISTRY (BFFTF)

Basic data	
Name minor	Becoming fit for the future project: Marine Bio-based Chemistry
Minor coordinator	Tanja Moerdijk
E-mail address minor coordinator	tanja.moerdijk@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	Dutch or English
Special entry requirements	An interview is part of the admission
Type of minor	In-depth/ Broadening / Multidisciplinary (depending on topic)

Educational information	
Contribution to SDG	SDG2 Zero Hunger, SDG12 Sustainable production and consumption, SDG13 Climate action
Concise description	Do you want to contribute to a sustainable world? And do you find it a challenge to work in a multidisciplinary team? Are food transition and materials transition topics you want to know more about? Then register for this minor! The Marine Bio-based Chemistry research group investigates the power of the sea! The research is practice-oriented and contributes to making the Zeeland Delta more sustainable. Depending on the current projects, you will work on, for example: - seaweed/algae - taste, flavour and fragrances - protein transition - bio-based applications and product development - development of (edible) coatings and alternative food packaging There are also subjects where you dive deep into chemistry and, for example, develop new methods of analysis. So there are different projects to work on! Depending on your interest and knowledge, it is determined in joint consultation which subject best matches. All projects have in common that you will learn how to perform research in a scientific manner. In a structural way you will learn how to write a literature review, to formulate research questions and how to design and perform an experiment, analyse your data and to communicate the outcome.
Learning outcomes	1. You work together on the project and jointly find solutions based on a professional and proactive attitude. Details: you collaborate, take responsibility and think critically, your actions are based on critical reflections, you want to understand, validate and achieve, you are constructive, respectful, reliable, curious, creative, and objective, you present yourself professionally and with proper etiquette, and you want to share your results and lessons learned. 2. You view and understand the challenge from different perspectives.

	Details: you find relevant, reliable and up-to-date information, analyse and apply it in a systematic way and conduct a literature review. You collaborate with stakeholders to identify the challenge. You present the challenge clearly and well-founded. 3. You design, execute, monitor, interpret and/or validate the professional end product (result) systematically. Details: in a structured manner you collaborate to develop, and possibly adjust the development of, a validated Professional product. 4. You propose a desirable follow-up, and critically evaluate the professional product and the associated development process. Details: you identify good practices and lessons learned. You reflect at your own role (me), the one of your team and stakeholders (we) and the results of your project (it). 5. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Details: you describe the project process to achieving the results clearly and well-structured. You share the results in relevant ways, e.g. via a Body of Knowledge and Skills. 6. Project-related goal. Details: specify.
Mandatory literature	N/A
Schedule	At least 3 days a week in makerspace JRCZ. Days by arrangement.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	interview	75%	5,5
TEST2	Professional skills and project-related goal	interview	25%	5,5

Findability	
Study programme	Chemistry (Applied Chemistry & Life Sciences), Water Management, other courses in consultation depending on subject and interdisciplinarity
Location	HZ University of Applied Sciences, Middelburg, JRCZ
Domain (DEX)	Technology, Water & Environment
Key words	Chemistry, Circular, Bio-based, Food transition, Flavour, Seaweed, Protein transition, Algae, Innovation, Product development

4.15 OFFSHORE RENEWABLE ENERGY

Basic data	
Name minor	Offshore Renewable Energy
Minor coordinator	Joachim de Keijzer
E-mail address minor coordinator	j.de.keijzer@hz.nl
Course code	MI00018
Max. number of participants	1 class (maximum 35 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 1 & 2
Format:	Full-time
Language	English
Special entry requirements	You have completed the propaedeutic phase and have a minimum of 30 ECTS from the 2nd study year.
Type of minor	Broadening / multidisciplinary

Educational information	
Contribution to SDG	SDGs 7, 9, 13 and 17
Concise description	Offshore wind turbines are increasing in size and are built on larger foundation constructions. An infrastructure for cables and transformer platforms is also needed. All this must be constructed. From a logistic viewpoint, you will need special ships and transport facilities. The Offshore industry has entered this market because the oil and gas markets are declining and the industry would like to contribute its expertise. In addition to Offshore Wind, there are other offshore sources such as tidal energy, wave energy, blue energy and thermal ocean energy. Energy storage is also essential for the market and provides an opportunity for new development and research. You will learn more about these new developments in this minor and you will be able to work on relevant projects. This minor focusses on the total life cycle of offshore wind farms, from design, installation to operation & maintain and decommissioning.
Learning outcomes	• Explain the scope, impact and importance of offshore wind within the context of the renewable energy transition. • Apply knowledge of the full lifecycle of the design, installation, operation and maintenance on offshore wind farms. • Create a complete overview of the interdependencies of design, installation, operation and maintenance decisions on offshore wind farms within this life cycle. • Work in a multi-disciplinary and international project team. Become familiar with different companies and jobs in the wind energy industry, both nationally and internationally.
Mandatory literature	-
Schedule	Two teaching days on Thursday and Friday. Other days are for project work, practicals and excursions.

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Design & Installation 1	Written exam	100%	5,5
TEST2	Logistics & Operations 1	Written exam	100%	5,5
TEST3	Project Tender Boskalis 1	Technical Bid report + ppt	100%	5,5
TEST4	Elective Project 1	Report + ppt	100%	5,5
TEST5	Elective Activities 1	Registration card	100%	5,5
TEST6	Design & Installation 2	Written exam	100%	5,5
TEST7	Logistics & Operations 2	Written exam	100%	5,5
TEST8	Project Tender Boskalis 2	Full Bid report + ppt	100%	5,5
TEST9	Elective Project 2	Report + ppt	100%	5,5
TEST10	Elective Activities 2	Registration card	100%	5,5

Findability	
Study programme	Civil Engineering, Engineering, Logistics Engineering, Water Management
Location	HZ University of Applied Sciences Middelburg
Domain (DEX)	Technology, Water & Environment
Key words	Offshore, renewable, energy, wind, tidal, transition, renewable energy, energy transition, sustainability, sustainable, innovative, innovations, innovation, innovative, hydrogen, hydrogen, energy island, asset management, logistic operation, supply chain, installation, installation, turbine

4.16 WATER TECHNOLOGY (BFFTF)

Basic data	
Name minor	Becoming Fit for the Future project: Water Technology
Minor coordinator	Emma McAteer
E-mail address minor coordinator	Emma.mcateer@hz.nl
Course code	MI00002
Max. number of participants	1 class (maximum 30 students)
Credits (ECTS)	30 ECTS
Semester:	Semester 2
Format:	Full-time
Language	English
Special entry requirements	N/A
Type of minor	In-depth

Educational information	
Contribution to SDG	6, 11, 13, 14 These goals all link to the goals of the water technology research group; creating a more climate resilient and robust water system by reducing fresh water scarcity, finding alternative sources of fresh water, treating and reusing water and recovering non-renewable resources. By creating a more robust water system, the stakeholders and economies within that system are also strengthen (think of agriculture, industry, nature, recreation).
Concise description	While working on a project about water technology you will learn more about and contribute to the development of applicable technologies for sustainable water (re)use in a combined fresh / saline delta; recycling surface and process water for industry, agriculture and aquaculture; valuable content recovery from waste water; monitoring and control. You will also develop skills like collaboration, research capacity, identifying next steps for the project and change making. **Current research themes include:** 1. Recycling of surface and process water for industry, agriculture and aquaculture. Examples are reuse of cooling tower blowdown, rainwater runoff and industrial wastewater. 2. Recovery of valuable content in waste water, like nutrients. 3. Monitoring and control of, for instance, water filtration systems. **More information:** https://www.projectenportfolio.nl/wiki/inde.php/Water_Technology
Learning outcomes	**Water Technology specific learning goals:** 1. Development of applicable technologies for sustainable water (re)use in a combined fresh / saline delta 2. Recycling surface and process water for industry, agriculture and aquaculture 3. Valuable content recovery from waste water 4. Monitoring and control in water systems 5. Develop skills like change making and research capacity in a practically-orientated research project. 1. You work together on the project and jointly find solutions based on a professional and proactive attitude. Details: you collaborate, take responsibility and think critically, your actions are based on critical reflections, you want to understand, validate and achieve, you are constructive, respectful, reliable, curious, creative, and objective, you present yourself professionally and with proper etiquette, and you want to share your results and lessons learned.

	2. You view and understand the challenge from different perspectives. Details: you find relevant, reliable and up-to-date information, analyse and apply it in a systematic way and conduct a literature review. You collaborate with stakeholders to identify the challenge. You present the challenge clearly and well-founded. 3. You design, execute, monitor, interpret and/or validate the professional end product (result) systematically. Details: in a structured manner you collaborate to develop, and possibly adjust the development of, a validated Professional product. 4. You propose a desirable follow-up, and critically evaluate the professional product and the associated development process. Details: you identify good practices and lessons learned. You reflect at your own role (me), the one of your team and stakeholders (we) and the results of your project (it). 5. You share and record the results in a structured manner and, based on your results, you potentially contribute to enriching existing knowledge. Details: you describe the project process to achieving the results clearly and well-structured. You share the results in relevant ways, e.g. via a Body of Knowledge and Skills. 6. Project related goal. Details: specify.
Mandatory literature	N/A
Schedule	-

Assessment				
	Test name	**Test type**	**Weighting**	**Minimum result**
TEST1	Portfolio	interview	75%	5,5
TEST2	Professional skills and project-related goal	interview	25%	5,5

Findability	
Study programme	Civil Technology, Chemistry, Engineering, HBO-ICT, Logistics Engineering, Water management Business & Management, Marketing & Economics Entry requirements: you are in study year 3 or 4 and you have obtained your first year certificate.
Location	HZ University of Applied Sciences, Middelburg
Domain (DEX)	Technology, Water & Environment
Key words	Water Technology, Fresh water, salt water, water management, resource recovery, circularity, water resources, treatment, reuse