

## Faculty of Health Medicine and Life sciences

# Sustainable Healthcare

Course code: GZW3017

Name coordinator: Jascha de Nooijer

Full period of this minor: September – January (P1-3)

Max. number of students: 30

ECTS credits in total of this minor: 30

Language of instruction: English, or Dutch, depending on the students

Teaching methods: workplace-based learning

Assessment methods: portfolio

### **Keywords:**

The health of the planet directly impacts human health, as environmental factors such as air and water quality, climate patterns, and biodiversity significantly influence disease prevalence and overall well-being. Conversely, human activities, including pollution, deforestation, and climate change, can degrade ecosystems, exacerbating health risks for both current and future generations. The focus of this minor is on working on sustainable healthcare projects through research and innovation and via interprofessional collaboration. As such, we aim to better prepare you for your professional future and enable a smoother transition to future practice.

This minor consists of a 4-week fundamentals course on sustainable healthcare, and 15 weeks 'internship' (3 days per week) and additional skills workshops on a campus day. You are going to work on complex projects that are conducted in the Maastricht University Medical Centre+ (MUMC+) as part of the **Green Deal I Working together towards sustainable healthcare** (in Dutch: Green Deal Duurzame zorg). This Green Deal aims to address five goals, including promoting health among patients, clients and employees; raising awareness and understanding of the impact of healthcare on climate change and vice versa; reducing CO2 emissions by 55% by 2030 and being climate neutral by 2050; reducing the consumption of primary raw materials by 50% by 2030 and maximising circularity in healthcare by 2050; and reducing environmental harm caused by (the use of) medication. Such complex problems require multidisciplinary approaches for which professionals with different expertise are required. As the title of the report says, collaboration is needed for a transition towards sustainable healthcare!

Full course description: See Minor Course book.

### **Course objectives**

1. Students develop expertise on the topic of sustainability in healthcare and contribute directly to society and the targets of the Dutch Green Deal Working together towards sustainable healthcare.
2. Students are aware of their own roles/responsibilities as future professionals, those of others, and how they can collaborate interprofessionally on complex problems.

3. Students develop an (inter)professional identity, see the value of collaboration with other professions and develop the ability to reflect on their (inter)professional identity as part of their professional identity.
4. Students obtain a better perspective on their future labour market.



# **SYLLABUS – SHORT VERSION**

## **Minor Sustainable Healthcare GZW3017**

**Collaborative approaches to wicked problems**

**Academic year: 2026–2027**

**Faculty of Health, Medicine and Life Sciences**  
***Bachelor Health Sciences***

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## Part 1. General Information

### 1.1 Planning Group

Function	Name	E-mail
Coordinator	Jascha de Nooijer	<a href="mailto:j.denooijer@maastrichtuniversity.nl">j.denooijer@maastrichtuniversity.nl</a>
Member	Renée Stalmeijer	<a href="mailto:r.stalmeijer@maastrichtuniversity.nl">r.stalmeijer@maastrichtuniversity.nl</a>
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### 1.2 Content of the Minor

This minor centres on healthcare, sustainability and their interrelatedness. Its focus is on working on sustainable healthcare projects through research and innovation and via interprofessional collaboration. As such, we aim to better prepare you for your professional future and enable a smoother transition to future practice.

#### The Planet and Healthcare

The health of the planet directly impacts human health, as environmental factors such as air and water quality, climate patterns, and biodiversity significantly influence disease prevalence and overall well-being. Conversely, human activities, including pollution, deforestation, and climate change, can degrade ecosystems, exacerbating health risks for both current and future generations.

The healthcare sector substantially contributes to environmental change. Due to its large CO<sub>2</sub> emissions, immense water and food consumption, the use of toxic materials and the production of vast amounts of waste, healthcare is ultimately compromising public health. The call for more sustainable healthcare has been strongly increasing in recent years.

Such complex problems require multidisciplinary approaches for which professionals with different types of expertise are required. In other words, collaboration is needed for a transition towards sustainable healthcare!

#### Complex Problems Require an Interprofessional Approach

Together with students from other programmes, you will work on projects that address complex problems related to sustainable healthcare. Complex, or 'wicked' problems are characterised by being unique in their kind, uncertainty about their origin, incompleteness, being contradictory, and being prone to changing requirements that are often difficult to recognise<sup>1</sup>. Wicked problems are thus difficult to solve, and addressing these necessitates a variety of professionals with different perspectives and expertise, who might have different (and sometimes contradictory) interests.

One strategy to approach this is by bringing together (future) professionals with different perspectives on the analysis of the issue, but also the direction of the best possible solution for all stakeholders. Therefore, novel and innovative methods and creative problem-solving skills are necessary to address such problems. The quality of

<sup>1</sup> Rittel, Horst W.J.; Webber, Melvin M. (1973). "Dilemmas in a General Theory of Planning" (PDF). *Policy Sciences*. 4 (2): 155–169. doi:10.1007/bf01405730. S2CID 18634229. Archived from the original (PDF) on 30 September 2007. [Reprinted in Cross, N., ed. (1984). *Developments in Design Methodology*. Chichester, England: John Wiley & Sons. pp. 135–144.]

the solution is also not clear in advance, and is determined based on literature, best practices and perceived bottlenecks in the context in which they take place. Together, the (future) professionals engage in interprofessional collaboration to address the wicked problem.

### **Green Deal Working together towards sustainable healthcare**

The complex project you are going to work on is conducted in the Maastricht University Medical Centre+ (MUMC+) as part of the **Green Deal Working together towards sustainable healthcare** (in Dutch: Green Deal Duurzame Zorg). This is an agreement between the Dutch government, sector organisations, and umbrella organisations for the implementation of plans to make healthcare more sustainable.

The purpose of the Green Deal is to foster an irreversible transformation with minimal impact on climate, environment and living conditions by 2050<sup>2</sup>. To achieve this, the Green Deal focuses on five objectives, or pillars:

1. A greater focus on the promotion of health among patients/clients, both at home and in and around their own healthcare location(s), in terms of environment, food and lifestyle, as well as a focus on the promotion of health among their own healthcare staff, in order to keep them in good health for longer;
2. To raise awareness and understanding of the impact of healthcare on climate and the environment, and the impact of climate and the environment on health among (prospective) healthcare professionals, patients/clients and within society;
3. A 55% reduction in CO2 emissions compared to 2018 by 2030 and climate neutral by 2050;
4. A 50% reduction in the use of primary raw materials compared to 2016 by 2030 and maximum circular healthcare by 2050;
5. Reduction of the environmental damage caused by (the use of) medication.

An overview of the Green Deal pillars can be found on the following website: [Green Deal pillars](#). The Green Deal report can be found here: [Green Deal report](#).

### **Research and Innovation**

Research and innovation go hand in hand. Research is needed to find solutions to complex problems, for example, to analyse exactly what the problem is (exploratory research), but also to evaluate whether an innovation (e.g. a new product or intervention, or improvement of a process or service) has the desired effect (intervention research) and whether the innovation 'lands' in practice (implementation research). The solutions you find will actually be implemented in practice and contribute to achieving the goals of the Green Deal.

### **Interprofessional Collaboration**

Complex or wicked problems don't have simple, monodisciplinary causes and solutions. Therefore, collaboration that crosses professional boundaries with other (future) professionals and stakeholders is necessary. Because this is something that you are going to do in your professional life, we designed and developed education that prepares you for this interprofessional collaboration.

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<sup>2</sup> Green Deal - Working together towards sustainable healthcare (2022)

Consequently, our education consists of 'realistic and authentic' problems in authentic learning environments where you experience what it is like to work in an interprofessional team (such as a workplace). The problems are challenging, so you cannot solve them on your own or with a group of students with the same knowledge and expertise. Thus, the interaction between you and your fellow students adds value that cannot be gained from collaboration with students with the same background (interdependency). In this minor, you therefore learn how to use your knowledge and expertise in collaborating with others, which largely depends on being able to communicate well with others without using too much jargon. The language and working methods need to be aligned.

In interprofessional collaboration, empathy and empathising with other views are essential. After all, there are always other views or interests, sometimes even conflicting, which determine directions for addressing wicked problems. Openness, curiosity, understanding and respect are needed to deal with those different views and interests.

### **Interprofessional Identity and Future Labour Market**

We think that interprofessional collaboration only occurs effectively if members of such teams develop an 'interprofessional identity', meaning that you as a professional are intrinsically motivated to belong to, commit to and support an interprofessional team. Interprofessional identity has been defined as "a robust cognitive, psychological and emotional sense of belonging to an interprofessional community(s), necessary to achieve shared context-dependent goals"<sup>3</sup> (p. 6), but is perhaps more clearly expressed as 'this is what I need to be'<sup>4</sup>.

By being immersed in an interprofessional team and collaborating on realistic problems in a real organisation, you develop as a professional, and you gain workplace experience. In this way, you gain a better view of your future labour market, but also of your strengths and room for improvement. The minor includes several workshops on writing a CV, networking, pitching, etc., skills that help you to enter the labour market. In general, we hope that this minor helps you with your decision for a master's programme or your first job.

### **Assessing Interprofessional Collaboration and Interprofessional Identity**

As you know by now, interprofessional collaboration and interprofessional identity formation are key indicators during this minor. We assess both concepts with questionnaires: the Generalized Extended Professional Identity Scale (G-EPIS) and the Generalized Collaborative Practice Assessment Tool (G-CPAT). Both scales were developed for health professions education but are adapted for use beyond healthcare.

The G-EPIS assesses interprofessional identity formation through three subscales, each consisting of four items: interprofessional belonging, interprofessional beliefs and interprofessional commitment (based on Reinders et al., 2020<sup>5</sup>).

<sup>3</sup> Tong, R., Brewer, M., Flavell, H., & Roberts, L. D. (2020). Professional and interprofessional identities: a scoping review. *Journal of Interprofessional Care*, 1-9. <https://doi.org/10.1080/13561820.2020.1713063>

<sup>4</sup> Tong, R., Brewer, M., Flavell, H., & Roberts, L. D. (2021). Facilitating interprofessional identity development in healthcare students through dedicated interprofessional placements. *Journal of Interprofessional Care*, 1-9. <https://doi.org/10.1080/13561820.2021.1883564>

<sup>5</sup> Reinders, J. J., Lycklama À Nijeholt, M., Van Der Schans, C. P., & Krijnen, W. P. (2020). The development and psychometric evaluation of an interprofessional identity measure: Extended Professional Identity Scale (EPIS). *Journal of Interprofessional Care*, 1-13. <https://doi.org/10.1080/13561820.2020.1713064>

The CPAT assesses collaborative practice based on the team members’ perceptions of their team’s collaboration. The CPAT consists of eight subscales: meaningful purpose and goals; general relationships; team leadership; general role responsibilities and autonomy; communication and information exchange; stakeholder linkages and coordination of appointments; decision-making and conflict management; and client involvement, adding up to 56 items. Additionally, the G-CPAT entails three open questions referring to the team’s strengths, challenges and starting points for improvement (based on Schroder et al., 2011<sup>6</sup>).

### 1.3 Format and Overview of the Minor





The minor will take place over 20 weeks (see also Table 1) and consists of a 4-week introductory course and 15 weeks ‘internship’.

In the first four weeks, you will prepare yourself well for the project by taking the course ‘Fundamentals of Sustainable Healthcare’. Here, you will get an introduction to planetary health, sustainable healthcare and the Green Deal, and get to know each other. Furthermore, you will be introduced to the project coordinators of the pillars of the Green Deal at the MUMC+ and will indicate your preference for a project.

After this introductory course, your internship starts. You will work on your Green Deal project for three days per week (15 weeks in total) in the hospital with three or four other students, preferably with different academic backgrounds. At the workplace, you will decide with your fellow students and professionals in the field how you are going to address the issue at stake, and you will actually implement it, so that you contribute directly to society and the targets of the Green Deal.

During these 15 weeks, we will also organise weekly ‘campus’ days which will be used for skills training and personal development, and to report back to the group about the progress of your project and to meet your coach, etc.. You also have one day per week that you can use for working on your portfolio.

Table 1. Overview of the minor

Minor element	Week of the minor																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		17	18	19	20
Fundamentals of SH																					
Project																					
Campus days																					
Break																					

<sup>6</sup> Schroder, C., Medves, J., Paterson, M., Byrnes, V., Chapman, C., O’Riordan, A., Pichora, D., & Kelly, C. (2011). Development and pilot testing of the collaborative practice assessment tool. *Journal of Interprofessional Care*, 25(3), 189-195. <https://doi.org/10.3109/13561820.2010.532620>

## **1.4 Why is this Minor Interesting for Students?**

### **Iris (student Biomedical Sciences)**

My name is Iris, and I study biomedical sciences at FHML, and I would recommend this minor to anyone looking for an experience outside the standard curriculum. The minor gives you a hands-on perspective on how sustainability connects with healthcare and allows you to work on long-term projects.

We started with a course on the principles of sustainability, which gave a good foundation for the projects we later worked on. The main part of the minor is working in interdisciplinary teams on a long-term project within the hospital. I really enjoyed being part of a larger team, as it was interesting to see how projects evolve over time and how people with different backgrounds collaborate to make them happen. In our case, our work contributed to change within the home ventilation team of the hospital, and we presented our findings at the green market, where sustainable initiatives were presented not only to our peers but also to hospital staff.

What I found most valuable was working closely with the same group over a longer period of time. It gave me insight into teamwork, planning, and seeing a project through from start to finish. It was also fun to be part of a motivated, diverse group, and it's nice to know that our project is still growing as members of the PREMIUM project have continued on with our work. Overall, this minor offers a unique and enjoyable way to gain real-world experiences in sustainable healthcare.

### **Maaïke (student Health Sciences)**

My name is Maaïke, and I am a Health Sciences student following the track Digital Technology and Care. During my third year, I was required to choose a minor from a wide range of options. I decided to pursue the Sustainable Healthcare minor, a choice I am very happy with.

This minor addresses a highly relevant and interesting topic: the connection between human health and planetary health. To improve human health, we should focus more on the health of our planet. This minor adds an important and often underrepresented dimension to healthcare education.

The programme begins with four weeks of problem-based learning sessions focused on planetary health and related themes. After this, students are assigned to projects aimed at supporting MUMC+ in becoming more sustainable. This combination of theory and real-world application makes the minor different from others.

What makes this minor particularly valuable is the opportunity to explore a different side of healthcare while getting to know the future workplace floor. The minor also offers very useful workshops on sustainability, behaviour change, and how to handle the workplace.

I would highly recommend this minor to students who are interested in working within interdisciplinary teams and who are looking for an experience that is different from other programmes.

### **Robert (student Digital Society)**

Taking part in the Sustainable Healthcare Minor is an experience I have enjoyed and would recommend to other students. As a Digital Society (FASoS) student, I was able to apply my knowledge in a completely new context: the University Medical Centre in

Maastricht. Stepping outside my usual field gave me valuable perspectives on how different disciplines think and operate in practice, and how to bridge these gaps successfully. Working for a real client in the MUMC+ also gave me insight into how large corporations work, with professional complexity that keeps people at the centre of their work. The fact that healthcare initially felt unfamiliar actually made it more engaging for me when trying to translate my perspective into a new domain. A highlight for me was being able to help prepare and attend the MECC ICT & Health Conference, where we represented the MUMC+ Green Teams. Being invited to tag along with (lunch)meetings, the freedom of doing your own research and networking within your project and attending professional events made the project feel very real and relevant. Overall, this minor has helped me to develop myself professionally, it has broadened my perspective on complex issues and the integration of sustainability policy. I would highly recommend it to students who feel like trying something totally new and working on real-world issues.

### **1.5 Aims and Intended Learning Outcomes of the Minor**

This minor has four **aims**:

1. Students develop expertise on the topic of sustainability in healthcare and contribute directly to society and the targets of the Dutch Green Deal Working together towards sustainable healthcare.
2. Students are aware of their own roles/responsibilities as future professionals, those of others, and how they can collaborate interprofessionally on complex problems.
3. Students develop an (inter)professional identity, see the value of collaboration with other professions and develop the ability to reflect on their interprofessional identity as part of their professional identity.
4. Students obtain a better perspective on their future labour market.

These aims are translated into the **intended learning outcomes (ILOs)** below.

After this minor period, students are able to:

*Expertise on sustainability in healthcare:*

1. Appreciate the dependence of human health on the health of the earth's natural systems (planetary health paradigm) and understand the impact of planetary health on healthcare system's functioning.
2. Describe healthcare's various environmental impacts and sustainability challenges.
3. Show awareness and responsibility toward good quality care and to promote health also shapes health care's responsibility to become more sustainable.
4. Demonstrate the knowledge and skills needed to contribute to the sustainable healthcare transition (e.g. as part of the Dutch Green Deal Working together towards sustainable healthcare).

*Interprofessional collaboration:*

1. Describe their own contribution as a professional, role and responsibilities, and that of other professions, in an interprofessional team engaged in sustainable healthcare.
2. Identify a common goal towards which they collaborate, and plan, monitor and evaluate their collaboration (and if necessary, adjust).
3. Integrate contributions from students with different professional backgrounds.
4. Discuss possible conflicts, e.g., due to power differentials, in the team at an early stage and contribute to a solution to the conflict.

*Interprofessional identity:*

1. Support the idea of requiring an (inter)professional identity in interprofessional collaboration.
2. Substantiate the importance of an (inter)professional identity and interprofessional collaboration in current wicked, situated problems, such as sustainable healthcare.
3. Reflect on the continuous development of their interprofessional identity.

*Perspective on labour market:*

1. Combine knowledge from different disciplinary fields to address a wicked, situated problem.
2. Explicate their experience, as a professional, with being part of an organisation with different departments and a corporate culture.
3. Discuss the broader societal context in which an organisation functions.
4. Value how the minor helps them to become aware of their future job market opportunities and foster their transition to the labour market.

## 1.6 Overview of the Educational Activities

### Fundamentals of Sustainable Healthcare (week 1-4)

The first four weeks of the minor will give you a general introduction to planetary health, its relation to human health and sustainable healthcare, the Green Deal Working towards sustainable healthcare, behavioural change and climate justice. During these four weeks, you will also choose the project you will be working on for the remainder of the minor.

Week 1 will introduce you to the topics of planetary health, sustainable healthcare and the Green Deal, and marks the kick-off of the minor. Throughout the week, the tutorials and workshops will introduce you to the dependence of human health on the health of the Earth's natural systems and the need for the healthcare sector to incorporate planetary health values and principles, and to systems thinking. We will also discuss climate worries.

Week 2 will focus on four of the five Green Deal pillars. You will also prepare for the students-teach-students workshops on the Green Deal pillar (explained during the course), and do a work session on the Planetary Health Pledge.

Week 3 focuses on the remaining Green Deal pillar, the role of technology and behavioural change. At the start of the week, you will be introduced to the different Green Deal projects and clients in the MUMC+ and will **indicate your preference for a**

**project.** By the end of the week, you will have been assigned to a project and a team. During this week, we will also discuss the assessment of the minor with you.

Week 4 focuses on climate justice and introduces you to the Dutch healthcare system. You will also give your workshops about the Green Deal pillars and find out what you can expect at the workplace. This week also marks your first team and individual meeting with your coach, and your first deadlines.

### **The Projects (week 5-19)**

Teams of four to five students participate in MUMC+ Green Deal projects for 15 weeks. The projects will be presented to you in September. In week 5, you will be introduced to the MUMC+ extensively and start your project. In week 19 or 20, there will be a closing event for the projects.

You will define the project in close collaboration with the 'client', in this case, the project coordinator of a Green Deal project. Together, you will develop a strategy to approach this via developing, implementing and evaluating an innovation. End products vary, e.g., (an outline of) a real intervention, advice, the results of a study among stakeholders or end users, etc.

The projects are carefully selected by the coordinator in close collaboration with the coordinator of the Green Deal and the client, so that they are complex and authentic, multidisciplinary, require interdependence, and allow students to be exposed to multidisciplinary teams. Projects have to add value to the Green Deal and/or society. Like in real life, projects could evolve during this minor due to internal and external factors.

### **Campus Days (week 5-19)**

The campus days have the following elements, occurring at different frequencies:

- **Workshops:** workshops with all students that focus on content knowledge, skills and personal development related to your projects and/or future endeavours. These are usually facilitated by guest faculty members.
- **Coach-team meetings:** meetings every 3 weeks (5 in total) in which you and your group discuss your team's collaboration related to the project and the process with your coach. You can also ask questions and discuss any other topics.
- **Individual coach-student meetings:** individual meetings with your coach (3 in total), in which you discuss your learning goals and progress.
- **Peer project update:** sessions (4 in total) with all teams and two faculty members, in which you inform the other teams about your project and can share experiences and ask questions.
- **Walk-in hours:** time slots (5 in total) in which you can make an appointment with a faculty member not involved in the projects or assessment to discuss problems or issues at the workplace or in the team.

### **'Off-site' Days**

One day each week, you will not have educational activities on campus or at the hospital, which means that you can use this day for self-study and your portfolio.

## 1.9 Assessment

During the minor, you will work on a portfolio. Your portfolio will be assessed at the end of the minor by the assessment committee. A positive decision by this committee results in the award of all 30 ECTS. **The final assessment is therefore a pass/fail assessment.**

**At the end of the minor, the portfolio is complete and contains the following parts:**

1. The mission proposal, a short document that briefly introduces the Green Deal project the student will be working on, its relation with the Green Deal pillar(s) and Planetary Health, as well as the contribution of the students based on prior education.
2. A description of the entire project, including a justification and the end product<sup>7</sup> and the presentation at the end of the minor for the Green Deal team. The Green Deal team provides feedback on the process and the end product (connection to the initial question, feasibility, originality, and relevance); the justification will be assessed by the portfolio committee.
3. A reflection by the student on the student's development of Interprofessional team identity (including the three completed G-EPIS). Assessed by the portfolio committee.
4. A reflection by the student on the discussions related to the interprofessional collaboration and the actions taken to optimise the collaboration based on the G-CPAT. Assessed by the portfolio committee.
5. An overall analysis of the strengths and points for improvement based on the above-mentioned parts of the portfolio and a statement/preview with respect to their future labour market. Assessed by the portfolio committee.

All parts of the portfolio must be 'according to expectations' or above, upon which you receive 30 ETCS.

If the portfolio is below expectations (unsatisfactory assessment), the Portfolio committee decides what needs to be done to remediate. If the portfolio is insufficiently assessed, an independent assessor is called in to check whether the assessment is justified. You will be given one opportunity to resit (based on feedback) in the same academic year in which the minor was taken. In case this would be another unsatisfactory, you will fail the minor. In case the end product is assessed as insufficient, and not all group members want to remediate, the Portfolio committee will provide an alternative assignment for those who do remediate, which is proportionate to the feedback on the original assignment.

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<sup>7</sup> The end product differs per Green Deal project.