

## 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 | 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 towards is needed for a transition towards sustainable healthcare!

Full course description See Minor Course book

### **Course objectives**

1. 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.
2. student are aware of their own roles/responsibilities as future professionals, those of others, and how they can collaborate interprofessionally on complex problems.
3. students obtain a better perspective on their future labour market.

4. students develop expertise on the topic sustainability in healthcare and contribute directly to society and the targets of the Dutch Green Deal Working together towards sustainable healthcare.

Minor course book

Sustainable Healthcare

Collaborative approaches to wicked problems

ACADEMIC YEAR: 2025-2026

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## Planning group

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## 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 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.

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[https://www.greendeals.nl/sites/default/files/2022-12/The%20five%20goals%20of%20the%20Green%20Deal%20for%20sustainable%20healthcare\\_0.pdf](https://www.greendeals.nl/sites/default/files/2022-12/The%20five%20goals%20of%20the%20Green%20Deal%20for%20sustainable%20healthcare_0.pdf)

And for the Green Deal report:

<https://www.greendeals.nl/sites/default/files/2023-01/C-238%20Green%20Deal%20Working%20together%20towards%20sustainable%20healthcare.pdf>

Such complex problems require multidisciplinary approaches for which professionals with different expertise are required. As the title of the report says, collaboration towards is needed for a transition towards sustainable healthcare!

Together with students of other programmes you are going to work on projects that address complex problems within the Green Deal. Complex, or 'wicked' problems are characterized by being unique in its kind, uncertainty about its origin, incompleteness, contradictory, and prone to changing requirements that are often difficult to recognize (Rittel and Webber, 1973). 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 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.

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.]

## Format and content

During this minor you get a unique opportunity to work on a real project in collaboration with students from different programmes and professionals from the hospital who are involved in the Green Deal projects.

This minor is 20 weeks and consists of 4 course weeks, and 15 weeks ‘internship’. To prepare yourself well for the project, you will join the ‘fundamentals course’ on sustainable healthcare to give you a general introduction to the topic, and to focus on one of the aims of the Green Deal during the first four weeks of the minor. During this course you will also be introduced to the project coordinators of the five pillars of the Green Deal, and indicate the project of your preference. Hereafter, the 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 backgrounds. During these 15 weeks we will organize weekly ‘campus’ days which will be used for skills training and to report back to the group about the progress of your project, to meet your coach, to have peer to peer feedback sessions, to organise the final symposium, etc.. You also have one day per week that you can use for working on your portfolio.

## Sustainable Healthcare and the Green Deal

This minor addresses the topic of sustainable healthcare. The healthcare sector substantially contributes to environmental change (Romanello et al.). 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. In 2021, more than 200 medical and other health-related journals (including *The Lancet*, *BMJ*, the *New England Journal of Medicine* and *The Netherlands Tijdschrift voor Geneeskunde*) co-published editorials raising concern about the direct and indirect health consequences of climate change and stressing the moral responsibility of health professionals to take action. Earlier this year, scientists, health professionals and more than 75 organisations sounded the alarm in a letter (entitled ‘Code Rood’) to Dutch ministers and policymakers, in which they urgently called for a fast transition towards sustainable health care and for the integration of the topic in education (Romanello et al.).

The “*Green Deal Working together towards sustainable healthcare*” is an agreement between the Dutch Government, sector organisations, and umbrella organisations for the implementation of plans that make healthcare more sustainable. The purpose of this Green Deal is to bring about an irreversible transformation to healthcare with minimal impact on climate, environment and living conditions in 2050 (Green Deal ...). To achieve this, the Green Deal focuses on five objectives:

- i. 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;
- ii. 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;
  - iii. A 55% reduction in CO2 emissions compared to 2018 by 2030 and climate neutral by 2050;
  - iv. A 50% reduction in the use of primary raw materials compared to 2016 by 2030 and maximum circular healthcare by 2050;
  - v. Reduction of the environmental damage caused by (the use of) medication.

Commitment and actions per theme are laid down in the Green Deal, as well as the implementation. This Green Deal is valid until October 2026.

C-238 Green Deal Working together towards sustainable healthcare (Green Deal Samen werken aan duurzame zorg)  
Romanello et al. The 2021 report of the *Lancet* Countdown on health and climate change: code red for a healthy future.  
<https://www.thelancet.com/action/showPdf?pii=S0140-6736%2821%2901787-6>.

## 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 the improvement of a process or service) also has the desired effect (intervention research) and whether the innovation 'lands' in practice (implementation research). The solutions you are going to find are actually going to be implemented in practice and contribute to achieve reach the goals of the Green Deal.

## Interprofessional collaboration and interprofessional identity

Complex or wicked problems don't have simple, monodisciplinary causes and solutions. Therefore, collaboration that cross 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. That means that our education consists of 'realistic and authentic' problems in authentic learning environments where you experience how it is to work in an interprofessional team (such as a workplace). The problems are challenging, so you cannot solve them on your own or with only 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). So, you learn how to use your knowledge and expertise well in collaborating with others. This also largely depends on being able to communicate well to connect connect with others without using too much jargon. The language and working methods need to be aligned. In interprofessional collaboration, empathy and being able to empathise 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.

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" (Tong et al., 2020, p. 6) but perhaps more clearly expressed as 'this is what I need to be' (Tong et al., 2021).

By being immersed in an interprofessional team and collaborating on realistic problems in a real organization, you develop as a professional and you gain workplace experience. In this way, you gain a better view on your future labour market, but also on 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.

As you know by now, interprofessional collaboration and interprofessional identity formation are key indicators during this minor. We assess both concepts with validated questionnaires: the Generalized Extended Professional Identity Scale (G-EPIS) and the Generalized Collaborative Practice Assessment Tool (G-CPAT). 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). The CPAT assesses collaborative practice based on the team members' perceptions of their team's collaboration. The CPAT consists of eight subscales, including meaningful purpose/goals, general relationships, team leadership, general role responsibilities/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-ended questions referring to the team's strengths, challenges and starting points for improvement (based on Schroder et al., 2011). Both scales were developed for health professions education but are adapted for use beyond healthcare.

## What does this minor look like?

We start with a four-week fundamentals course at the campus. During these weeks, you get to know each other, you are introduced to the topic of sustainable healthcare and the Green Deal, so you get expertise on the topic. Furthermore, you indicate your preference for one of the projects that are offered by the MUMC+. During the second part of the minor (week 5-19) you are going to work on this project in groups of four to five students, preferably with different backgrounds. This means that you are at the workplace for three days, in this case the hospital, and on campus (1 day per week) or working on your portfolio (1 day per week). 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.

The campus days (one per week) facilitate (collaboration) competency development via interactive workshops, peer-to-peer feedback sessions (interviewing), and discussions with your coach. You will also inform other groups, and vice versa, about the progress of your project.

## Why is this minor interesting for students?

### **Laura (psychology student)**

*The minor in “Sustainable Healthcare” is an interdisciplinary minor that combines some of my core interests by looking at the intersection of healthcare and sustainability and equipping me with the knowledge and skills to tackle real-life challenges faced by our society today. For me, one of the most compelling aspects of this minor is the chance to have a real impact by working on a regional project within the healthcare sector.*

*Moreover, the emphasis on interdisciplinary teamwork sounds like an extremely valuable experience for me, since I believe that working with students from diverse backgrounds will not only broaden my perspective, but will also make me realize my own (disciplinary) strengths and viewpoints. Furthermore, the emphasis on learning about planetary health and the critical link between environmental sustainability and human well-being really sparked my interest. I feel empowered by the opportunity to contribute to practices that promote sustainability and adaptation within the healthcare sector and have a direct impact on a topic I am passionate about.*

### **Janneke (biomedical sciences student)**

*As a student of the biomedical sciences program, I am used to studying a wide variety of topics, but all while wearing the glasses of a ‘biomedical scientist’. This minor provides me the opportunity to work on a project with the influence of students from diverse backgrounds, bringing in diverse perspectives. Thereby, I learn to approach problems differently. Moreover, I get hands-on experience with a real-life project, showing an alternative to the lab-centric focus of projects in the regular biomedical curriculum. This is a nice change of pace that offers new insight into the possibilities of my future professional development. The sustainability aspect of the minor makes it very relevant and gives extra meaning to the whole minor. It’s nice to see the impact you can make in a challenging matter by joining forces and combining knowledge.*

### **Annemarie (health sciences student)**

*When I studied health sciences (Dutch: Gezondheidswetenschappen), I was intrigued by the complexity of our healthcare system. Although I highly appreciated the specialisation I chose within health sciences, I sometimes missed the interdisciplinary aspect of our first year. As (future) health scientists, we are constantly confronted with the issues of the healthcare system’s future. I believe sustainable healthcare is one that is underhighlighted in our program, especially since our planet and healthcare system are so interrelated. This minor provides both an opportunity to learn more about sustainable healthcare and to collaborate with students from other disciplines on a very real, authentic problem. The possibility to work hands-on on a project is something that our program currently does not offer and a chance to get “out of the books”. Taking part in this minor lets you actually contribute to the (regional) healthcare system and your future work field!*

## Aims and intended learning outcomes

### Aims

After reading the introduction you probably noticed that this minor has several aims:

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

### Intended Learning Outcomes

These aims are translated to the following intended learning outcomes:

After this minor period, students are able to:

#### *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.

#### *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.

#### *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.

#### *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).

## Overview activities

### Fundamentals course (week 1-4)

Ideas to include per week, with the idea of starting broad and acquiring more specific expertise on one of the pillars of the Green Deal.

**Week 1:** general introduction to the topic, starting with planetary health linked to planetary boundaries, then making the loop to sustainable healthcare, Netflix Crossing Boundaries, climatefresk for sustainable healthcare, online game ePlanet (by Greener),

**Week 2:** introduction to the Green Deal pillars and ambitions, textbook about sustainability in healthcare, system thinking. By the end of the week: selection of one of the pillars to focus on during week 3-4

**Week 3:** teaching other students/prepare an interactive educational activity/workshop with a group of students for the other students. Introduction to the MUMC+ Green Deal projects.

**Week 4:** Workshops, climate anxiety workshop

### Projects

Groups of four to five students participate in MUMC+ Green Deal projects for 15 weeks. Examples of projects are reducing the use of disposables for respiration support at home, promoting smoke free hospital compounds, or the use of urine bags to avoid that medical waste in sewage. Students will define the project in close collaboration with the 'client' (in this case, the project coordinator of a Green Deal project) and develop a strategy to approach this via developing, implementing and evaluating an innovation. End products vary, e.g. (an outline of) a real intervention, an 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, requiring interdependency, and allow students to be exposed to multidisciplinary teams. Projects have to add value to the Green Deal (or society). Like in real life, projects could evolve during this minor due to internal and external factors.

### Campus days

As of week 5 and until week 18 the campus days will have the following elements, occurring at different frequencies:

- **Student team meeting with coach:** bi-weekly activity with a coach in which the group informs/presents the progress in the project and in which the team performance is discussed. There is also room for questions or any other business related to the project.
- **Current state of affairs of the project:** 4 meetings in total in which teams inform other teams about their projects.
- **Workshops:** these workshops tackle issues that more teams would face, and focus on content knowledge and skills related to the Green Deal projects, e.g. networking, research skills, business proposals, communication skills, CV workshop.
- **Peer-to-peer coaching:** 4 sessions in groups of 10 students, supervised by a qualified faculty member. The aim of peer-to-peer coaching is to discuss relevant situations or problems you face at the workplace, and learning together how you could approach this situation or similar situations in other contexts.

- **Individual meetings with coach:** 3 sessions in total, in which you discuss your learning goals, ...

#### 'Off site' days

One day each week will not have educational activities on campus or at the hospital, which means that you can use this day for self-study, your portfolio and organising the final symposium. Of course, at UM you can visit the Randwyck Library or reserve a room if you want to have a quiet place or meet with your group.

## 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>1</sup> and the presentation at the end of the minor for the Green Deal team. The Green Deal team provides feedback on the endproduct (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, appendix 2). Assessed by the portfolio committee.
4. A reflection by the student on the discussions related to the interprofessional collaboration and the actions taken to optimize the collaboration based on the G-CPAT (Appendix 3). 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.

### **Final evaluation: pass/fail**

If the portfolio is below expectations (unsatisfactory assessment), the assessment 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 o-satisfactory, you will fail the minor.

A full description of the assessment is described in the assessment plan.

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<sup>1</sup> The endproduct differs per Green Deal project.

## Good to know...

### **Assessment procedure and quality assurance**

The minor Sustainable Healthcare falls within the Education and Examination Regulations (EER) and the Rules and Regulations (RR) of the Bachelor's Programme in Health Sciences, and therefore falls under the Health Examination Committee.

### **Educational Programme Committee**

The minor Sustainable Healthcare falls under the Health Sciences Education Committee (OC-HS).

An Education Committee has an advisory role and focuses on promoting and guarantee the quality of a programme or a part thereof, in this case the minor Sustainable Healthcare. To this end, it uses, among other things, the results of the student evaluations of the individual study components, which are taken among the programme's students throughout the year. In addition, a Programme Committee has the task of advising the education director, solicited and unsolicited, on all matters concerning the programme.

### **Complaint Service Point**

Maastricht University (UM) students who feel that they have not been treated properly treated by any person or body within UM, can be raised in the first instance through the coordinator or the block planning group. If this does not lead to the desired solutions, students can contact the Complaints Service Point (CSP). The CSP is UM's central desk, where you as a student can submit an objection, appeal or complaint. The CSP makes sure that the right body or person handles your case. handles. Information about the CSP is bundled on the following website:

<https://www.maastrichtuniversity.nl/support/during-your-studies/complaints-service-point-csp-one-service-desk-objections-appeals-or-0>