# IDE Master Graduation Project

## Project team, procedural checks and Personal Project Brief

In this document the agreements made between student and supervisory team about the student's IDE Master Graduation Project are set out. This document may also include involvement of an external client, however does not cover any legal matters student and client (might) agree upon. Next to that, this document facilitates the required procedural checks:

- Student defines the team, what the student is going to do/deliver and how that will come about
- Chair of the supervisory team signs, to formally approve the project's setup / Project brief
- SSC E&SA (Shared Service Centre, Education & Student Affairs) report on the student's registration and study progress
- IDE's Board of Examiners confirms the proposed supervisory team on their eligibility, and whether the student is allowed to start the Graduation Project

### STUDENT DATA & MASTER PROGRAMME

Complete all fields and indicate which master(s) you are in

| | |
|---|---|
| Family name | Izci |
| Initials | CB |
| Given name | Ceyda |
| Student number | 5656656 |

| | | | | |
|---|---|---|---|---|
| IDE master(s) | IPD ✓ | DfI | SPD | |
| 2nd non-IDE master | | | | |
| Individual programme *(date of approval)* | | | | |
| Medisign | ✓ | | | |
| HPM | | | | |

### SUPERVISORY TEAM

Fill in he required information of supervisory team members. If applicable, company mentor is added as 2nd mentor

| | | | |
|---|---|---|---|
| Chair | J.C. Diehl | dept./section | SDE |
| mentor | T. Hoveling | dept./section | SDE |
| 2nd mentor | | | |
| client: | | | |
| city: | | country: | |
| optional comments | The chair and mentor are from the SDE department. Professor Diehl, known for his emphasis on circular design in healthcare, recommended involving PhD researcher Tamara Hoveling. Her specialization in medical devices during her PhD will provide a a different perspective to the proje | | |

! Ensure a heterogeneous team. In case you wish to include team members from the same section, explain why.

! Chair should request the IDE Board of Examiners for approval when a non-IDE mentor is proposed. Include CV and motivation letter.

! 2nd mentor only applies when a client is involved.

### APPROVAL OF CHAIR on PROJECT PROPOSAL / PROJECT BRIEF -> to be filled in **by the Chair** of the supervisory team

Sign for approval (Chair)

Name _____ Date _____ Signature _____

## CHECK ON STUDY PROGRESS

To be filled in **by SSC E&SA** (Shared Service Centre, Education & Student Affairs), after approval of the project brief by the chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total _____ EC

Of which, taking conditional requirements into account, can be part of the exam programme _____ EC

| | | |
|---|---|---|
| | **YES** | all 1st year master courses passed |
| | **NO** | missing 1st year courses |

Comments:

Sign for approval (SSC E&SA)

Name _____ Date _____ Signature _____

## APPROVAL OF BOARD OF EXAMINERS IDE on SUPERVISORY TEAM -> to be checked and filled in by IDE's Board of Examiners

Does the composition of the Supervisory Team comply with regulations?

| | | |
|---|---|---|
| **YES** | | Supervisory Team approved |
| **NO** | | Supervisory Team not approved |

Comments:

Based on study progress, students is …

| | |
|---|---|
| | **ALLOWED** to start the graduation project |
| | **NOT** allowed to start the graduation project |

Comments:

Sign for approval (BoEx)

Name _____ Date _____ Signature _____

# Personal Project Brief – IDE Master Graduation Project

**Name student** Ceyda Izci **Student number** 5,656,656

**PROJECT TITLE, INTRODUCTION, PROBLEM DEFINITION and ASSIGNMENT**
Complete all fields, keep information clear, specific and concise

**Project title** The journey of a greener endoscope

*Please state the title of your graduation project (above). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.*

**Introduction**

*Describe the context of your project here; What is the domain in which your project takes place? Who are the main stakeholders and what interests are at stake? Describe the opportunities (and limitations) in this domain to better serve the stakeholder interests. (max 250 words)*

The endoscope is a medical device that is used to look inside the body. It allows doctors to observe the interior surfaces of an organ without having to make large incisions (Achord & Muthusamy, 2019). These procedures are often performed, it was estimated that in the Netherlands half a million endoscopic procedures were performed in 2009 (Van Turenhout et al., 2012).

Endoscopy happens to be a resource-intensive speciality as there are high throughput caseloads, repeated travel for patients and relatives, the usage of non-renewable waste streams like cleaning detergents and CO2 for patient pain relief, single-use consumables and resource-heavy decontamination process (Baddeley et al., 2022). It was estimated that endoscopy incurs the third highest burden of hospital waste (3.1 kg per bed day).

This graduation project will be part of the Convergence Health & Technology project: `*Transition towards Zero Emission Endoscopy (ZEE)*' which is in collaboration with the TU Delft/EMC/EUR. The overall aim of this project is to lower the ecological footprint of the endoscopy department.

Currently, reusable endoscopes are used by doctors and nurses in the endoscopy department. This means that they need to be decontaminated after their usage by a special team in the disinfection room. For the graduation project, the journey of the endoscope in the EMC (Erasmus Medical Center) will be followed to identify where sustainability improvements can be made. The green teams of the EMC could provide valuable insights.

For a comprehensive product journey map, the endoscope's production process needs to be considered. However, due to time constraints during the graduation period, the emphasis will be on the endoscope's journey within the hospital. Nonetheless, the production of the endoscope will still be examined, and estimates will be provided.

→ *space available for images / figures on next page*

*introduction (continued): space for images*

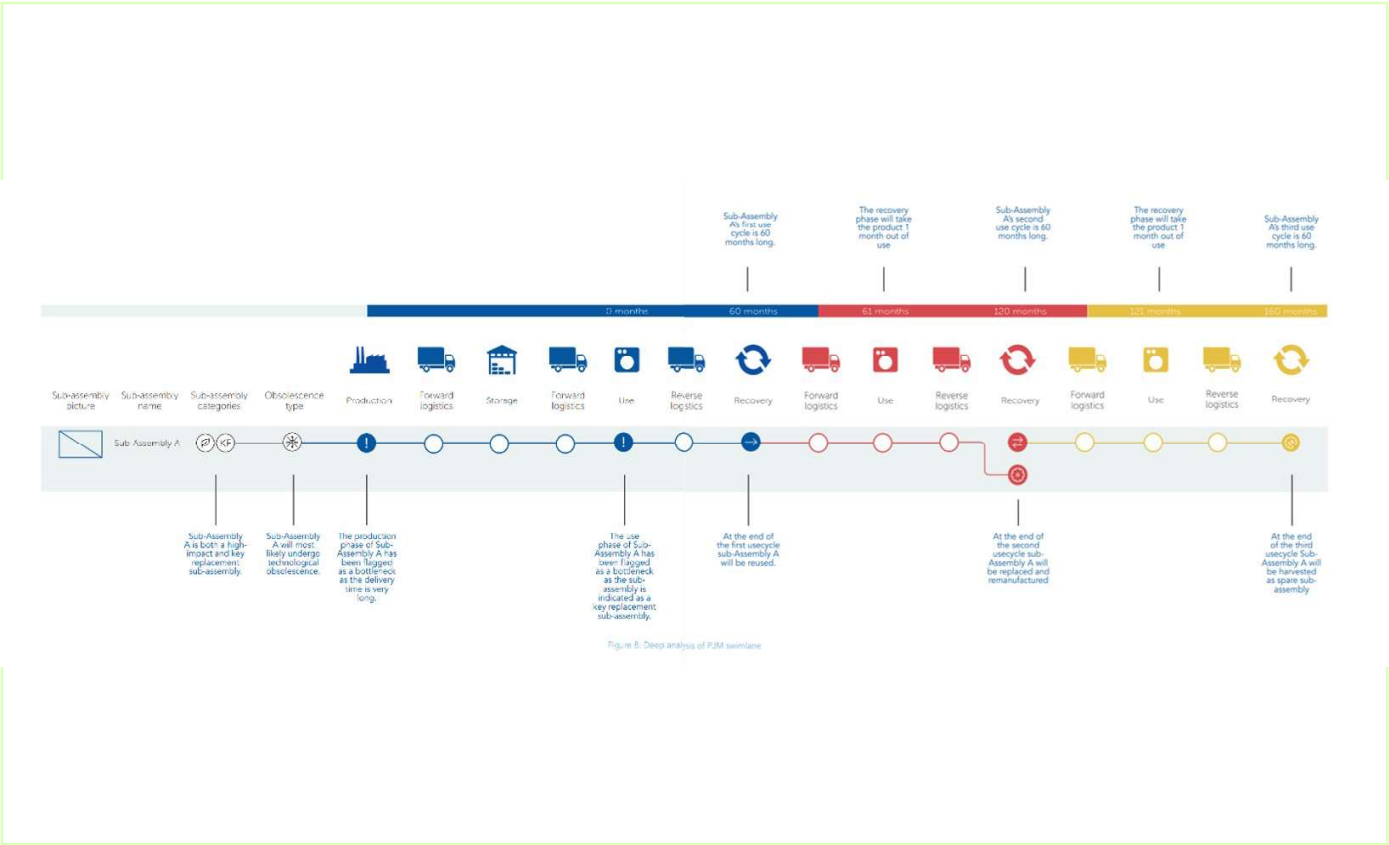


image / figure 1 *An example of a product journey map. Source: Product Journey Mapping: a design method to shift towards the circular*

image / figure 2 *Manual cleaning of the endoscopes before placing them in the washing machine. Source: https://www.shutterstock.co*

# Personal Project Brief – IDE Master Graduation Project

## Problem Definition

*What problem do you want to solve in the context described in the introduction, and within the available time frame of 100 working days? (= Master Graduation Project of 30 EC). What opportunities do you see to create added value for the described stakeholders? Substantiate your choice.*
*(max 200 words)*

As mentioned earlier, the endoscopy department ranks as the third largest contributor to hospital waste, this significantly contributes to the hospital's overall ecological footprint. Therefore, to lower the environmental impact of the EMC, it is important to focus on the endoscopy department.

Since the ZEE project kicked off at the beginning of February, there is still a lot of information missing around the topic of sustainability in the endoscopy department. So to begin, it will be important to map the journey of the endoscope in the EMC, starting with the endoscopic procedure till the disinfection of the endoscope.

This overview will enable identifying spots where sustainability improvements can be implemented. Additionally, the map will help in pinpointing which steps in the endoscope's journey have the most significant impact on its overall ecological footprint. During the graduation period, at least one of these spots with a high impact will be chosen for designing a sustainable intervention.

Ensuring that the sustainable intervention aligns with the workflow of doctors, nurses, and disinfection staff is crucial. This prevents adding to their workload, considering they are already quite busy.

## Assignment

*This is the most important part of the project brief because it will give a clear direction of what you are heading for. Formulate an assignment to yourself regarding what you expect to deliver as result at the end of your project. (1 sentence) As you graduate as an industrial design engineer, your assignment will start with a verb (Design/Investigate/Validate/Create), and you may use the green text format:*

I will create a product journey map to analyse the endoscope's journey in the Erasmus Medical Center to identify possibilities and design interventions for improving the product's sustainability.

*Then explain your project approach to carrying out your graduation project and what research and design methods you plan to use to generate your design solution (max 150 words)*

First, to understand the topic around the sustainability of endoscopy better, literature research will be performed. Observations will be conducted in the endoscopy department and the disinfection room of the EMC to ensure a comprehensive understanding and to avoid overlooking any steps while mapping the journey of the endoscope. The Product Journey Map (PJM) method will be used to create this overview. Initially, a high-level PJM will be developed to outline the steps.

After, differentiations of the PJM will be created incorporating various important variables that need to be considered, such as CO2 emissions and workload. It will also include qualitative research, which will be collected by conducting observations and user interviews with doctors, nurses and the disinfection staff.

The PJM will be used to identify hotspots where sustainability can be improved, at least one of these spots will be chosen to design a sustainable intervention to lower the ecological footprint. This intervention will be conceptualized on a product level and a low-fidelity prototype will be developed of the selected concept. The de

**Project planning and key moments**

*To make visible how you plan to spend your time, you must make a planning for the full project. You are advised to use a Gantt chart format to show the different phases of your project, deliverables you have in mind, meetings and in-between deadlines. Keep in mind that all activities should fit within the given run time of 100 working days. Your planning should include a* ***kick-off meeting***, ***mid-term evaluation meeting***, ***green light meeting*** *and* ***graduation ceremony****. Please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any (for instance because of holidays or parallel course activities).*

*Make sure to attach the full plan to this project brief.*
*The four key moment dates must be filled in below*

| | |
|---|---|
| **Kick off meeting** | 27 feb 2024 |
| **Mid-term evaluation** | 29 apr 2024 |
| **Green light meeting** | 10 juni 2024 |
| **Graduation ceremony** | 8 juli 2024 |

*In exceptional cases (part of) the Graduation Project may need to be scheduled part-time. Indicate here if such applies to your project*

| | |
|---|---|
| Part of project scheduled part-time | |
| For how many project weeks | |
| Number of project days per week | |

Comments:

**Motivation and personal ambitions**

*Explain why you wish to start this project, what competencies you want to prove or develop (e.g. competencies acquired in your MSc programme, electives, extra-curricular activities or other).*

*Optionally, describe whether you have some personal learning ambitions which you explicitly want to address in this project, on top of the learning objectives of the Graduation Project itself. You might think of e.g. acquiring in depth knowledge on a specific subject, broadening your competencies or experimenting with a specific tool or methodology. Personal learning ambitions are limited to a maximum number of five.*
*(200 words max)*

After obtaining my bachelor's degree in Mechanical Engineering, I aimed for a more human-centred approach to design. This resulted in me pursuing a master's degree in Integrated Product Design. During my first semester of the Master's program, I worked on a Medisign project centred on 3D-printed medicines. This project awakened my interest in designing within a healthcare context.

Therefore, I completed several medisign-related courses during my electives. During the Capita Selecta elective, I was introduced to different topics within the healthcare context. In the Health Systems Transformation elective, I gained insight into designing within a hospital (EMC) setting which involves multiple stakeholders. In Health Psychology, I dived deeper into the psychological aspects of human behaviour related to health.

During this graduation project, I look forward to work closely with healthcare professionals on-site at the EMC. This experience will enable me to further develop my human-centred design approach.

Another important topic that I am going to focus on is sustainability. Since my Bachelor's I had a great interest in this topic. I am aiming to broaden my knowledge more and make the sustainability topic in the project more concrete. Furthermore, I will broaden my competencies by using the Product Journey Map Method. Lastly, this project will be performed individually which will contribute to my personal development as an Industrial Designe