Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences
Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

<table>
<thead>
<tr>
<th><strong>Personal information</strong></th>
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<tbody>
<tr>
<td><strong>Name</strong></td>
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<td><strong>Student number</strong></td>
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<td><strong>Telephone number</strong></td>
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<td><strong>Private e-mail address</strong></td>
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<th><strong>Studio</strong></th>
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<tr>
<td><strong>Name / Theme</strong></td>
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<tr>
<td><strong>Teachers / tutors</strong></td>
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<td><strong>Argumentation of choice of the studio</strong></td>
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<tr>
<th><strong>Graduation project</strong></th>
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<tr>
<td><strong>Title of the graduation project</strong></td>
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<th><strong>Goal</strong></th>
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<td><strong>Location:</strong></td>
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<td><strong>The posed problem,</strong></td>
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How can local waste flows of different functions in an urban environment be used to facilitate a public building? What technique can be used to map the urban metabolism of a specific location?

In the design I aim to combine different waste streams from the surroundings of the Arenapark. These waste streams consist of energy and material. The available waste streams from the surroundings will decide the program of the design, affect the aesthetics, and facilitate the programme.

By first mapping the waste streams and making a profile of the neighbourhood, I aim to visualize the problems and possibilities for combining waste streams in a design. After this, I will try to create synergies by combining the local problems with the available waste streams. The function and programme of the building will depend on the problem and type of waste streams that will be used to design with. Further research has to be done to come up with more possible synergies. For now, the following design assignment can be formulated with the collected data:

**Local problem**
A relatively large group of residents in Amsterdam Zuidoost cope with loneliness and have problems participating in society.

**General objective**
Support residents in participating in the neighbourhood and being part of society.

**Operational objective**
ING Bank and the municipality aim to support local initiatives and start-ups to help the residents interact with the labour market and set up small businesses on their own.

**Supply**
Open grass field, construction waste from an adjacent office building (natural stone, concrete walls, aluminium window frames, etc.), organic waste from offices, and other materials and products from the surroundings.

**Demand**
At the Arenapark there is a big need for a pleasant public space where people can spend time.

**Design assignment ("solution")**
Designing a place where local residents can meet and work on their business ideas. To create a synergy, the surroundings have to be able to profit from the programme as well. Local waste streams can facilitate the initiatives in creating spaces where they can work, or supply the initiatives with materials. In the area there are possibilities to match the demand with the available waste streams. This is also shown in the tool. The tool will be explained in the next paragraph.
## Process

### Method description

<table>
<thead>
<tr>
<th>Research</th>
<th>Method description</th>
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| 1. Start | Cause Problem  
Goal Ambition |
| 2. Study | Literature Case studies  
Location |
| 3. Tool | Create a profile characterization of the location  
Map supply and demand |
| 4. Approach | Analysis of information  
Searching for synergies and symbioses  
What problems can be linked to the supply and demand of the location? |
| 5. Circular elements | Determine program of the design  
Formulate a statement of requirements  
Formulate a concept |
| 6. Design | AreaApark |

In this figure, the method of proceeding from my research to my design is shown. The research is divided into 5 stages. These 5 stages are not distinct steps occurring consecutively. Sometimes I go back and forth to keep reflecting on what I do. Overall it shows my working method. Stage one was finished after P1, with some slight adjustments after this. In stage 2, I conducted a literature review on the circular economy and urban metabolism. Parallel to this I looked into case studies to learn how these projects put the relatively new topics of circular economy and urban metabolism into practice. Furthermore, I chose a location based on a small analysis of Amsterdam. Then it was possible for me to study a specific location. Stage 3 is strongly related to stage 2. Here I made a proposal for a tool to map and visualize the urban metabolism of any given location. For my research, I design this tool using my location as one illustrative case. The literature review and case studies help me to reflect on the tool and adjust it according to research done previously. In this tool, I map the following aspects of my location:

- Characterization in relation to societal issues
- Characterization in relation to economic issues
- Urban functions
- Available waste(streams) - (materials and energy)

To collect these data, I have to deal with some challenges. In urban metabolism studies, a lack of available data poses challenges. A lot of data is not available because it is stored internally in companies. However, previous studies of metabolism make it possible to extrapolate data. Extrapolating data, in combination with interviews, on site observations and educated assumptions make it possible to map the urban metabolism and provide a good preparation for the next stage.

In stage 4, I aim to combine local supply and demand to create synergies and come up with several programmes for the design. I will use the most suitable programme for further research. To find out what synergies are possible, the tool will be used, containing all the necessary information. It is important to note that the process of using the tool is significant in reflecting on it afterwards. This will make it possible to improve the tool and make recommendations for further research.

After deciding what programme I will use for my design, I will formulate a concept and a statement of requirements. This will be the start of the design process.
I consulted and intend to consult the following sources to obtain the necessary data for my research:

- Literature
- Site visits
- Municipal documents
- Online databases
  - Maps.amsterdam.nl
  - Statline.cbs.nl

Literature


Research on urban metabolism and circular economy done by companies and authoritative sources:


Reflection

Relevance
The aim of this research is to show that it is possible to use different waste streams to create something new that will provide advantages for the direct surroundings. As was stated before, the notions of circular economy and urban metabolism are relatively new. As yet, there is no clear method for mapping the urban metabolism, so with this research I hope to contribute to showing possibilities for doing so.

The necessity to make the transition from a linear to a circular economy where waste no longer exists and therefore does not harm the environment, has never been greater. In a first-world country we are used to a certain standard of living that produces a lot of waste and tremendously pollutes the environment. The design has to create awareness to show that waste is not unusable anymore, but that it creates new opportunities, not only for the economy but also for society.

Time planning
No other ECT’s have to be obtained, other than graduating. The scheme can be found on the next page.