MINOR
SMART CITIES – MULTIFUNCTIONAL FLOOD DEFENCES

IN THIS MODULE YOU WILL CREATE AND DESIGN A MULTIFUNCTIONAL FLOOD DEFENCES AS AN INNOVATIVE SOLUTION FOR SMART CITY PLANNING. YOU WILL LEARN IN-DEPTH KNOWLEDGE RELATED TO MFD'S AND APPLY THIS IN TEAMS TO BUILD A PHYSICAL SCALE MODEL.

WHAT IS A HTHT MINOR?

A HTHT-minor fits within the UT profile: High Tech, Human Touch. The minor is offered in English and accessible for both national and international students. The goal of the HTHT-minor is to illuminate specific societal themes for which the UT develops High Tech Human Touch solutions. These solutions are created by conducting high-quality research. Both the form and the content of the minors are High Tech Human Touch (multidisciplinary) and are profiling for the student.

The UT offers most HTHT-minors in a coherent package of 2 (30 EC). There are also HTHT minors of 15 EC that do not belong to a package. You can choose one of these minors and combine this with one minor of a package. If possible, you can even choose 2 minors from different packages.

MINOR INFORMATION

In this module, you learn to design in an interdisciplinary team and learn in-depth knowledge about Multifunctional Flood Defences (MFD). Five state-of-the-art topics essential for MFD design are introduced:

1) **Dynamic use functions:** functions of MFD's need to be analysed to match the final design under different use conditions.
2) **Governance and knowledge management**. Highly complex projects require a strategic plan to implement and communicate your innovative design to stakeholders.
3) **Spatial subsoil Planning:** integrated constructions, such as houses or parking lots require analysis of suitable building locations.
4) **Building with Nature:** novel concepts, such as vegetated foreshores can be applied to combine nature and flood safety.
5) **Multifunctional Flood Safety** is changing the methods for assessing flood safety. Novel methods are introduced to ensure safety against flooding.

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Future flood defences integrate many functions, users and innovations, resulting in highly complex engineering and management challenges.

You will go in-depth into one of these topics, while integrating your results in multidisciplinary teams. The final product of this module is a physical scale model of a MFD for the study area.

Module organization, topics, learning objectives and assessment.

The study area is divided into sections. Each team consists of five students and is responsible for the design of one of the sections of the study area. Each team member works as an expert on one of the five topics and acquires in-depth knowledge. The experts from the different teams work together to exchange knowledge and learn from each other under supervision during expert meetings. During plenary sessions, the designs and requirements are exchanged between the teams. The DesignLab will be used as a central location for lectures, exchanges, project work and physical model construction. Planning of the design and work process is essential in this module: for yourself, within your team and between the teams. This will be your own responsibility.
The module is divided into 4 consecutive parts:

Part I: The first two weeks of the module are used to introduce the study area and the topics in (guest) lectures. Students define their design concepts (workshop) and preliminary design requirements, which are discussed in a team session and a plenary session at the end of the second week.

Part II: In weeks 3-5, the designs are worked out. The students work both individually on their topic as experts and in teams on the project. Supervised meetings are scheduled to exchange knowledge, stimulate integration and monitor the progress. Several workshops are organized to guide the design. This part end with a plenary presentation of the design alternatives.

Part III: In weeks 6-8, the preferred alternative is worked out in detail and matched with the designs of the neighbouring sections. Here, you work as a team towards a final design that is sufficiently detailed to build into a scale model. Individually, you are responsible that your topic is suitable to include in the final design for your teams section. As a team you are responsible that your design matches the other team designs, both technically, functionally and logistically. Teaching staff is available with expertise on the different topics. Also, plenary sessions are scheduled to discuss challenges and stimulate cooperation towards the final design.

Part IV: The last two weeks of the module are dedicated to finalize the integration , visualization and evaluation in the form of a physical model of the final designs and a final pitch to explain and sell your team's design. You will work in the DesignLab workshops to build the physical scale model.

Learning goals

Detailed Learning Goals can be found in the Osiris Course Catalogue. The final grade is determined by a team report (10%), individual report (30%), team report (40%), final team presentation (20%) and individual reflection (sufficient).

MORE INFORMATION

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