

- 2 Describe systemic relations between parts, and their behaviors over time (*systems-thinking*).
- 3 Continuously adjust the design process, by iterating between observing reality and taking reality-oriented (design) actions in order to steer the context of study in a certain direction. Can question the system boundaries using tool from the second-order cybernetics (*cybernetics*).
- 4 Can design integrated socio-technical systems (*systems-oriented design and open-ended design*).
- 5 Through Open-ended Design outcomes engage with multiple (non-)human stakeholders, *distributing* control and ownership of the designed outcome (*self-sustainability*).
- 6 Integrate in the design project different aspects of sustainability, both in their assessments (post-factum) and design (ante-factum) (*sustainability*).

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, Independent work

Extra information on the teaching methods

The course is project-based and students are asked to work in teams. The theory is passed to the class through lectures and guided self-study, in the second case an in-class discussion takes place. All given theory should be integrated in the design project.

- Lectures in English
- Guided self-study: guidance in English or Dutch according to the preference of the students, reporting of the results in English
- Project: coaching in English or Dutch according to the preference of the students, assignment and reporting in English

Study material

Type: Slides

Name: Slides

Indicative price: Free or paid by faculty

Optional: no

Available on Ufora : Yes

References

- Braun, W. (2002). The System Archetypes. *The Systems Modeling Workbook*, 1–26. Retrieved from <https://kumu.io/stw/systems-kele#systems-archetypes>.
- Dubberly, H., & Pangaro, P. (2015). Cybernetics and Design: Conversations for Action. *Cybernetics and Human Knowing*, 22(3), 73–82.
- Kim, D. H. (1999). Introduction to Systems Thinking. *Pegasus Communications, Inc.*, 1–21.
- "[Working with wicked problems](#)"

Course content-related study coaching

Weekly consults are given to the teams, with the goal of coaching them in the methodology or their design process.

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Peer and/or self assessment, Assignment

Examination methods in case of periodic assessment during the second examination period

Assignment

Examination methods in case of permanent assessment

Participation, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is not possible

Extra information on the examination methods

- **NPE** (50%) is based on:
 - Attendance and active participation to in-class activities.
 - Attendance and active participation to consults.
 - The design process followed by the students, which must be reported on a "continuous documentation" on UFORA.
 - Meeting reports (both among students, teachers, and other stakeholders).
- **NPE** (10%) peer evaluation.
- **PE** (40%) is based on:
 - Presentation in which the link between theory and practice is evaluated based on the final competencies enlisted in the course.
 - The PE is a **team evaluation**, but differences between students can be made based on the Q&A.

Calculation of the examination mark

NPE: 50%

NPE (peer evaluation): 10%

PE (final presentation): 40%