

Systems and Scenario Thinking

Organising institution:

KU Leuven

Faculty/Department/Programme/External partners:

Faculty of Bioscience Engineering
Master of Bioscience Engineering

Abstract:

In this course they receive theoretical background information on systems thinking and work with a number of applications.

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Description:

Prof. Erik Mathijs is full professor at the Faculty of Bioscience Engineering of KU Leuven. He teaches, among other things, Systems and Scenario Thinking, a course within the minor 'Leadership in a globalising context', an optional package of 20 credits which Bioscience Engineering students can take up during their Master's training. In this course they receive theoretical background information on systems thinking and work with a number of applications.

The following training objectives are set:

- Students are introduced to the basics of systems and scenario thinking.
- Students are acquainted with and can use the terminology related to systems and scenario thinking.
- Students have an overview of the systems analysis and scenario development techniques.
- Students are able to interpret, use, and critically evaluate systems analyses and future scenarios.
- Students are able to design simple system diagrams.
- Students understand the link between systems thinking and scenario building.
- Students are able to set up, implement, analyse, and communicate an explorative scenario exercise using a deductive approach.

During the theoretical classes they are taught the following content with regard to systems thinking to achieve the aforementioned goals:

- System thinking basics
- Hard systems analysis: stocks, flows, business dynamics, system archetypes
- Soft systems analysis: influence diagrams, participatory approaches
- Systems analysis and scenario building

During the practical lessons they are taught the following content to achieve the aforementioned goals:

Students learn to design simple system diagrams using both hard and soft systems analysis by carrying out the following activities:

- To get acquainted with either the Vensim or Stella software to design systems diagrams.
- To build a hard systems model of a complex socio-technical problem.
- To create a set of soft system diagrams that address various problem settings (technical, organizational, social, socio-technical, etc.).
- To write a short individual paper on a specific systems problem chosen by the student.