

ENG-422

**Optional project in Systems engineering**

Profs divers \*

<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Systems Engineering minor	E, H	Opt.

Language of teaching	English
Credits	8
Session	Winter, Summer
Semester	Fall
Exam	During the semester
Workload	240h
Weeks	14
<b>Hours</b>	<b>8 weekly</b>
Project	8 weekly
<b>Number of positions</b>	

**Summary**

The optional project in systems engineering aims to guide students through the experience of undertaking a complex design or analysis project from a systems perspective.

**Content**

The project will focus on identification, optimization, and risk management in complex engineering projects. It addresses a real-world analysis or design problem by combining tools from disciplines such as computer science, computational biology, control systems, industrial engineering, information systems, organization science, operations research, and systems engineering. The student will learn to work with systems analysis methods so as to describe and optimize a system and its inputs in view of achieving measurable performance targets. The overall purpose of the project is to stimulate holistic thinking and exploration of systems analysis methods to address a relevant human endeavor.

**Keywords**

- control engineering
- energy and process systems engineering
- engineering economic systems
- industrial engineering
- network systems engineering
- operations research
- space systems engineering
- sustainable systems
- systems biology

**Learning Prerequisites****Recommended courses**

ENG-421 - Fundamentals in Systems Engineering

**Learning Outcomes**

By the end of the course, the student must be able to:

- Appreciate the benefits of a holistic and interdisciplinary approach to systems engineering
- Manage and comprehend complexity in systems

- Develop and utilize mathematical models and algorithms to solve real complex systems problems

### **Transversal skills**

- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Set objectives and design an action plan to reach those objectives.
- Communicate effectively with professionals from other disciplines.
- Make an oral presentation.

### **Assessment methods**

Continuous assessment or written report: to be determined by the project supervisor