

Course syllabus

Grunderna för beslutsfattande och beslutsanalys Foundations of Decision Making and Decision Analysis

VRSA10, 9 credits, G1 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED BI/RH

Date of Decision: 2023-04-12

General Information

Main field: Technology.

Compulsory for: R2

Language of instruction: The course will be given in Swedish

Aim

The aim of the course is for the students to receive basic knowledge about decision making and decision analysis. In addition, the course also aims at providing the students with knowledge of how to use tools for decision analysis in order to create a basis for a decision. Finally, the course also aims at providing a basis for further studies in the area of risk, safety and crisis management.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to explain central concepts in a decision analysis.
- be able to explain how humans make decisions under uncertainty and describe important factors that influence such decisions.
- be able to describe different methods used in decision analysis and explain the method's strengths and weaknesses.

- be able to explain the central principles of decision analysis and how they influence a decision analysis.

Competences and skills

For a passing grade the student must

- demonstrate the ability to critically, systematically, and independently use concepts, methods and tools from the field of decision analysis.
- demonstrate the ability to collect information concerning uncertainty and values, and use them in a decision analysis.
- demonstrate the ability to orally present and explain a decision analysis and discuss the arguments supporting the results of the analysis.

Judgement and approach

For a passing grade the student must

- demonstrate how to evaluate different decision alternatives using a decision analysis.
- demonstrate insight into the possibilities and limitations of decision analyses.

Contents

The course consists of six parts: Introduction to decision-making and decision analysis, Principles of decision-making, How to describe uncertainty, How to collect evidence to support decision-making, How to describe values, How to conduct a decision analysis.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: The performance appraisal is based on the results from a written exam and group assignments. The final grade is given by a combination of the results on the written exam and the group assignment. Presence at mandatory seminars are required.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0123. **Name:** Written Assignment.

Credits: 6. **Grading scale:** TH. **Assessment:** Approved written exam. **Contents:** Basic knowledge about decision making and risk, Problem solving using tools related to decision analysis.

Code: 0223. **Name:** Group Assignment.

Credits: 2,5. **Grading scale:** UG. **Assessment:** Approved group assignment. **Contents:** A group assignment shall be completed during the course. The assignment involves conducting a decision analysis. Consultations supervision for the assignment will be available. The group assignment shall be presented in a written report.

Code: 0323. **Name:** Seminars.

Credits: 0,5. **Grading scale:** UG. **Assessment:** Approved participation at seminars. **Contents:** The students shall present and discuss different types of decision analyses.

Admission

Assumed prior knowledge: Introduction to studies in risk, safety and crisis management (VBRA05)

The number of participants is limited to: No

Reading list

- Howard, R. A. & Abbas, A. E.: Foundations of Decision Analysis. Pearson., 2016.
- Tehler, H.: Introduktion till risk och riskhantering, kapitel 9. Studentlitteratur. , 2023.
- Lennerfors, T. T.: Etik för ingenjörer. Studentlitteratur. , 2019.

Contact and other information

Course coordinator: Henrik Tehler, henrik.tehler@risk.lth.se

Further information: Active participation in group work is mandatory. Each group member must be able to present and answer for the contents of the joint report. A student who does not meet the demands of active participation, or disregard their obligations, can be replaced to another group or failed by the examiner.