

## Risk Assessment (E900304)

Course size (nominal values; actual values may depend on programme)

Credits 8.0      Study time 240 h      Contact hrs 74.0 h

Course offerings in academic year 2019-2020

A (semester 2)      English

Lecturers in academic year 2019-2020

Frantzich, Håkan	LUND01 lecturer-in-charge
Abrahamsson, Marcus	LUND01 co-lecturer
Johansson, Jonas	LUND01 co-lecturer
Månsson, Peter	LUND01 co-lecturer
Svegrup, Linn	LUND01 co-lecturer

Offered in the following programmes in 2019-2020

	crdts	offering
<a href="#">International Master of Science in Fire Safety Engineering</a>	8	A

Teaching languages

English

Keywords

Risk Analysis, Risk Assessment, Risk Management, Uncertainty, Sensitivity, Methods

Position of the course

Introduction to risk assessment in a safety context (not only fire safety). Provide a broad basis for performing and using risk assessments for risk related decisions concerning safety issues.

Contents

The overriding elements in the course consist of: Introduction to the field of risk assessment and management, the concept of risk, risk assessment methodology within the field of fire safety engineering, uncertainty analysis, risk measures and risk evaluation. During the course, a number of individual home assignments, as well as a group project assignment, are to be completed. The project assignment contains relevant issues associated to the engineering field. The project assignment is to be reported in written form and also orally.

Initial competences

Calculus in Several Variables, Statistics with Decision Theory or equivalent.

Final competences

The aim of the course is that, in combination with earlier courses, the students gain the capability of utilizing tools for risk assessment and how they can support decisions in the area of risk management and especially in the area of fire safety engineering. Furthermore, the course is aimed at providing a foundation for continuing studies in the risk management field.

### *Knowledge and understanding*

For a passing grade the student must:

- be able to describe different perspectives of the concept of risk and be aware of the implications of adopting the different perspectives in a risk management context.
- be able to describe risk assessment methods, their areas of applicability, especially in the area of fire safety engineering and their strengths and weaknesses.
- be able to describe relevant risk measures, their limitations and strengths and how they can be applied to evaluate risks.
- be able to describe different types of uncertainty and how they can be addressed and handled in a risk assessment context.

- be able to describe how input from risk assessments can be utilised as a basis for decision-making and emergency preparedness planning.
- demonstrate an understanding of various sources of information that can be used and the challenges in using them as input to risk assessments.

#### *Skills and abilities*

For a passing grade the student must:

- be able to utilize, the concepts, methods and tools used in risk assessment, in new situations and in situations related to fire safety.
- be able to evaluate the contents of existing risk assessments.
- be able to report, both orally and in writing, and discuss the implications of a performed risk assessment in a way understandable to persons with different knowledge backgrounds.
- be able to utilise material in scientific publications relevant for risk assessment.
- be able to utilise methods and tools for basic decision problems concerning risks.

#### *Judgement and approach*

For a passing grade the student must:

- be able to critically reflect on the benefits and limitations of risk assessments as an input to decision-making.
- be able to reflect upon ethical and subjective dimensions of risk assessments.

#### Conditions for credit contract

This course unit cannot be taken via a credit contract

#### Conditions for exam contract

This course unit cannot be taken via an exam contract

#### Teaching methods

Group work, lecture, seminar, self-reliant study activities

#### Extra information on the teaching methods

Lectures, individual assignment, project assignment, calculation seminars, literature seminars

#### Learning materials and price

All material needed can be found digitally on the course web (for free).

#### References

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- CCPS (2000b). "Chapter 4: Risk measures & 8.1 Case study". *Guidelines for Chemical Process Quantitative Risk Analysis*. New York, Center for Chemical Process Safety, American Institute of Chemical Engineers.
- Garrick, B. J. (1998), Technological stigmatism, Risk perception and Truth, *Reliability Engineering and System Safety*, 59: 41-45.
- Pidgeon, N. (1998). "Risk assessment, risk values and the social science programme: why we do need risk perception research" *Reliability Engineering & System Safety* 59: 5-15.
- Slovic, P. (2001). "The Risk Game" *Journal of Hazardous Materials* 86: 17-24.
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- INSTA 950 (2014). Fire Safety Engineering – Comparative method to verify fire safety design in buildings. Swedish standards institute.
- Johnson, D., & Levin, S. (2009). The tragedy of cognition: psychological biases and environmental inaction. Current science, 97(11), 1593-1603.

#### Course content-related study coaching

##### Evaluation methods

end-of-term evaluation and continuous assessment

##### Examination methods in case of periodic evaluation during the first examination period

Oral examination

##### Examination methods in case of periodic evaluation during the second examination period

Oral examination

##### Examination methods in case of permanent evaluation

Skills test

##### Possibilities of retake in case of permanent evaluation

examination during the second examination period is not possible

##### Extra information on the examination methods

The examination of the course consists of three parts; home assignments, one project assignment and a written exam. Three home assignments have to be completed (an individually written paper, a group assignment on risk identification and finally an uncertainty analysis performed individually). The home assignments are intended to highlight specific aspects related to risk and each assignment shall be presented as a written mini-report or a shorter paper. In the first paper the students must show an understanding of and an ability to summarize the most relevant parts of a number of scientific papers. They should also be able to critically reflect upon the material. A project assignment is to be completed where the students show an ability to apply and make a synthesis of the knowledge gained during the course. The project assignment is to be reported in written form and also orally.

##### Calculation of the examination mark

10% project, 20% home assignments, 70% written exam.