

## Course Syllabus

### Risk Analysis 7.5 Credits\*, Second Cycle

#### Learning Outcomes

The main objective of this course is that students shall develop knowledge about risk-related phenomena and processes with the goal of being able to deal with risks in situations that are general and specific. A fundamental element in risk analysis is formal modeling with statistical analysis combined with experience and insight from various subject fields. The course aims to develop a statistical and probabilistic foundation and in such a way develop students' ability to apply formal risk modelling, which in turn can be used in decision-making in times of uncertainty.

Upon completion of the course, students shall be able to:

- apply the foundations of probability theory, random variables, statistical distributions, and conditional probability.
- apply statistical estimation techniques of probabilities, risks, and other parameters.
- describe the scientific foundation for quantitative risk management.
- identify different types of uncertainty and how they can be addressed and handled in a risk analysis and evaluation context.
- perform scenario analysis

#### Course Content

The course is theoretical and contains elements from probability theory and statistics. The topics included are random variables and distributions, conditional probability, and conditional distributions. Stochastic processes will be introduced. Statistical estimation techniques are presented in combination with associated inference. This theoretical foundation carries over to the domain of risk analysis, where its scientific principles are introduced. Central risk analysis techniques, such as simulations and scenario analysis, are tried out in a laboratory setting.

#### Assessment

Written examination 4 credits, assignments that are examined individually at seminars 3.5 credits.

#### Forms of Study

Lectures, group work and lab work, and mandatory seminars.

**Grades**

The Swedish grades U - G.

**Prerequisites**

Bachelor's degree in Statistics, Economics, Business Administration, Computer Science, Information Science or Informatics comprising at least 180 credits and English 6

**Subject:**

Microdata Analysis

**Group of Subjects:**

Other Interdisciplinary Studies

**Disciplinary Domain:**

Natural Science, 100%

**This course can be included in the following main field(s) of study:**

1. Microdata Analysis

**Progression Indicator within (each) main field of study:**

1. A1N

**Approved:**

Approved 18 April 2019

Valid from 21 June 2019