# HM2004 Practical Statistics 7.5 credits

**Practical Statistics**

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

Course syllabus for HM2004 valid from Autumn 2010

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Mathematics

## Specific prerequisites

Having basic knowledge in Mathematical Statistics and be eligible to the programme TPLVM

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

The aim is to give the participants the ability to use statistics and related areas in an advanced form for predictions and risk analysis as input for decisions.

The participant is expected after the study course to be able to:

- Select proper distributions for the stochastic simulation from available data
- Make stochastic simulation models using Monte Carlo technique
- Explain what the simulation result is revealing about risk and opportunity
- Use the most common qualitative risk analysis methods as a complement to the numerical
- Make a complete risk analysis using both qualitative and quantitative data
- Use statistical design of experiments to evaluate multi-factorial dependencies in the risk analysis and the predictions

Write risk analysis reports which also laymen can

## Course contents

The largest part is learning how to use Stochastic Simulation for risk analysis and predictions. The risk methods like Fault Tree, Failure Mode Effect Analysis are taught as well as Two-level multi-factor Design of Experiments using statistical methods and an orthogonal matrix.

A vital part of the content is the translation of collected data into the possible statistical distribution to be used in the stochastic simulation.

## Course literature

Schuyler, John (2001 or later), Risk and Decision Analysis in Projects, PMI

Handouts and compendium in Monte Carlo technique

## Examination

- ÖVN1 - Group Tasks, 4.5 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

TEN1 – Written examination 3 ECTS credits (A – E, Fx and F)

ÖVN1 – Group Assignments 4,5 ECTS credits (P, F)

Both TEN1 and ÖVN1 must be finished and closed to get the final grade which is dependant on the quality of both assignments and the written examination.

## Other requirements for final grade

Group tasks as computer-based problem solving using Excel and @RISK. 4,5 cr.
Written examination 3 cr.
Marks:
A-F in accordance with the ordinary system of KTH

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.