Syllabus for

Academic year 2011/2012 >

TMS062 - Mathematical statistics

Syllabus adopted 2011-02-22 by Head of Programme (or corresponding)
Owner: TKMAS
7,5 Credits
Grading: TH - Five, Four, Three, Not passed
Education cycle: First-cycle
Major subject: Mathematics
Department: 11 - MATHEMATICAL SCIENCES

Teaching language: English

Credit distribution

Course module				Sp1	Sp2	Sp3	Sp4	Summer course	No Sp	Examination dates		
0111	Examination	6,0 c	Grading: TH			6,0 c				Tue 22/05-2012 am M,	Mon 09/01-2012 am M,	Tue 21/08-2012 am V
0211	Design exercise	1,5 c	Grading: UG			1,5 c						

In programs
TKDES INDUSTRIAL DESIGN ENGINEERING, Year 3 (elective)
TKMAS MECHANICAL ENGINEERING, Year 3 (compulsory)

Examiner:
Professor Sergey Zuyev

Replaces
TMS061 Mathematical statistics

Course evaluation:
https://document.chalmers.se/doc/2020831086

Go to course homepage

Eligibility:
For single subject courses within Chalmers programmes the same eligibility requirements apply, as to the programme(s) that the course is part of.

Course specific prerequisites
Basic courses in mathematical analysis and linear algebra.

Aim
The course covers basic Probability theory and statistics with
emphases on concepts and methods of importance for technology.
The course also introduces elements of Experimental design.

Learning outcomes *(after completion of the course the student should be able to)*
* identify and describe problems arising in technical studies for which the treatment requires use of fundamental concepts and methods from Probability theory and Mathematical Statistics,
* apply basic probabilistic and/or theoretical or computational statistical methods in problem solving

Content
* Probability:
o Probability measure, events, basic combinatorics.
o Random variables, expectation and variance.
o Main distributions: Binomial, Poisson, Exponential, Normal.
o Central Limit Theorem and Poisson Theorem and their applications.
* Statistics:
o Descriptive statistics. Sample mean and variance.
o Estimates: point and interval, sampling.

o Hypotheses testing: one and two-sample tests.
o Regression and correlation, multiple regression.

Organisation

The teaching of the course is organised around the following components: lectures on the theory, assisted discussion sessions and computer lab work on the basis of the web-based Virtual Learning Environment (VLE). In addition to this, a practical Statistical project will be performed in small groups of 3-5 students. The project mark of each individual student will be the group mark weighed according to the peer review system, so not engaging students are much more likely not to get a passing mark for the group project work even if the overall project mark is passable.

Literature

The main source is the Study Guide which is available for browsing and download as a whole or by parts from within the VLE. Also recommended but not compulsory:

Douglas C. Montgomery and George C. Runger. Applied Statistics and Probability for Engineers. Wiley, 2007.

Examination

The grade for the course is based on the results of three tests performed in weeks 14, 18 and 20 and the final examination on the 24th of May 2011. Students successfully completed the tests are exempt from the final examination. A pass mark in the project is also necessary in order to be credited for the course. Students who have not passed the exam or have not completed the project in May will be asked to take the re-sit examination on August 18th 2011 and/or submit the outstanding project, respectively.