SYLLABUS

Applied Multivariate Data Analysis 7.5 credits W7001M

Tillämpad Multivariat Dataanalys

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2020-02-14

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LULEÅ TEKNISKA UNIVERSITET

Applied Multivariate Data Analysis 7.5 credits W7001M

Tillämpad Multivariat Dataanalys

Second cycle, W7001M

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Matematisk statistik	Mathematical Statistics

Entry requirements

Selection

The selection is based on 30-285 credits

Course Aim

After finished the course the student will be able to:

- Summarize and analyze data with different level of complexity and be able to choose and apply different statistical/analytical methods depending on the aim of a study. Focus will be on multivariate projection methods.

- Judge when and if the methods are suitable to use based on knowledge about underlying assumptions, drawbacks and advantages of the different methods.

- Use statistical programs for planning and designing experiments and for processing and analyzing data of different complexity.

- Write reports and orally present the results of multivariate data analysis.

Contents

When working in the wood industry or in the academy sector it is of great advantage to have skills in handling and analyzing measured data and being able to choose and use statistical methods. Thus, in this course the student will learn how to use some statistical methods and also receive knowledge of many important control measures that is used in multivariate data analysis. The content of the course are:

Basic statistics and concepts, Hypothesis testing, Confidence of interval, Linear regression, Principal Component Analysis, Projection to Latent Structures and Design of experiments

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.

The student is responsible for his/her own knowledge building and will work both alone and with other students. Literature, study guide and lessons introduce different issues that will be applied and examined at laboratory assignments. The theory lessons can be pre-recorded. Guidance by supervisors is given regularly, individually or in group.

The laboratory assignments are self-instructional and are the core in the learning process. Many of the data sets used originate from the research in wood technology. In this way the student will get insight into the nature of the wood research area.

After each section, students send questions raised on literature, theory lessons and laborations to the supervisors. To enhance the knowledge building the supervisors distribute the answers/explanations to all students in the course.

The last section consists of a student project where the student work alone or in pair. Each student analyzes a dataset from the wood research area and presents the results in a report and an oral presentation.

All material, except the main book, will be available at a web based learning platform.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

The course will examined by:

- Laboration assignments.
- A student project.
- A written exam (divided on each section).

All these parts will be graded with differentiated grades.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Laboratory Work 1	G U 3 4 5	1.5	Mandatory	A12	
0002	Laboratory Work 2	G U 3 4 5	1.5	Mandatory	A12	
0003	Laboratory Work 3	G U 3 4 5	1.5	Mandatory	A12	
0004	Laboratory Work 4	G U 3 4 5	1.5	Mandatory	A12	
0005	Project	G U 3 4 5	1.5	Mandatory	A12	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Niklas Lehto 2020-02-14

Syllabus established

by Dept. TVM Mats Näsström 2012-03-14