

## **Course curriculum for STAN41 Multivariate Analysis**

### **1. General information**

1. Name: Multivariate Analysis
2. Level: Advanced (A1N)
3. Credit points: 7.5; ECTS-credits: 7.5
4. Approved by the Board of Directors at the Department of Statistics, School of Economics and Management, Lund University, December 19, 2011.

### **2. Course placement within the educational system**

1. Subject: Statistics
2. This is an advanced level course and it is mandatory in the master's programme in Statistics.
3. The course is offered in English.

### **3. Learning outcomes**

On a general level the students should be able to understand the concept of analysing multivariate data. They should be familiar with a basic minimum level of matrix competency and with general aspects of handling multivariate data.

On successful completion of the course the student

- will appreciate the range of multivariate techniques available,
- will be able to summarize and interpret multivariate data,
- will have an understanding of the link between multivariate techniques and corresponding univariate techniques,
- will be able to use multivariate techniques appropriately, undertake multivariate hypothesis tests, and draw appropriate conclusions.

### **4. Course content**

The central theme of the course is the multivariate general linear model, and statistical methods include multivariate hypothesis testing, principal component analysis, factor analysis, discriminant analysis, canonical correlation analysis, and multivariate analysis of variance and covariance and cluster analysis. The course covers theoretical, computational, and interpretive issues of multivariate techniques using computer solution.

### **5. Teaching and assessment**

The course is designed as a series of lectures, exercises and laboratory work with reports. Grading is based on individual performance, via written assignments, oral presentation as well as group activities.

#### *Note*

The university views plagiarism very seriously, and will take disciplinary actions against students for any kind of attempted malpractice in examinations and assessments. Plagiarism is considered to be a very serious academic offence. The penalty that may be imposed for this, and other unfair practice in examinations or assessments, includes suspension from the University for a specified period.

### **6. Grading scale**

At the School of Economics and Management grades are awarded in accordance with a criterion-based grading scale A-F:

A: Excellent  
 B: Very good  
 C: Good  
 D: Satisfactory  
 E: Sufficient  
 F: Fail

Students have to receive a grade of E or higher in order to pass a course.

<b>GRADE</b>	<b>CHARACTERISTICS</b>	<b>POINTS</b>	<b>CRITERIA</b>
A	Excellent	100-85	A distinguished result that is excellent with regard to the following aspects – theoretical depth, practical relevance, analytical ability and independent thought.
B	Very good	84-75	A very good result with regard to the above mentioned aspects.
C	Good	74-65	The result is of a good standard with regard to the above mentioned aspects and lives up to expectations.
D	Satisfactory	64-55	The result is of a satisfactory standard with regard to the above mentioned aspects and lives up to expectations.
E	Sufficient	54-50	The result satisfies the minimum requirements with regard to the above mentioned aspects, but not more.
F	Fail	49-0	The result does not meet the minimum requirements with regard to the above mentioned aspects.

### **7. Prerequisites**

General prerequisites for the masters programme in Statistics.

### **8. Literature**

See separate document.

***Literature***

Johnson, R.A., Wichern, D.W.: Applied Multivariate Statistical Analysis, Prentice-Hall, New Jersey, 2002.