

## **Course curriculum for STAN42 Statistical Computing**

### **1. General information**

1. Name: Statistical Computing
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 a master level course and is mandatory in the master's programme in Statistics.
3. The course is offered in English.

### **3. Learning outcomes**

Students should be able to understand the main tasks that are carried out as statistical software is developed, such as analysis, design, programming and evaluation. The ability to manipulate abstract concepts and use them to find solutions to practical problems is essential.

On successful completion of the course students

- will have met a wide range of data sets, and understood how models may be devised for them.
- will have appreciated how likelihood-based procedures operate in unusual practical situations
- will have experience of modern statistical methods that make use of the power of modern computers, especially those using simulation methods and bootstrap.

### **4. Course content**

A central theme of the course is algorithms and basic programming with emphasis on numerical linear algebra, numerical optimization and numerical integration. Emphasis is also on random number generation, simulation methods and bootstrap.

### **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***

Chapman S. J., MATLAB Programming for Engineers.