Course curriculum for STAE03 Business Analytics

1. **General information**

1. Name: Business Analytics
2. Level: Basic (G1F)
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 on February 23, 2015.

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

1. Subject: Statistics
2. Undergraduate level
3. Language of instruction: English

3. **Learning outcomes**

On a general level the students should be able to understand and identify the challenges in analyzing massive data that are difficult to process without modern computational tools, challenges often described as the Big Data problem. They will be able to conceptualize a data mining solution to a practical problem involving complex, big data sets. The focus will be on economics and business oriented applications. The student will also become familiar with basic statistical techniques useful for drawing patterns from data, which help improving decision making. Modern statistical methods of processing the data to obtain useful information will be illustrated using numerical and graphical tools.

4. **Course content**

Analytics refers to our ability to collect and use data to generate insights for fact-based decision-making. Every day our world is filled with new data, with every data input adding new information to the preceding ones. Google and Amazon, among many, are providing us with huge databases that record our preferences, a process made possible through the use of statistical learning. In this course we will explore challenges dealing with Big Data and learn about several statistical methods that are commonly used to investigate business-related problems.

The course is designed for students with basic knowledge of statistics, and the content of the course will be of practical nature. It covers methods for data mining and business analytics and their usage in making strategic business decisions. It will concentrate on the modeling aspects of data mining and will provide students with a set of tools for better understanding key methods of, for example, data exploration, visualization, classification, prediction, and clustering. The course starts with data visualization and getting to know features hidden in the data. Over time we will gain familiarity with traditional regression models and hypothesis testing and practice using them with real data. This introduction to traditional approaches will then lead to the discussion of more advanced methods such as, discriminant analysis, classification and clustering methods, which are useful in finding patterns hidden in the data. During the course, we deal with various types of data such as, categorical data, time series,
text data, and network data, among others. The fundamentals of building suitable models are discussed. Illustrations are carried out using the statistical package R.

Students are required to work on solving business-related projects to practice applying the methods discussed and utilizing existing software tools. Classes take three forms: lectures, tutorials and lab projects. Discussions will enable students to share and compare ideas with each other and to receive specific guidance from the instructors. Efforts will be made to help students formulate real-world problems into mathematical models so that suitable algorithms can be applied with consideration to computational constraints.

5. Teaching and assessment
The course is designed as a series of lectures, tutorials, and lab sessions with reports. Grading is based on individual performance, via written assignments and a final computer based exam.

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

<table>
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<tr>
<th>GRADING</th>
<th>CHARACTERISTIC</th>
<th>POINTS</th>
<th>CRITERIA</th>
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<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>100-85</td>
<td>A distinguished result that is excellent with regard to the following aspects – theoretical depth, practical relevance, analytical ability and independent thought.</td>
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<tr>
<td>B</td>
<td>Very good</td>
<td>84-75</td>
<td>A very good result with regard to the above mentioned aspects.</td>
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<tr>
<td>C</td>
<td>Good</td>
<td>74-65</td>
<td>The result is of a good standard with regard to the above mentioned aspects and lives up to expectations.</td>
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<tr>
<td>D</td>
<td>Satisfactory</td>
<td>64-55</td>
<td>The result is of a satisfactory standard</td>
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with regard to the above mentioned aspects and lives up to expectations.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Score</th>
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<tr>
<td>E</td>
<td>Sufficient</td>
<td>54-50</td>
<td>The result satisfies the minimum requirements with regard to the above mentioned aspects, but not more.</td>
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<tr>
<td>F</td>
<td>Fail</td>
<td>49-0</td>
<td>The result does not meet the minimum requirements with regard to the above mentioned aspects.</td>
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7. Prerequisites

Introductory course in statistics.

8. Literature