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| <p>Module title, ECTS credits (and possibly STADS code)</p> <p><i>Data Analysis and Statistics</i></p> <p>10 ECTS</p> |
| <p>Location</p> <p>4th semester</p> |
| <p>Module coordinator</p> <p>Associate Professor <i>John Vestergaard Olsen</i> johnvo@btech.au.dk</p> |
| <p>Course teachers</p> <p>Associate Professor <i>John Vestergaard Olsen</i> johnvo@btech.au.dk</p> <p>Assistant Professor <i>Eun Kyung Park</i> eunkyung@business.aau.dk</p> |
| <p>Type and language</p> <p><i>English</i></p> |
| <p>Objectives</p> <p>Knowledge</p> <ul style="list-style-type: none"> - Theoretical statistics, including descriptive statistics, probability theory, distributions, samples, regression analysis, uncertainty and interpretation of one's own and others results. - Knowledge about applied statistics. The students get an introduction on to how formulate and conduct quantitative analyses themselves. Among other things, this involves knowledge on how to choose models and operationalize research questions and variables related to concrete problems within business economics. - Knowledge of statistical software for conducting statistical analyses. <p>Skills</p> <p>The statistical model concept is introduced, as to make the students capable of conducting quantitative analyses themselves. This concerns the ability to critically select and process data, apply descriptive statistics, construct and work with simple regression models, and critically interpret results and evaluate analyses based on these models. The students can use SPSS for quantitative analyses.</p> <p>Competences</p> <ul style="list-style-type: none"> - Being able to identify, formulate and analyse problems within business economics using quantitative analyses. - Being able to critically assess the method and available data. - Being able to critically interpret and evaluate results of quantitative analyses. |
| <p>Academic content and conjunction with other modules/semesters</p> <p>The course in Statistics and data analysis includes descriptive statistics, probability theory, stochastic variables and their distributions, samples, estimation, hypothesis testing and comparison of two populations, analysis of variance (ANOVA), simple and multiple regression analysis, and logistic regression. These topics are first presented theoretically, Then, these skills are practised through exercises.</p> <p>In addition, the above is supplemented by a series of lectures focusing on how statistics might</p> |

be applied to solve problems within business economics. The themes/problems for this part focus on the interactions between companies and their environment. These lectures in applied statistics are supplemented by two guest lectures by local companies.

The course is the basis of the course in market analysis, which focuses on quantitative method.

Scope and expected performance

23 2-hours lectures + 22 2-hour exercises. During the exercises, students will have time to work with the 5 exam exercises. The exercises also include more traditional exercises based on the course text book.

See Moodle for a detailed description of the individual lectures and exercises.

10 ECTS correspond to 270 hours of teaching workload to be allocated as follows:

| Activity | No. of hours |
|-----------------------------------|---------------------|
| 23 lectures | 46 |
| 22 exercise sessions | 44 |
| Preparation for lectures and exam | 180 |

Participants

4th semester EBA students and possibly Top-up students

Prerequisites for participation

The students are required to have mathematical skills corresponding to the High school graduation level B.

Module activities (course sessions etc.)

Lecture 1: Introduction and descriptive statistics (JVO)

- Exercises for lecture 1, including introduction to SPSS (JVO)

Lecture 2: Introduction and descriptive statistics (JVO)

- Exercises for lecture 2, including introduction to SPSS (JVO)

Lecture 3: Application of descriptive statistics 1 (EKP)

Lecture 4: Probability theory (JVO)

- Exercises for lecture 4 (JVO)

Lecture 5: Probability theory (JVO)

- Exercises for lecture. 5 (JVO)

Lecture 6: Estimation and confidence intervals (JVO)

- Exercises for lecture 6 (JVO)

Lecture 7: Guest lecture by representative from NEAS A/S

- Exercises for lecture. 6, continued (JVO)

Lecture 8: Hypotheses testing (JVO)

- Exercises for lecture. 8 (JVO)

Lecture 9: Comparison of 2 groups (JVO)

- Exercises for lecture 9 (JVO)

Lecture 10: Test and confidence intervals for variances (JVO)

- Exercises: Exam exercise 1 (JVO)

Lecture 11: Guest lecture by representative from Jysk Analyse A/S

- Exercises: Exam exercise 1, continued (JVO)

Lecture 12: Analysis of variance (ANOVA) (JVO)

- Exercises for lecture 12 (JVO)

Lecture 13: Analysis of variance (ANOVA) (JVO)

- Exercises: Exam exercise 2, sub question a) (JVO)

Lecture 14: Analysis of variance (ANOVA) (JVO)

- Exercises: Exam exercise 2, sub question b) (JVO)

Lecture 15: Linear regression (JVO)

- Exercises for lecture 15 (JVO)

Lecture 16: Linear regression (JVO)

- Exercises for lecture. 16 (JVO)

Lecture 17: Application of descriptive statistics 2 (EKP)

- Exercises: Exam exercise 3 (JVO)

Lecture 18: Linear regression (JVO)

- Exercises for lecture 18 (JVO)

Lecture 19: Linear regression (JVO)

- Exercises for lecture 19 (JVO)

Lecture 20: Application of linear regression (PJG)

- Exercises: Exam exercise 4 (JVO)

Lecture 21: Chi-squared test (JVO)

- Exercises for lecture 21 (JVO)

Lecture 22: Logistic regression (JVO)

- Exercises: Exam exercise 5 (JVO)

Lecture 23: Application of logistic regression (EKP)

- Exercises: Exam exercise 5, continued (JVO)

See Moodle for a detailed description of the individual lectures and exercises, including the curriculum.

JVO: John Vestergaard Olsen

EKP: Eunkyung Park

Examination

Oral exam. The basis for the exam is one of the five exam exercises. 20 min. per student. Internal censor.