MASTER OF SCIENCE IN ENGINEERING

Module Description, available in: EN

Business Analytics

General Information

Number of ECTS Credits

3

Module code

TSM_BusAn

Valid for academic year

2025-26

Last modification

2023-08-28

Coordinator of the module

Marcel Dettling (ZHAW, dtli@zhaw.ch)

Explanations regarding the language definitions for each location:

- Instruction is given in the language defined below for each location/each time the module is held.
- Documentation is available in the languages defined below. Where documents are in several languages, the percentage distribution is shown (100% = all the documentation).
- The examination is available 100% in the languages shown for each location/each time it is held.

	Lausanne			Lugano	Zurich		
Instruction					**X** E 100%		
Documentation					**X** E 100%		
Examination					**X** E 100%		

Module Category

TSM Technical scientific module

Profile Recommendations

This module is recommended for the following profiles:

	Zurich
Profile	BE

Lessons

2 lecture periods and 1 tutorial period per week

Entry level competences

Prerequisites, previous knowledge

Basic knowledge in statistics on the level of an introductory stochastics course.

Brief course description of module objectives and content

Business Analytics (BA) is the science of analyzing enterprise data with statistical methods. The aim is to better understand market, customers, internal processes and the competitive environment, allowing for better and more informed decisions in business. As such, BA goes well beyond simply presenting data, numbers and tables, but focuses on finding new patterns, explaining the occurrence of results and forecasting future development. The essence is to find meaning in the data und successfully deploy it into the daily business life. This course will provide an overview over the principal questions, practices, methods, tools and goals in BA.

Aims, content, methods

Learning objectives and competencies to be acquired

The students understand the benefits that BA offers for an enterprise, i.e. they perceive the potential that quantitative analysis of business data harbors and that it is important to turn data into information. They acquire a comprehensive overview how and in which fields BA can offer added value to a company. The students are able to perform basic tasks in e.g. customer selection, segmentation, demand forecasting and maintenance planning on their own means. They recognize points of contact to other, technical modules such as Predictive Modelling and can strengthen their skills in statistical data analysis.

Module content with weighting of different components

Throughout the course, there will be a strong focus on the process of gaining information from and making use of business data. That involves setting realistic goals, selecting suitable data, drawing unbiased conclusions, reporting facts correctly and deploying the results. This goes along with pointing out some common misconceptions and pitfalls that often repeat themselves in statistical analysis.

The meat of the course will be made up by case studies that cover BA tasks such as customer segmentation, churn analysis, customer selection, demand forecasting, point-of-sale data, customer lifetime value, dynamic pricing, planned maintenance, service science, et cetera. The use and benefits of each of these topics will be explained, methods for practically solving the analysis tasks will be presented in an accessible, non-technical manner and focus on the validity and generalizability of the results will be laid.

Teaching and learning methods

Lectures and practical work on computer with suitable BA tools.

Literature

Slides and lecture notes will be available in addition to recommended book chapters.

Assessment

Additional performance assessment during the semester

The module does not contain an additional performance assessment during the semester

Basic principle for exams

As a rule, all standard final exams are conducted in written form. For resit exams, lecturers will communicate the exam format (written/oral) together with the exam schedule.

Standard final exam for a module and written resit exam

Kind of exam

Written exam

Duration of exam

120 minutes

Permissible aids

Aids permitted as specified below:

Permissible electronic aids

Scientific pocket calculator

Other permissible aids

Written aid of max. 20 pages with arbitrary content (format A4, 10 sheets printed on front and back or 20 pages only front-printed, can be machine-written)

Exception: In case of an electronic Moodle exam, adjustments to the permissible aids may occur. Lecturers will announce the final permissible aids prior to the exam session.

Special case: Resit exam as oral exam

Kind of exam

Oral exam

Duration of exam

30 minutes

Permissible aids

No aids permitted