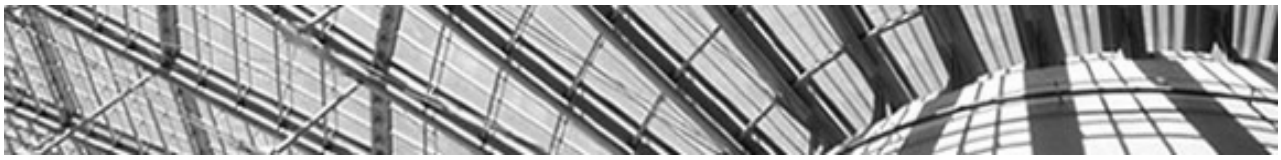


THE HAGUE
UNIVERSITY OF
APPLIED SCIENCES
ACADEMY OF MASTERS &
PROFESSIONAL COURSES

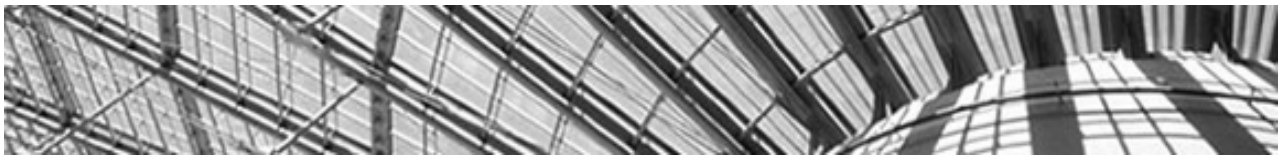
Master of Business Administration

Course outline
Academic year 2019-2020

Program	Master of Business Administration
Course title	Business Analytics/ Data Analytics
Lecturer	J.H. van der Zwan
Program variant	Full-time
Credit points (ECTS)	3
Phase	Q3
Amount of sessions (total)	8
Contact hours (total)	24
Hours of study (total)	84
Minimum result required in all assessments in order to obtain credits for this module	5.5

Course Overview

In the 21st century, organizations are more and more data driven. This requires managers to have insight into how to create value from (big) data. In this course, a number of data analysis skills are added to the student's toolbox. The aim is not to train the student to become a data scientist but to learn what possibilities data analysis offers and to be able to deal critically with the results of data analyzes. In addition, this course focuses on the use of statistical techniques in scientific quantitative research and the method of reporting the results according to Harvard/ APA style.
Besides descriptive statistics, the student is introduced to a couple of techniques used in inferential statistics - estimating parameters and testing of hypotheses - and the use of association analysis to describe and measure the relationship between variables.



Objectives

1. Introduction to the importance of data analysis in modern organizations
2. Collecting, cleaning and transforming data into information that adds value to the organization
3. Data analysis using visualizations and descriptive statistics
4. Techniques to analyze relationships between variables
5. Testing of hypotheses; understanding the concepts and apply them to different kind of tests
6. Being able to write up the results of statistical outcomes in a scientific report (Harvard/ APA).

MBA Competencies and learning outcomes

The learning outcomes are operationalisations of the competencies.

Competency 1 (C1): To understand and be able to apply the Master of Business Administration body of knowledge.

Learning outcomes C1:

- Operationalize a quantitative research question.
- Use statistical techniques in a variety of contexts: descriptive statistics, estimation, significance tests, correlation and regression analysis, statistical process control.
- Evaluate the results of the use of statistical techniques in quantitative research (C1 and C3).

Competency 3 (C3): To administer management tasks and tackle business-related challenges.

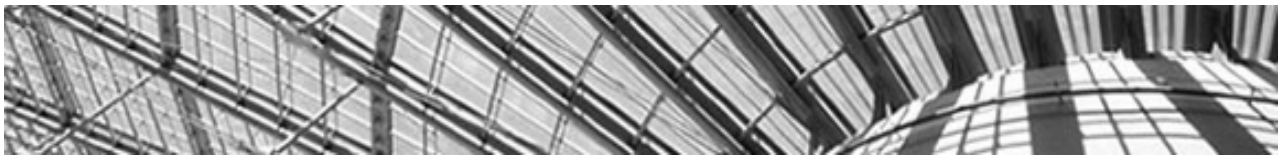
Learning outcomes C3:

- Evaluate the results of the use of statistical techniques in quantitative research (C1 and C3).
- Present the results from the use of statistical techniques like hypotheses testing in a scientific paper.

Comp.	Comp.	Learning Outcomes	Blooms Taxonomie		
			%Apply	%Analyze, Evaluate, Create/synthesize	check
		The student is able			
1		to operationalise a quantitative research question	10%		10%
1		use the appropriate statistical techniques in different contexts	40%		40%
1	3	to evaluate the results of a quantitative research		40%	40%
3		to report the results of statistical research in a scientific report		10%	10%
				Total	100%

Assessment

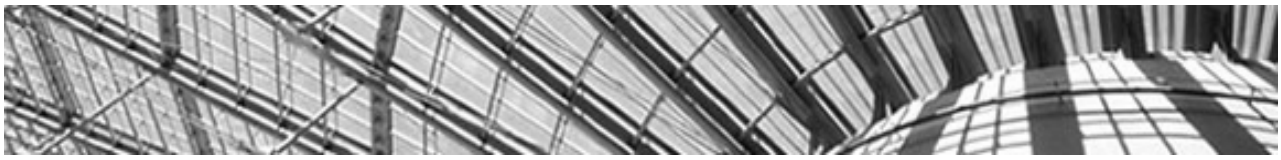
Individual: homework assignments
Group (max. 2 students) assignment



Outline of schedule and activities

Session date:		**Time:**	
Session nr. 1:	Introduction to this course The use of statistical techniques in quantitative research Data visualization		
Preparation to be done by students for this session:	Study handout 1 from the course website. Rumsey (2010), CH1, CH2 en CH3. Watch: https://www.youtube.com/watch?v=hZxnzfnt5v8 (6 min), types of Data: Nominal, Ordinal, Interval/Ratio, SLC (Statistical Learning Centre). Watch: https://www.youtube.com/watch?v=DAU0qqh_I-A (14 min), basics of constructing charts in MS Excel. Watch: https://www.youtube.com/watch?v=y3A0lUkpAko (6 min), introduction to inferential statistics (SLC).		

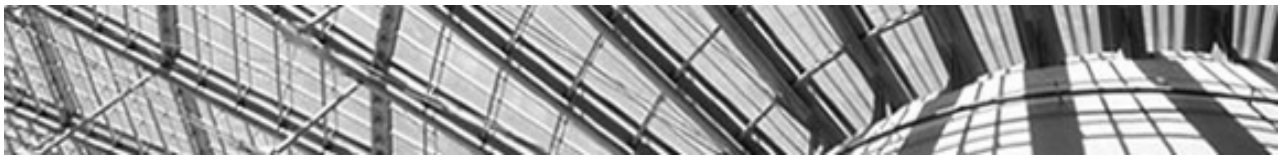
Session date:		**Time:**	10:00 – 13:00
Session nr. 2:	Summarizing data: graphs and statistics Data wrangling: - select variables, filter observations, group data, summarize data - using pivot tables in MS Excel - long and wide data format		
Preparation to be done by students for this session:	Study handout 2 from the course website. Watch: https://www.youtube.com/watch?v=9NUjHBNWe9M (15 min), introduction to MS Excel pivot tables. Watch: https://www.youtube.com/watch?v=rAN6DBctgJ0&t=4s (5 min), measures for central tendency (SLC). Watch: https://www.youtube.com/watch?v=dq_D30kyR1A (17 min), meaning of the standard deviation (Nystrom).		



Session date:		**Time:**	10:00 – 13:00
Session nr. 3:	Data modelling: theoretical distributions Uniform, binomial and normal distributions Concept of hypotheses testing		
Preparation to be done by students for this session:	Study handout 3 from the course website. Watch: https://www.youtube.com/watch?v=3EZbX2ftCUk (6 min), binomial distributions (SLC). Watch the videos below to refresh your knowledge about normal distributions (or, if you have never heard about these distributions, to get acquainted with them). https://www.youtube.com/watch?v=c11d3vVM5v8 (4 min.). https://www.youtube.com/watch?v=zZWd56VlN7w (11 min.). https://www.youtube.com/watch?v=ER-e1wwhjXY (10 min.).		

Session date:		**Time:**	10:00 – 13:00
Session nr. 4:	Association analysis (1) Association between categorical variables. Association between numerical variables: regression analysis		
Preparation to be done by students for this session:	Study handout 4 from the course website. Watch: https://www.youtube.com/watch?v=Ohp1PpzrRhE (5 min.), Scatterplot in Excel. Watch: https://www.youtube.com/watch?v=Ma_yCWKYKEc (6 min.), regression analysis in Excel.		

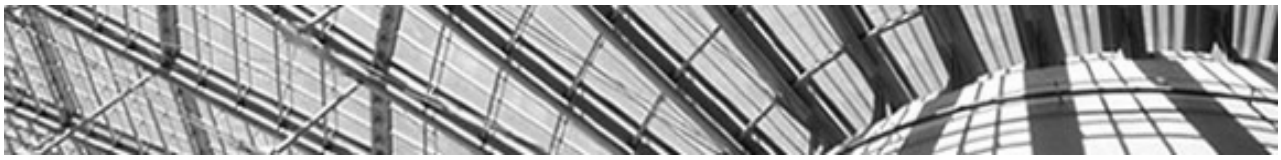
Session date:		**Time:**	10:00 – 13:00
Session nr. 5:	Association analyses (2) Multiple regression analysis, dummy variables, multicollinearity. Panel data analysis		
Preparation to be done by students for this session:	Study handout 5 from the course website. Watch: https://www.youtube.com/watch?v=dQNpSa-bq4M multiple regression (20 min.). Collect the data needed for the take-home assignment.		



Session date:		Time:	10:00 – 13:00
Session nr. 6:	Testing of hypothesis (single variable) Binomial test t-test		
Preparation to be done by students for this session:	Study handout 6 from the course website. Watch: https://www.youtube.com/watch?v=uPX0NBrJfRI, (12 min), a video about sampling distributions (caution: the lecturer is a bit hyperactive). Watch https://www.youtube.com/watch?v=yTczWL7qJ-Y (11 min.), a good and simple introduction to hypothesis testing. Watch: https://www.youtube.com/watch?v=eyknGvncKLw (5 min.) explanation of the meaning of the p-value in significance testing.		

Session date:		Time:	10:00 – 13:00
Session nr. 7:	Study handout 7 from the course website. Testing of hypotheses, different tests such as: - difference between population means - difference between population proportions - chi-square goodness of fit test Modern hypothesis testing: bootstrapping		
Preparation to be done by students for this session:	Watch: https://www.youtube.com/watch?v=0zZYBALbZgg (7 min.), t-test (SLC). Watch: https://www.youtube.com/watch?v=t2ryZyytW5w&t=20s (4 min.), Two means t-test in Excel (SLC). Watch: https://www.youtube.com/watch?v=rulIUAN0U3w (9 min.), which test is appropriate in a given situation (SLC). Watch: https://www.youtube.com/watch?v=b3o_hjWKgQw (4 min.), Chi-square goodness of fit test.		

Session date:		Time:	10:00 – 13:00
Session nr. 8:	Wrap up Individual consult about assignment		
Preparation to be done by students for this session:	Working on the end assignment		



Literature

Compulsory literature	Van der Zwan, J.H. (2019). Handouts. https://bookdown.org/jhvdz/mfmc Ismay C. & Kim A. Y. (2019) Modern Dive. https://moderndive.com Rumsey Deborah, J. (2010) *Statistical Essentials for Dummies.* Hoboken: Wiley Publishing, Inc. Saunders, M., Lewis, P. & Thornhill, A. (2015). Research methods for business students (7th ed.). Harlow: Prentice Hall.

Recommended literature	Schmuller, J. (2013) Statistical Analysis with Excel for Dummies. Hoboken: Wiley Publishing Inc. https://explorable.com/operationalization Article about the importance of operationalization in research. https://depts.washington.edu/psych/files/writing_center/stats.pdf Examples how to report results of a significance test in a scientific paper.

Assessment

Item	Assessment task	Individual / Group	Length (in case of final exam)	Weight
1.	Homework assignments	Individual		0% (a pass is required to make the group assignment)
2.	End Assignment	Group (max. 2 students)		100%
			Total	100%