Subject				
Statistics				
ECTS code	**Semester**	Faculty: Finance		
	2	Major: Finance and Accounting		
		Corporate Finance and Accounting		
Faculty:				
Lecture: dr Daniel Kosiorowski				
Classes: dr Daniel Kosiorowski				
System of studies:				
part time, first degree				
Subject status	**Pass requirement**	**Number of contact hours**		**ECTS points**
		Lectures	**Classes**	
		18	18	5
Teaching language				
English				

Subject provisions and objectives (including the expected can-do of students on completion of the course)

Introduction to statistical reasoning. Emphasis on concepts rather than in-depth coverage of traditional statistical methods. Topics include sampling and experimentation, descriptive statistics, probability, binomial and normal distributions, estimation, single sample hypothesis tests for linear regression inference. Additional topics will be selected from descriptive methods in regression and correlation, or basic robust statistics and time series analysis.

Teaching curriculum (in case of prescribed subjects, compliance with the standards, maximum 15 topics)

AN INTRODUCTION TO BUSINESS STATISTICS

- APPLICATIONS OF STATISCTICS IN BUSINESS AND ECONOMICS
- DATA: Elements, Variables, and Observations; Scales of Measurement; Categorical and Quantitative Data Cross-Sectional and Time Series Data
- DATA SOURCES: Existing Sources, Statistical Studies, Data Acquisition Errors
- DESCRIPTIVE STATISTICS AND STATISTICAL INFERENCE
- STATISTICAL ANALYSIS USING R ENVITONMENT
- SUMMARIZING CATEGORICAL DATA: Frequency Distribution, Relative Frequency and Percent Frequency Distributions, Bar and Pie Charts
- SUMMARIZING QUANTITATIVE DATA: Frequency Distribution, Relative Frequency and Percent Frequency Distributions, Dot Plot, Histogram, Cumulative Distributions, Ogive.
- EXPLORATORY DATA ANALYSIS: Steam-and-leaf display, crosstabulations, scatter diagrams and trendline.

DESCRIPTIVE STATISTICS - NUMERICAL MEASURES

- MEASURES OF LOCATION: Mean, Median, Mode, Quartiles, Quantiles.
- MEASURES OF VARIABILITY: Range, Interquartile Range, Variance, Standard Deviation.
- MEASURES OF DISTRIBUTION SHAPE, RELATIVE LOCATION, AND DETECTING OUTLIERS: Distribution Shape, z-Scores, Chebyshev's Theorem, Empirical Rule, Detecting Outliers.
- EXPLORATORY DATA ANALYSIS: Five-Number Summary, Box Plot.
- MEASURES OF ASSOCIATION BETWEEN TWO VARIABLES: Covariance, Interpretation of the Covariance, Correlation Coefficient, Interpretation of the Correlation Coefficient.
- THE WEIGHTED MEAN AND WORKING WITH GROUPED DATA: Weighted Mean for Grouped Data.

SIMPLE LINEAR REGRESSION

- SIMPLE LINEAR REGRESSION MODEL (Regression Model and Regression Equation, Estimated Regression Equation)
- LEAST SQUARES METHOD
- COEFFICIENT OF DETERMINATION
- USING THE ESTIMATED REGRESSION EQUATION FOR ESTIMATION AND PREDICTION
- SIMPLE REGRESSION DIAGNOSTICS : RESIDUAL ANALYSIS

MULTIPLE REGRESSION

- MULTIPLE REGRESSION MODEL (Regression Model and Regression Equation, Estimated Multiple Regression Equation)
- LEAST SQUARES METHOD
- MULTIPLE COEFFICIENT OF DETERMINATION
- USING THE ESTIMATED REGRESSION EQUATION FOR ESTIMATION AND PREDICTION

AN INTRODUCTION TO PROBABILITY THEORY
AN INTRODUCTION TO TIME SERIES ANALYSIS AND FORECASTING

Class topics (maximum 15 topics)

INTRODUCTION TO R ENVIRONMENT
- PRELIMINARIES: Arithmetic operations, vectors, simple plots
- BASIC STATISTICAL PLOTS: Bar plot, dot plot, histogram
- DESCRIPTIVE STATISTICS: Mean, Median, Quantile, Variance
- SIMPLE REGRESSION

DESCRIPTIVE STATISTICS - NUMERICAL MEASURES
- MEASURES OF LOCATION: Mean, Median, Mode, Quartiles, Quantiles.
- MEASURES OF VARIABILITY: Range, Interquartile Range, Variance, Standard Deviation.
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INTRODUCTION TO "ONE DIMENSIONAL" ROBUST STATISTICS
- OUTLIER IDENTIFICATION
- ROBUST LOCATION AND SCATTER MEASURES
- ROBUST REGRESSION

Introductory topics	
Mathematics	
Teaching methods	
LECTURE, CLASS, COMPUTER SIMULATION WITH R ENIVIROMENT, PROJECT, EMPIRICAL CASE ANALYSIS	
Basic literature and Rother sources	
Free e- books Emmanuel Paradis, R for Beginners http://cran.r-project.org/doc/contrib/Paradis-rdebuts_en.pdf Introduction to the R Project for Statistical Computing for use at ITC http://cran.r-project.org/doc/contrib/Rossiter-RIntro-ITC.pdf	
Upton G., Cook I. (2002) Introducing Statistics 2nd Edition, Oxford University Press	
Aczel A.D., *Complete Business Statistics*, McGraw-Hill Irwin, Fifth Edition 2002	
Pass requirements for signature/examination	
Evaluation system: Final Exam Grade = 0,5*Quiz+0,5*Final Class Grade Final Class Grade = Mid-term + Project	
Examples of questions for tests and examinations	