

Master's Degree in Sciences of Administrations and Complex Organizations (LM-63)

Quantitative Research Methods

a.y. 2021-2022, 1st year, 1st semester, 10 ECTS Credits

Prof. Francesco Rania

Course Information	Quantitative Research Methods (SECS-S/05) 10 ECTS – 60 hours Lesson period: 1st year, 1st semester, a.y. 2021-2022
Professor Information	Prof. Francesco Rania Department of Law, Economy and Sociology Website: https://www.diges.unicz.it/web/docenti/rania-francesco/ Email: raniaf@unicz.it Phone: +39 0961 3694 4987 Office hours: during the lesson period; before and after the lessons and every month before the examination
Course Description	Quantitative Research Methods aims to provide mathematical statistical tools and prediction methods, which allow the investigation on economic, financial, and social phenomena.
Course goals and Expected Learning Outcomes	Upon course completion, a student will be able to: <ul style="list-style-type: none">• Describe and graphical present the data;• Calculate and interpret confidence interval estimates of population parameters;• Formulate and conduct tests of significance for population parameters;• Describe and apply the classical regression model and its application to cross-section data.• Competently use regression, logit and probit analysis to quantify economic relationships using standard regression programmes in simple applications.• Apply regression analysis to fit time-series models with awareness of some of the economic, financial and strategic choices of organizations.
Program	<u>Elements of Statistics:</u> Organization and representation of data; synthetic indicators of central position, variability, skewness, and kurtosis; Statistical ratios; random variables; estimation, tests of hypothesis. <u>Bivariate analysis:</u> cross tables of categorical variables, independence test; the linear regression of a cardinal variable with a single regressor, assumptions, OLS method, regressor estimate and test, model test. <u>Multivariate analysis:</u> linear regression of a cardinal variable with several regressors, OLS method, regressor estimates and tests, model test; logistic regression of a categorical variable, Odds ratio; regression with time effects; the assumptions and standard errors in the regression with fixed effects. <u>Stochastic processes:</u> Gauss, Markov, and Wiener processes. <u>Financial data analysis:</u> prices, returns, shares; Markowitz model; Efficient frontier; Risk aversion; Single index model; Selection of the optimal portfolio in a downside risk context. <u>The event study method:</u> the model; statistical analysis; Multi-title analysis; Application of the event study methodology to a business case. <u>Elements of Social Finance.</u>
Expected student workload	Approximately 90 hours.
Teaching methods	- Lectures

	<ul style="list-style-type: none"> - Case studies - Exercises during the classroom lessons 																												
Learning resources (textbooks, eventual further reading, ...)	<p><u>Textbook</u></p> <ul style="list-style-type: none"> - Piergiorgio Corbetta – Giancarlo Gasperoni – Maurizio Pisati, Statistica per la ricerca sociale, il Mulino manuali, 2001 - Marco Micocci, Giovanni Battista Masala, Manuale di Matematica Finanziaria Metodi e strumenti quantitativi per il risk management, Carocci editore 2012. <p><u>Further reading</u> James H. Stock, Mark W. Watson, Introduzione all'econometria, redatto da F. Peracchi, Pearson Addison Wesley (edizione del 2009 o successiva).</p>																												
Support activities	Subject-specific seminars																												
Attendancy policy	The attendancy policy is established by art. 8 of the University teaching regulation: http://www.unicz.it/pdf/regolamento_didattico_ateneo_dr681.pdf .																												
Assesment Methods	<p>The course does not include intermediate assessment tests. The examination is written and oral. The student must have obtained a score of 14/30 in the written part to be able to sit for the final (oral) part.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Grade</th> <th style="width: 30%;">Grade knowledge and understanding of the topic</th> <th style="width: 30%;">Ability to analyze and synthesize</th> <th style="width: 30%;">Use of references</th> </tr> </thead> <tbody> <tr> <td>Fail</td> <td>Severe shortcomings and inaccuracies</td> <td>Irrelevant frequent generalizations. Inability to synthesize</td> <td>Completely inappropriate</td> </tr> <tr> <td>18-20</td> <td>Sufficient. Important shortcomings.</td> <td>Sufficient capabilities</td> <td>Sufficient</td> </tr> <tr> <td>21-23</td> <td>Basic knowledge</td> <td>The student is capable of correct analysis and synthesis, he argues logically and consistently</td> <td>The student uses standard references</td> </tr> <tr> <td>24-26</td> <td>Satisfactory. Good knowledge</td> <td>The student has good analysis and synthesis skills. The arguments are expressed consistently</td> <td>The student uses standard references</td> </tr> <tr> <td>27-29</td> <td>Very good</td> <td>The student has considerable skills in analysis and synthesis</td> <td>The student studies in depth the topics of the exam</td> </tr> <tr> <td>30-30L</td> <td>Excellent</td> <td>The student has Excellent analysis and synthesis skills</td> <td>Important insights</td> </tr> </tbody> </table>	Grade	Grade knowledge and understanding of the topic	Ability to analyze and synthesize	Use of references	Fail	Severe shortcomings and inaccuracies	Irrelevant frequent generalizations. Inability to synthesize	Completely inappropriate	18-20	Sufficient. Important shortcomings.	Sufficient capabilities	Sufficient	21-23	Basic knowledge	The student is capable of correct analysis and synthesis, he argues logically and consistently	The student uses standard references	24-26	Satisfactory. Good knowledge	The student has good analysis and synthesis skills. The arguments are expressed consistently	The student uses standard references	27-29	Very good	The student has considerable skills in analysis and synthesis	The student studies in depth the topics of the exam	30-30L	Excellent	The student has Excellent analysis and synthesis skills	Important insights
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