İZMİR UNIVERSITY OF ECONOMICS

# Graduate School of Social Sciences
## Financial Economics (With Thesis)
### ECON 533 - Econometrics and Quantitative Methods

**COURSE INTRODUCTION AND APPLICATION INFORMATION**

| Course Name | Code | Semester | Theory (hour/week) | Application/Laboratory (hour/week) | Local Credits | ECTS |
|---|---|---|---|---|---|---|
| **Econometrics and Quantitative Methods** | ECON 533 | Fall | 3 | 0 | 3 | 7.5 |

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| **Prerequisites** | None |

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| **Course Language** | English |
| **Course Type** | Required |
| **Course Level** | Second Cycle |
| **Course Coordinator** | - |
| **Course Lecturer(s)** | * Yrd. Doç. Dr. Gül ERTAN ÖZGÜZER |
| **Course Assistants** | - |
| **Course Objectives** | The main goal is to give the quantitative skills necessary to understand finance and economics through the master level. The focus of the course is explaining to use mathematical tools efficiently and accurately in the solution of economic and financial problems. The course also equips the students with the techniques like regression to make economic forecasts. To discuss several optimization problems encountered in financial and economic models, and to explain how to solve such problems using recent advances in methods are the other two objectives. |
| **Course Learning Outcomes** | The students who succeeded in this course;<br>* will be able to use mathematical tools efficiently and accurately in the solution of economic and financial problems.<br>* will be able to work with the solutions of optimization problems in economic models<br>* will be able to use differential calculus to understand demand theory, production theory and output decision of the firm<br>* will be able to use the techniques like regression to make economic forecasts. |

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| | * will be able to solve optimization problems with Excel solver. |
| **Course Content** | The course starts with one variable calculus and its applications to demand theory, production theory, and output decision of the firm. Then it moves on to explaining the time value of money and risk analysis. It also focuses on forecasting methods such as regression analysis. The last part of the course gives attention to the optimization methods in finance and economics. The course illustrates how all these methods and tools are useful in various applications, drawing on many economic and financial markets examples. |

**WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES**

| Week | Subjects | Related Preparation |
|---|---|---|
| 1 | Introduction | |
| 2 | One variable calculus: application to demand theory and production theory | Mathematics for Economists, Simon and Blume Chp. 4 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Chs 7-8 - Managerial Economics, Allen, Doherty, Weigelt and Mansfield Chp 1-2-3 |
| 3 | One variable calculus: application to cost functions and output decision of the firm | Mathematics for Economists, Simon and Blume Chps 3- 4 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Chs 7-8 - Managerial Economics, Allen, Doherty, Weigelt and Mansfield Chp 7-9-10 |
| 4 | One variable calculus: application to cost functions and output decision of the firm | Mathematics for Economists, Simon and Blume Chps 3- 4 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Chs 7-8 - Managerial Economics, Allen, Doherty, Weigelt and Mansfield Chp 7-9-10 |

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| **5** | Single variable optimization with Excel Solver | |
| **6** | Time Value of Money | Quantitative Methods for Finance and Investments, Teall and Hasan Chp 4-5, Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 10 |
| **7** | Risk Analysis and Fund Performance Application | Managerial Economics, Allen, Doherty, Weigelt and Mansfield Chp 14 - Quantitative Methods for Finance and Investments, Teall and Hasan Chp 5 |
| **8** | Midterm Exam I | November 13, 2014 |
| **9** | Regression Analysis and Estimating Demand Functions | Managerial Economics, Allen, Doherty, Weigelt and Mansfield Chp 4 |
| **10** | Multivariable Optimization | Mathematics for Economists, Simon and Blume Chp 17, Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 13 |
| **11** | Constrained optimization | Mathematics for Economists, Simon and Blume Chp 18 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 14 |
| **12** | Constrained optimization: application to economics and finance | Mathematics for Economists, Simon and Blume Chp 18 - Essential Mathematics for Economic Analysis, Sysaeter and Hammond Ch 14 |
| **13** | Midterm Exam II | December 18, 2014 |
| **14** | Project :  asset/liability cash-flow matching | Optimization Methods in Finance, Cornuejols and Tütüncü Chp 3 |
| **15** | Project: asset/liability cash-flow matching | Optimization Methods in Finance, Cornuejols and Tütüncü Chp 3 |
| **16** | Review of the Semester | |

## SOURCES

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| **Course Notes / Textbooks** | Mathematics for Economists, Carl P. Simon, Lawrance Blume. W.W. Norton & Company, Inc. (1994) - Managerial Economics, Allen, Doherty, Weigelt and Mansfield W.W. Norton & Company, Inc. 6th edition - Optimization Methods in Finance, Cornuejols and Tütüncü Cambridge University Press (2007), Quantitative Methods for Finance and Investments, Teall and Hasan Balackwell Publishing (2002), Essential Mathematics for Economic Analysis, Sysaeter and Hammond, Prentice Hall, 3rd Edition |
| **References** | |

## EVALUATION SYSTEM

| **Semester Requirements** | **Number** | **Percentage of Grade** |
|---|---|---|
| Attendance/Participation | 15 | 10 |
| Laboratory | - | - |
| Application | - | - |
| Field Work | - | - |
| Special Course Internship (Work Placement) | - | - |
| Quizzes/Studio Critics | - | - |
| Homework Assignments | 2 | 20 |
| Presentation/Jury | - | - |
| Project | 1 | 20 |
| Seminar/Workshop | - | - |
| Midterms/Oral Exams | 2 | 50 |
| Final/Oral Exam | - | - |
| **Total** | 20 | 100 |

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| **PERCENTAGE OF SEMESTER WORK** | **-** | **80** |
| **PERCENTAGE OF FINAL WORK** | **-** | **20** |
| **Total** | 0 | 100 |

## COURSE CATEGORY

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| **Course Category** | Core Courses | X |
| | Major Area Courses | |
| | Supportive Courses | |
| | Media and Managment Skills Courses | |
| | Transferable Skill Courses | |

## THE RELATIONSHIP BETWEEN COURSE LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS

| # | Program Qualifications / Outcomes | * Level of Contribution | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1 | Developing and deepening the knowledge of economics and finance to an expert level, building on the competencies of the undergraduate education. | | | | | |
| 2 | Comprehending the interaction between related disciplines and financial economics. | | | | | |
| 3 | To be able to apply the advanced level knowledge acquired in economics and finance. | | | | | |
| 4 | Creating new knowledge by combining the knowledge of financial economics with the knowledge coming from other disciplines and also be able to solve problems which requires expert knowledge by applying scientific methods. | | | | X | |
| 5 | To be able to critically evaluate the knowledge in financial economics, to lead learning and carry out advanced level research independently. | | | | | |
| 6 | To be able to comprehend and evaluate any issue or problem in financial economics individually, to develop solutions to problems independently and apply them when necessary. | | | | | X |
| 7 | To be able to develop new strategic approaches for unexpected, complicated situations in financial economics and take responsibility in solving it. | | | | | |
| 8 | To be competent in the tools that will put the acquired expert knowledge to professional use. | | | | | X |
| 9 | To possess the communication network to put the economic and social needs of the region of residence on the agenda. | | | | | |
| 10 | To have adequate social responsibility and conciousness about the needs of society and to have the experience and authority to organize and support the operations that can affect and drive the social dynamics when necessary. | | | | | |
| 11 | To be able to think analytically to identify problems in financial economics and to be able to make policy recommendations in economics and finance based on scientific analysis of issues and problems. | | | | | |

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| **12** | To protect the social, scientific and ethical values at the data collection, interpretation and dissemination stages and to be able to introduce and supervise these values. | | | | | **X** |
| **13** | To be able to use the skills of modelling, empirical analysis and formulating policy options that are developed for financial economics, in interdisciplinary contexts. | | | | | **X** |

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest

## ECTS / WORKLOAD TABLE

| **Activities** | **Number** | **Duration (Hours)** | **Total Workload** |
|---|---|---|---|
| Course Hours (Including Exam Week: 16 x Total Hours) | 16 | 3 | 48 |
| Laboratory | - | - | - |
| Application | - | - | - |
| Special Course Internship (Work Placement) | - | - | - |
| Field Work | - | - | - |
| Study Hours Out of Class | 16 | 4 | 64 |
| Presentations / Seminar | - | - | - |
| Project | 1 | 31 | 31 |
| Homework Assignments | 2 | 16 | 32 |
| Quizzes | - | - | - |
| Midterms / Oral Exams | 2 | 25 | 50 |
| Final / Oral Exam | - | - | - |
| | | **Total Workload** | **225** |