# ECTS COURSE INFORMATION FORM

| | | |
|---|---|---|
| **School/Faculty/Institute** | **Faculty of Economics, Administrative and Social Sciences** | |
| **Program** | **B.A. in Economics** | **Required** |
| | **B.A. in Business Administration** | **Required** |
| | | |

| | | | | |
|---|---|---|---|---|
| **Course Code** | **MATH 104** | | | |
| **Course Title in English** | **Mathematics for Social Sciences II** | | | |
| **Course Title in Turkish** | **Sosyal Bilimler için Matematik II** | | | |
| **Language of Instruction** | **English** | | | |
| **Type of Course** | **Lecture (Flipped Classroom)** | | | |
| **Level of Course** | **Undergraduate - Introductory** | | | |
| **Semester** | **Fall/Spring/Summer** | | | |
| **Contact Hours per Week** | **Lecture: 3** | **Recitation: 0** | **Lab: 0** | **Other: 0** |
| **Estimated Student Workload** | **151 hours per semester.** | | | |
| **Number of Credits** | **6 ECTS** | | | |
| **Grading Mode** | **Standard Letter Grade** | | | |
| **Pre-requisites** | **MATH 103** | | | |
| **Expected Prior Knowledge** | **Knowledge of basic mathematical concepts and tools** | | | |
| **Co-requisites** | **None** | | | |
| **Registration Restrictions** | **Only Undergraduate Students** | | | |
| **Overall Educational Objective** | To study the key mathematical subjects that are necessary for economics and business education. | | | |
| **Course Description** | **This course covers fundamental topics of mathematics for economic analysis. Topics include integration, financial economics, multivariable functions, tools for comparative statistics, multivariable and constrained optimization.** | | | |
| **Course Description in Turkish** | **Bu ders ekonomik analiz için gerekli temel matematik konularını kapsar. İçerdiği konular integral, finansal ekonomi, çok değişkenli fonksiyonlar, karşılaştırmalı istatistiksel araçlar, çok değişkenli ve kısıtlı optimizasyon.** | | | |
| **Course Learning Outcomes and Competences** | **Upon successful completion of the course, the learner is expected to be able to:**<br>**1. compute definite and indefinite integrations by using methods like integration by parts, substitution;**<br>**2. comprehend the following mathematical subjects that are widely used in financial economics: interest periods, present value, and geometric series;**<br>**3. understand the concept of multi-variable functions, partial derivatives, and partial elasticities;**<br>**4. apply mathematical tools for comparative statistics: chain rule for many variables, elasticity of substitution, systems of equations;**<br>**5. solve different kinds of multi-variable and constrained optimization problems;**<br>**6. relate the mathematical concepts with possible economical and business applications that will help to evaluate real business life issues.** | | | |

| Relation to Program Outcomes and Competences: N=None S=Supportive H=Highly Related | | |
|---|---|---|
| **Program Outcomes and Competences** | **Level** | **Assessed by** |
| | N/S/H | Exam, Project, HW, Lab, Presentation, etc. |
| 1. Has a broad understanding of economics with a deep exposure to other social sciences and mathematics. | H | Quizzes, Exams, Participation |
| 2. Demonstrates knowledge and skills in understanding the interactions of different areas of economics. | N | |
| 3. Displays a sound comprehension of microeconomic and macroeconomic theory. | N | |
| 4. Applies economic concepts to solve complex problems and enhance decision-making capability. | N | |
| 5. Uses quantitative techniques to analyze different economic systems. | S | Quizzes, Participation |
| 6. Applies theoretical knowledge to analyze issues regarding Turkish and global economies. | N | |
| 7. Demonstrates proficiency in statistical tools and mainstream software programs to process and evaluate economic data. | N | |
| 8. Behaves according to scientific and ethical values at all stages of economic analysis: data collection, interpretation and dissemination of findings. | N | |
| 9. Uses written and spoken English effectively (at least CEFR B2 level) to exchange scientific information. | S | Quizzes |
| 10. Exhibits individual and professional ethical behavior and social responsibility. | N | |
| 11. Displays learning skills necessary for further study with a high degree of autonomy | S | Quizzes, Participation |

| | | |
|---|---|---|
| Prepared by and Date | Assistant Prof. Dr. Murat Öztürk, 10.05.2018 | |
| | | |
| Semester | Spring 2018-2019 | |
| | | |
| Name of Instructor | Dr. Mehmet Arslan | |
| | | |
| Course Contents | Week | Week |
| | 1. | Integration (Sections 9.1-9.3) |
| | 2. | Integration (Sections 9.4-9.6) |
| | 3. | Integration (Sections 9.7-9.9) |
| | 4. | Topics in Financial Economics (Sections 10.1-10.4) |
| | 5. | Topics in Financial Economics (Sections 10.5–10.8) |
| | 6. | Function of Many Variables (Section 11.1-11.4) |
| | 7. | Function of Many Variables (Section 11.5-11.8) |
| | 8. | Review Week |
| | 9. | Tools for Comparative Statistics (Section 12.1-12.3) |
| | 10. | Tools for Comparative Statistics (Section 12.4-12.7) |
| | 11. | Tools for Comparative Statistics (Section 12.8-12.11) |
| | 12. | Multivariable Optimization (Sections 13.1-13.4) |

| | | |
|---|---|---|
| | 13. | Multivariable Optimization (Sections 13.5-13.7) |
| | 14. | Constrained Optimization (Sections 14.1-14.4) |
| | 15. | Final Examination Period |
| | 16. | Final Examination Period |
| | | |
| Required/Recommended Readings | Required Reading: Essential Mathematics for Economic Analysis, 4th Edition by Knut Sydsaeter, Peter Hammond and Arne Strom, Published by Pearson, 2012. | |
| Teaching Methods | Lectures (Flipped Classroom) | |
| Homework and Projects | None | |
| Laboratory Work | None | |
| Computer Use | None | |
| Other Activities | Scheduled and unscheduled quizzes | |
| Assessment Methods | • Feedbacks and participation (they will be worth of 10% of the total grade)<br>• Quizzes (they will be worth of 10% of the total grade)<br>• One midterm (it will be worth 30% of the total grade)<br>• One final (it will be worth 50% of the final grade) | |
| Course Administration | Mehmet Arslan – arslanmeh@mef.edu.tr<br><br>More detailed information about the course, like office hours, can be found in the course manual. Attendance is not required, but strictly advised.<br><br>The grade of the final exam will be counted for the exams that you missed upon the faculty's approval of your excuse. Please refer to "Mazeretlerin Kabulü ve Mazeret Sınavlarının Yapılış Yönergesi" for further information.<br><br>Mathematics is best learned by practice. The students are expected to be open-minded and eager to try and fail.<br><br>Academic Dishonesty and Plagiarism: YOK Regulation<br><br>**IMPORTANT**: To be able to enter the final exam you need to be at least 30% successful from pre-final assessment methods. The instructors can lower this threshold, if needed. | |

ECTS Student Workload Estimation

| Activity | No/Weeks | Hours | | | Calculation | Explanation |
|---|---|---|---|---|---|---|
| | No/Weeks per Semester (A) | Preparing for the Activity (B) | Spent in the Activity Itself (C) | Completing the Activity Requirements (D) | | |
| Lecture | 14 | 3 | 3 | 2 | 112 | A*(B+C+D) |
| Lab etc. | | | | | | |
| Midterm(s) | 1 | 15 | 2 | | 17 | A*(B+C+D) |
| Assingment, Project, Presentation | | | | | | A*(B+C+D) |
| Final Examination | 1 | 20 | 2 | | 22 | A*(B+C+D) |
| Total Workload | | | | | 151 | |
| Total Workload/25 | | | | | 6.04 | |
| ECTS | | | | | **6** | |