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| antalya bilim Ã¼niversitesi ile ilgili gÃ¶rsel sonucu | **ECTS Course Description Form** |
| **PART I ( Senate Approval)** |
| **Offering School**  | **College of Engineering** |
| **Offering Department** | **Industrial Engineering** |
| **Program(s) Offered to** | **Industrial Engineering**  |  |
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| **Course Code**  | **IE-412** |
| **Course Name** | **Forecasting Methods and Applications** |
| **Language of Instruction** | **English** |
| **Type of Course** | **Departmental Area Elective** |
| **Level of Course** | **Undergraduate** |
| **Hours per Week** | **Lecture: 3** | **Laboratory:** | **Recitation: 1** | **Practical:**  | **Studio:** | **Other:** |
| **ECTS Credit** | **6** |
| **Grading Mode** | **Letter Grade** |
| **Pre-requisites** | **IE-212** |
| **Co-requisites** | **-** |
| **Registration Restriction** | *-* |
| **Educational Objective** | Basic quantitative methods of forecasting are introduced. Exploratory, time series and qualitative forecasting methods will be discussed. In this respect time series decomposition, exponential smoothing, regression and Box-Jenkins models will be covered. Judgmental forecasting will also be briefly mentioned. Applications in various fields will be introduced and engineering applications will be emphasized. If time permits ARCH and GARCH models will be introduced. |
| **Course Description** | To present principals of forecasting methodologies. |
| **Learning Outcomes** | **LO1** | Upon successful completion of the course, students will be able to have a good understanding of the following topics and their applications:**1.** Understand Basic quantitative methods of forecasting**2**. Understand time series and qualitative forecasting methods |
| **LO2** |
| **LO3** |
| **LO4** |
| **LO5** |
| **LO6** |
| **n..** |
| **PART II ( Faculty Board Approval)** |
| **Basic Outcomes (University-wide)** | **No.** | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **PO1** | **Ability** to communicate effectively and write and present a report in Turkish and English.  | 🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸🗸   🗸🗸  🗸🗸 |
| **PO2** | **Ability** to work individually, and in intra-disciplinary and multi-disciplinary teams. |
| **PO3** | **Recognition** of the need for life-long learning and **ability** to access information , follow developments in science and technology, and continually reinvent oneself. |
| **PO4** | **Knowledge** of project management, risk management, innovation and change management, entrepreneurship, and sustainable development. |
| **PO5** | **Awareness** of sectors and **ability** to prepare a business plan. |
| **PO6** | **Understanding** of professional and ethical responsibility and **demonstrating** ethical behavior. |
| **Faculty Specific Outcomes** | **PO7** | Ability to develop, select and use modern techniques and tools necessary for engineering applications and ability to use information technologies effectively. |
| **PO8** | Recognition of the effects of engineering applications on health, environment and safety in the universal and societal dimensions and the problems of the time and awareness of the legal consequences of engineering solutions. |
| **PO9** | Ability to identify, define, formulate and solve complex engineering problems; and electing and applying appropriate analysis and modeling methods for this purpose. |
| **Discipline Specific Outcomes (program)** | **PO10** | Sufficient knowledge in mathematics, science and engineering and the ability to apply theoretical and practical knowledge in these areas to model and solve engineering problems. |
| **PO11** | Ability to design a complex system, process, device or product to meet specific requirements under realistic constraints and conditions of economic, environmental, sustainability, manufacturability, ethics, health, safety, social and political issues; and the ability to apply modern design methods for this purpose.  |
| **PO12** | Ability to design experiments, conduct experiments, collect data, analyze and interpret results for the examination of engineering problems. |
| **Specialization Specific Outcomes** | **PO N….** |  |
| **PART III ( Department Board Approval)** |
| **Course Subjects, Contribution of Course Subjects to Learning Outcomes, and Methods for Assessing Learning of Course Subjects** | **Subjects** | **Week** |  | **LO1** | **LO2** | **LO3** | **LO4** | **LO5** | **LO6** |
| **S1** | 1 | Introduction | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S2** | 2 | Forecasting Perspective | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S3** | 3 | Basic Forecasting tools | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S4** | 4 | Time Series Decomposition | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S5** | 5 | Exponantial Smoothing | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S6** | 6 | Simple Regression | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S7** | 7 | Multiple Regression | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S8** | 8 | **Midterm Exam** | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S9** | 9 | Box Jenkins Methods | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S10** | 10 | Arima models | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S11** | 11 | Advanced Forecasting models | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S12** | 12 | Forecasting the long term | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S13** | 13 | Judgemental Forecasting | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **S14** | 14 | Forecasting in Practice | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* | *A1-A2-A3* |  |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **No.** | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | 70 | No electronic devices are allowed in the examinations except the calculator | If the reason for not taking the exam is justified by the school, the student is informed about the time of the make-up exam. |
| **A2** | **Quiz** | 20 | It is given at any time without informing to the students*.* | The compensation of he quizzes is valid in case of special situations. |
| **A3** | **Homework** | 10 | Homeworks are given by announcing deadline. Homeworks that are submitted after the deadline are not accepted. | There is no compensation for the homeworks. |
| **A4** | **Project** |  |  |  |
| **A5** | **Report** |  | - | - |
| **A6** | **Presentation** |  | - | - |
| **A7** | **Attendance/ Interaction** |  | - | - |
| **A8** | **Class/Lab./****Field Work** |  | - | - |
| **A9** | **Other** |  |  |  |
| **TOTAL** | **100%** |
| **Evidence of Achievement of Learning Outcomes** | Letter grades determined by weighting on the specified percentages on the grades that are taken from exams, quizzes and homeworks by the students.The teaching staff can make changes in the student's grades. |
| **Method for Determining Letter Grade** |

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| --- | --- | --- | --- | --- |
| **Activities** | Midterm Exams | Quizzes | Homeworks | Final Exam |
| **Quantity** | 1 | 10 | 2 | 1 |
| **Effects on Grading, %)** | 30 | 20 | 10 | 40 |

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| **Teaching Methods, Student Work Load** | **No** | **Method** | **Explanation** | **Hours** |
| ***Time applied by instructor*** |
| **1** | **Lecture** |  | 3x14 |
| **2** | **Interactive Lecture** |  |  |
| **3** | **Recitation** |  | 1x14 |
| **4** | **Laboratory** |  |  |
| **5** | **Practical** |  |  |
| **6** | **Field Work** |  |  |
| ***Time expected to be allocated by student*** |
| **7** | **Project** |  |  |
| **8** | **Homework** |  | 20 |
| **9** | **Pre-class Learning of Course Material**  |  | 45 |
| **10** | **Review of Course Material** |  | 60 |
| **11** | **Studio** |  |  |
| **12** | **Office Hour** |  |  |
| **TOTAL** |  |
| **IV. PART** |
| **Instructor** | **Name** | M. Fatih AK |
| **E-mail** | fatih.ak@antalya.edu.tr |
| **Phone Number** |  |
| **Office Number** |  |
| **Office Hours** | It will be determined during the semester. |
| **Course Materials** | **Mandatory** |  |
| **Recommended** |  |
| **Other** | **Scholastic Honesty** | Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Any for of scholastic dishonesty is a serious academic violation and will result in a disciplinary action. |
| **Students with Disabilities** | Reasonable accommodations will be made for students with verifiable disabilities. |
| **Safety Issues**  | The course does not require any special safety precautions. |
| **Flexibility** | Circumstances may arise during the course that prevents the instructor from fulfilling each and every component of this syllabus; therefore, the syllabus is subject to change.  Students will be notified prior to any changes.  |