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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* | *Must* |
| *Computer Engineering, Civil Engineering* | *Must* |
| *Electrical and Electronics Engineering* | *Must* |
| **Course Code**  | *MATH 211* |
| **Course Name** | *Probability and Statistics for Engineers* |
| **Language of Instruction** | *English* |
| **Type of Course** | *Compulsory* |
| **Level of Course** | 2nd year |
| **Hours per Week** | **Lecture:** 3 | **Laboratory: 1**  | **Recitation:** 1 | **Practical:**  | **Studio:** | **Other:** |
| **ECTS Credit** | *5* |
| **Grading Mode** | *Letter Grade* |
| **Pre-requisites** |  |
| **Co-requisites** | *-* |
| **Registration Restriction** | *-* |
| **Educational Objective** | *Students are expected to gain a beginning appreciation of the important role that Statistical methods* *play in making technological and scientific decisions. Students are expected to learn statistical* *principles, methods, and tools that will prove useful in later course work and be relevant to some data* *analysis situations that may be encountered at work.* |
| **Course Description** | *Graphical representations of data; Axioms of probability; conditioning, Bayes Theorem; Discrete distributions (geometric, binomial, poisson); Continuous distributions (normal, exponential, weibull); point and interval estimation; likelihood functions; tests of hypotheses for means, variances, and proportions for one and two populations.* |
| **Learning Outcomes**  | **LO1** | *1. Understand basic concepts in probability including combinatorics, independence, conditional probability and Bayes' rule.**2. Solve basic problems arising in engineering that involve discrete and continuous probability distributions.**3. Use statistical concepts such as means, variances and various types of graphs to analyze datasets using computational software such as R.**4. Understand confidence intervals and perform statistical inference such as hypothesis testing and regression.* |
| **LO2** |
| **LO3** |
| **LO4** |
| **LO5** |
| **LO6** |
| **n..** |
| **PART II ( Faculty Board Approval)** |
| **Basic Outcomes (University-wide)** | **No.** | **Program Outcomes** | **LO1** | **LO2** | **LO3** | **LO4** |
| **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 Industrial 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 systems, conduct experiments, collect data, analyze and interpret results for the examination of Industrial engineering problems. |
| **Specialization Specific Outcomes** | **PO N….** | Ability to simulate a given real life problem and analyze the real problem using the simulation and recommend solutions to the real life problem |
| **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* | *Course Introduction, The Role of Statistics in the Engineering Problem- Solving Process* | *A1,A2,A3* |
| **S2** | *2* | *Descriptive Statistics –* *Numerical Methods* | *A1,A2,A3* |
| **S3** | *3* | *Descriptive Statistics –* *Graphical Methods* | *A1,A2,A3* |
| **S4** | *4* | *Probability* | *A1,A2,A3* |
| **S5** | *5* | *Bayes' Theorem and Random Variables* | *A1,A2,A3* |
| **S6** | *6* | *Discrete Random Variables and Probability Distributions* | *A1,A2,A3* |
| **S7** | *7* | *Continuous Random Variables and Probability Distributions, Joint Probability Distribution* | *A1,A2,A3* |
| **S8** | *8* | *Midterm* |  |  |  |  |  |  |
| **S9** | *9* | *Sampling Distributions and Point Estimation* | *A1,A2,A3* |
| **S10** | *10* | *The Central Limit Theorem* | *A1,A2,A3* |
| **S11** | *11* | *Confidence Interval,* *Variance Known* | *A1,A2,A3* |
|  | **S12** | *12* | *Confidence Interval,* *Variance Unknown* | *A1,A2,A3* |
|  | **S13** | *13-14* | *Confidence Interval of a Normal Distribution* | *A1,A2,A3* |
|  | **S14** |  |  |  |  |  |  |  |  |
| **Assessment Methods, Weight in Course Grade, Implementation and Make-Up Rules**  | **No.** | **Type** | **Weight** | **Implementation Rule** | **Make-Up Rule** |
| **A1** | **Exam** | *30% Midterm, 40% Final* | *In class Exam* | *If a student misses an exam and provides an acceptable legitimate document, a make-up exam should be provided for the midterm.* |
| **A2** | **Quiz** | *10%* | *In class* | No Makeups |
| **A3** | **Homework** | *10%* |  *Take Home* | *50% deduction of points due to late submission* |
| **A4** | **Project** |  |  |  |
| **A5** | **Report** |  |  |  |
| **A6** | **Presentation** |  |  |  |
| **A7** | **Attendance/ Interaction** | 5% | *In class* | *Late comers are not accepted to the class* |
| **A8** | **Class/Lab./****Field Work** | 5% | *In the lab* | *Late comers are not accepted to the lab* |
| **A9** | **Other** |  |  |  |
| **TOTAL** | **100%** |
| **Evidence of Achievement of Learning Outcomes** | *Letter grades depend on the weighted total of the scores attained from homework, midterm, final,* *lab work, project according to the weights given above.* |
| **Method for Determining Letter Grade** | *Better Result of a Curve in class or the Catalog System given below:**A+:100 A: 95-99 A-: 90-94**B+: 85-89 B: 80-84 B-: 75-79**C+: 70-74 C: 65-69 C-: 60-64**D+: 55-59 D: 50-54 F:0-50* |
| **Teaching Methods, Student Work Load** | **No** | **Method** | **Explanation** | **Hours** |
| ***Time applied by instructor*** |
| **1** | **Lecture** | *Lecturing and utilizing chalkboard/whiteboard. Sample questions and answers to strengthen learning. In class exams.*  | *14 weeks 3 hours =42* |
| **2** | **Interactive Lecture** | *The instructor stops and asks students questions and encourages them to answer.* |  |
| **3** | **Recitation** | *Problems and solutions are demonstrated on chalkboard/whiteboard.*  | *14 weeks 1 hours =14* |
| **4** | **Laboratory** | *Conducting experiments in lab and writing reports.* | *14 weeks 1 hours =14* |
| **5** | **Practical** | *Supervised practical experience in a student’s field of study that provides him/her the opportunity to apply knowledge gained in an academic setting.* | *14 weeks 1 hour =14* |
| **6** | **Field Work** | *Students out into the real world to experience new information.*  | *6 weeks 2 hours =12* |
| ***Time expected to be allocated by student*** |
| **7** | **Project** | The problem subject of the project is researched and a report is written.  |  |
| **8** | **Homework** | Answers of given questions are prepared at home.  | *14 weeks 2 hours =28* |
| **9** | **Pre-class Learning of Course Material**  | New subjects are learned by watching videos or reading course notes before class.  | *14 weeks 2 hours =28* |
| **10** | **Review of Course Material** | Review of the subjects before exams in order to prepare.  | *14 weeks 2 hours =28* |
| **11** | **Studio** | Activity leading to skill development of the student’s design or performance ability and/or artistic growth. |  |
| **12** | **Office Hour** | Asking questions to instructor or to the teaching assistant out of class hour. |  |
| **TOTAL** | *180* |
| ***IV. PART*** |
| **Instructor** | **Name** | *Dr. Semail Ülgen* |
| **E-mail** | *sulgen@antalya.edu.tr* |
| **Phone Number** | *0242 2452307* |
| **Office Number** | *A1-33* |
| **Office Hours** | *2 hrs per week* |
| **Course Materials** | **Mandatory** | Applied Statistics and Probability for Engineers, 6e [Douglas C. Montgomery](http://eu.wiley.com/WileyCDA/Section/id-302479.html?query=Douglas+C.+Montgomery), [George C. Runger](http://eu.wiley.com/WileyCDA/Section/id-302479.html?query=George+C.+Runger)[Applied Statistics and Probability for Engineers, 6e (EHEP002914) cover image](http://eu.wiley.com/WileyCDA/WileyTitle/productCd-EHEP002914.html) |
| **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 form 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.* |
|  | *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.* |
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