TED UNIVERSITY

MATH 240
INTRODUCTION TO PROBABILITY & STATISTICS FOR ENGINEERS

SYLLABUS – SPRING 2025

Course Information

Required or Elective	☑ Required ☐ Elective	**Date**	February 2025
Semester	Spring 2025	**Class Hours and Classrooms**	**Sections 01 (RSOK) & 02 (ÖK)** Mon. 11:00 – 13:00 (D032/S1 DB18/S2) Tue. 11:00 – 12:00 (D032/S1 DB18/S2) **Sections 03 (CA) & 04 (ANG)** Tue. 15:00 – 16:00 (D030/S3 D032/S4) Wed. 13:00 – 15:00 (D030/S3 D032/S4)
Course/ECTS Credit Hours	(3+0+0) 3 / 6	**Pre-requisite / Co-requisite**	MATH 101 – Calculus of One Variable
Level of Course	Sophomore	**Language of Instruction**	☑ English ☐ Turkish
Instructors and Office Hours	Dr. R. Secer O. Keskin (secer.keskin@tedu.edu.tr) (Office D308) – S01 Dr. Özkan Kale (ozkan.kale@tedu.edu.tr) (Office D304) – S02 Dr. Cem Akgüner (cem.akguner@tedu.edu.tr) (Office D312) – S03 Dr. Aslı Numanoğlu Genç (asli.genc@tedu.edu.tr) (Office D301) – S04 Please contact us by e-mail for appointments.		
Teaching Assistant(s)	None		
Textbook	There is not a single textbook for this class. Recommended books for study and further exercise are given below. Hand-outs will be distributed and posted on LMS as necessary.		
Supplementary Textbooks (not in order)	1) Probability and Statistics for Engineers and Scientists by R. E. Walpole, R. H. Myers, S. L. Myers, and K. Ye 2) Probability and Statistics for Engineering & the Sciences by J. L. Devore 3) Introduction to Probability Models by S. M. Ross 4) Applied Statistics and Probability for Engineers by D. C. Montgomery and G. C. Runger		
Course Web Pages and Communication	You are already enrolled in the TEDU learning management system (LMS) (**2025S_MATH240** on **TEDU LMS**). Please make a habit of regularly following these pages to have access to course-related materials. We also recommend the Moodle mobile application as a well-adapted and easily accessible alternative to the website version. We will use e-mail through the LMS (**lms.tedu.edu.tr**) as our primary communication tool for announcements, reminders, and updates.		

Course Description

Basic concepts of probability, Discrete and continuous random variables, their probability distributions, expected value, variance. Discrete probability distributions. Jointly distributed and independent Random Variables. Covariance and correlation. Sampling, estimation. Hypothesis Testing, Regression.

Course Learning Outcomes

On successful completion of this course students will be able to:

1. Compute probabilities by modeling sample spaces
2. Construct the probability distribution of discrete and continuous random variables
3. Calculate expected values and variances of random variables
4. Apply statistical descriptors to a sample
5. Apply hypothesis testing to form engineering judgement
6. Interpret regression results

Course Assignments

A. ***Exams I & II (55%):*** There will be two exams given during the semester. Tentative times for exams are shown in the weekly schedule on Page 4.

B. ***Final Exam (45%):*** There will be a comprehensive final during the final exam weeks starting on June 11, 2025. The exact date of the final will be announced by the University towards the end of the semester.

Course Assessments & Learning Outcomes Matrix

Assessment Methods	Course Learning Outcomes
Midterm Exams	All
Final Exam	All

Relationship to Program Outcomes

This course contributes to fulfillment of the following program outcomes (2 count / 2 weights):
PO1: Comprehend science and advanced mathematics subjects fundamental to engineering (1)
PO6: Design and conduct experiments; analyze and interpret data (1)

Teaching Methods & Learning Activities

☑ Telling/Explaining
☑ Discussions/Debates
☑ Questioning
☑ Reading
☐ Peer Teaching
☐ Scaffolding/Coaching
☐ Demonstrating
☑ Problem Solving
☐ Inquiry
☐ Collaborating
☐ Think-Pair-Share
☐ Predict-Observe-Explain
☐ Microteaching
☑ Case Study/Scenario Analysis
☐ Simulations & Games
☐ Video Presentations
☐ Oral Presentations/Reports
☐ Concept Mapping
☐ Brainstorming
☐ Drama/Role Playing

☐ Seminars
☐ Field Trips
☐ Guest Speakers
☑ Hands-on Activities
☐ Service Learning
☐ Web Searching
☐ Experiments
☐ Other(s):

Student Workload

☑ Lectures .....**42** .. hrs
☑ Course Readings .....**14**... hrs
☐ Workshop .... hrs
☐ Online Discussion .... hrs
☐ Debate .... hrs
☐ Work Placement..... ..... hrs
☐ Field Trips/Visits..... ..... hrs
☐ Observation..... ..... hrs
☐ Lab Applications..... ..... hrs
☐ Hands-on Work..... ..... hrs
☑ Exams/Quizzes .....**118**.. hrs
☐ Resource Review..... ..... hrs
☐ Research Review .... hrs
☐ Report on a Topic .... hrs
☐ Case Study Analysis .... hrs
☐ Oral Presentation .... hrs
☐ Poster Presentation .... hrs
☐ Demonstration .... hrs
☐ Web Designs .... hrs
☐ Mock Designs .... hrs
☐ Team Meetings..... ..... hrs
☐ Other: Term Projects..... ..... hrs
TOTAL..... **174**... hrs

Assessment Methods

☑ Test/Exam
☐ Quiz
☐ Oral Questioning
☐ Performance Project
☐ Written ☐Oral
☐ Observation
☐ Self-evaluation
☐ Peer Evaluation
☐ Portfolio
☐ Presentation (Oral, Poster)
☐ Other(s):

Tentative Course Outline

A tentative course outline for the lectures and exam dates is given below. Any changes and updates will be announced on the Moodle web page for the course.

Week	Topic
1	Interpreting Probabilities, Sample Spaces and Events, Permutations and Combinations
2	Axioms of Probability, Conditional Probability
3	Independence, Bayes' Theorem
4	Random Variables, Discrete and Continuous Probability Distributions, Expectation and Variance
5	Binomial Distribution, Poisson Distribution
6	Uniform, Exponential Distributions, Applications in Component and System Reliability –
7	Normal Distribution – **Exam 1**
8	Applications of Normal Distributions
9	Sample Statistics
10	Central Limit Theorem
11	Hypothesis Testing
12	Hypothesis Testing, p-value
13	Hypothesis testing, confidence interval – **Exam 2**
14	Simple Linear Regression

Course Policies and Some Remarks

General

1. Date for the final exam will be announced at the end of the semester by the University. The final exam will cover all topics.
2. Cell phones should be turned off and kept out of sight during classes. You are also not allowed to use your computers/ tablets etc. in the classroom.
3. If you are more than 10 minutes late, please do not enter the class.
4. You are not allowed to use cell phones during the exams.

Attendance

Attendance is strongly encouraged for student success. Attendance may be recorded at various intervals. Students who do not take the final examination will automatically receive the grade **FX** at the end of the semester.

Make Up Exams

Make-up for midterm exams will generally **NOT** be offered. If you have a legitimate reason for missing an exam, then you must inform your instructors in advance and get their approval. The only exceptions to this rule are illness or emergency. In case of an illness or emergency, you need to supply documentation that supports your claim. Also please read the document given in the link: http://www.tedu.edu.tr/tr/main/yonetmelikler-ve-yonergeler

Calculator Policy

You may use a non-programmable calculator during exams.

Plagiarism

All the following are considered plagiarism:

- "Turning in someone else's work as your own
- Copying words or ideas from someone else without giving credit
- Failing to put a quotation in quotation marks
- Giving incorrect information about the source of a quotation
- Changing words but copying the sentence structure of a source without giving credit
- Copying so many words or ideas from a source that it makes up most of your work, whether you give credit or not" (www.plagiarism.org)

Plagiarism is a very serious offense and will be penalized accordingly by the university disciplinary committee. The best way to avoid accidentally plagiarizing is to work on your own before you ask for the help of other resources. Collaboration on non-collected homework and in studying is strongly encouraged; however, the work you hand in must be solely your own. For more information on TEDU policy on intellectual integrity see the "Student Handbook" in the following link: https://student.tedu.edu.tr/tr/student

Cheating

Cheating has a very broad description which can be summarized as "acting dishonestly". Some of the things that can be considered as cheating are the following: copying answers on exams, homework and lab works, using prohibited material on exams, lying to gain any type of advantage in class, providing false, modified or forged data in a report, plagiarizing, modifying graded material to be re-graded, causing harm to colleagues by distributing false information about an exam, homework or lab. Cheating is a very serious offense and will be penalized accordingly by the university disciplinary committee. For more information on TEDU policy on intellectual integrity, see the "Student Handbook" in the following link: https://student.tedu.edu.tr/tr/student.

Use of Generative AI Tools

Use of Generative AI (such as ChatGPT, Gemini, Copilot, Deepseek, Claude, etc.), along with any other form of AI, is strictly prohibited for any asssesments/examinations given in this course. Any violation of this policy will be addressed under the Code of Ethical Conduct for all students and in the case of sufficient cause for concern, a disciplinary action will be taken in accordance with HEC (Higher Education Council- YÖK) rules and regulations.

Student Support and Guidance Services

Student Development and Psychological Counseling Center (SDPCC)

Student Development and Psychological Counseling Center conducts individual psychological counseling, group psychological counseling, preventive and developmental services such as workshops and seminars for all students in need. You may apply to our Center to deal with all your current problems.

For General Information: https://csc.tedu.edu.tr/

For Application: https://anket.tedu.edu.tr/index.php/761882?lang=en

TEDU Without Barriers Unit:

Please inform the *TEDU Without Barriers* Unit and the instructor of the course about the specific issues in case you have a physical or mental disability and are having trouble with anything related to this course—such as accessing the material, participating in the class, taking notes, preparing for, attending or managing to complete the exams. Your situation will be reviewed by commission, in accordance with the principle of confidentiality, and if deemed appropriate, facilitating measures will be taken so that you can take the course more efficiently.

For further information and/or questions:

https://engelsiz.tedu.edu.tr/ or engelsiz@tedu.edu.tr