# Statistics

**Instructor**

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Dept. of CENG, C233

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**Office Hours**

4 pm – 5 pm, Mondays

**Course Overview**

Statistics (Teams Code: l5inivy / 4ltwvqh)

We are going to learn both the mathematical foundations and real-world application of the statistics in this course. Focus in this course will be to provide the required background for a machine learning course. Python is preferred as the programming language for the applications of this course.

**Required Text**

Probability And Statistics for Computer Scientists, CRC Press, *Michael Baron*

Introduction to Probability and Statistics, Elsevier, *Sheldon M. Ross*

Probability and Statistics for Engineers and Scientists, Brooks/Cole, *A.J. Hayter*

**Course Materials**

- Python 3.x (Anaconda is preferred)
- Jupyter Notebook from Anaconda
- Pycharm from JetBrains / Visual Studio Code from Microsoft

**Course Schedule**

| Week | Subject | Week | Subject |
|---|---|---|---|
| 01 | Definitions of Descriptive Statistics | 08 | Linear Regression |
| 02 | Data, Sampling, and Variation | 09 | Linear Regression with Matrix Algebra |
| 03 | Visualization of Data | 10 | Regression with High Degree Polynomials |
| 04 | Measures of Central Tendency | 11 | Data Linearization and Transformation |
| 05 | Measures of Variation | 12 | Chi-Square and Goodness-of-Fit Tests |
| 06 | Measures for Multiple Variables | 13 | Model Building |
| 07 | Box Plots and Outliers | 14 | Simulation with Monte Carlo Methods |