אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2025–26–B term

Course Name Mathematical foundations of Deep Learning

Course Number 201.1.0161

Course web page
`https://math.bgu.ac.il//en/teaching/spring2026/courses/deep-learning`

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Office Hours `https://math.bgu.ac.il/en/teaching/hours`

Abstract

Requirements and grading[1]

Course topics

Deep Learning, often imprecisely called "Artfiicial Intelligence", has become a hugely successful discipline recently. At its core are mathematical tools in the fields of Linear algebra, Optimization, Probability and Statistics. The main objective of this class is to prepare students for advanced courses in Deep learning by introducing them to the mathematical tools on which Deep Learning is based. We will also consider simple examples of Deep Learning to motivate the subject as well as to see how the acquired techniques are being used. We will also use computer demonstrations using the python based SAGE computer algebra system, serving as an introduction to the use of python in advanced Deep Learning classes. The course will focus on Linear Algebra and Optimization. It is thereore recommended to supplement it with a Probability and/or Statistics class. Textbook: trang - Linear algebra and learning from data Prerequisites: Two linear algebra and one calculus class in the Mathematics, Computer Science or Electrical Engineering departments. Students in other departments who would like to take the class will be accepted on a case by case basis.

[1] Information may change during the first two weeks of the term. Please consult the webpage for updates