

## The Department of Mathematics

2015–16–A term

**Course Name** Basic Concepts in Modern Analysis

**Course Number** 201.2.0351

**Course web page**

<https://www.math.bgu.ac.il/en/teaching/fall2015/courses/basic-concepts-in-modern-analysis>

**Lecturer** Prof. Victor Vinnikov, <[vinnikov@bgu.ac.il](mailto:vinnikov@bgu.ac.il)>, Office 103

**Office Hours** <https://www.math.bgu.ac.il/en/teaching/hours>

### Abstract

### Requirements and grading<sup>1</sup>

### Course topics

Banach spaces and Hilbert spaces. Basic properties of Hilbert spaces. Topological vector spaces. Banach-Steinhaus theorem; open mapping theorem and closed graph theorem. Hahn-Banach theorem. Duality. Measures on locally compact spaces; the dual of  $C(X)$ . Weak and weak-\* topologies; Banach-Alaoglu theorem. Convexity and the Krein-Milman theorem. The Stone-Weierstrass theorem. Compact operators on Hilbert space. Introduction to Banach algebras and Gelfand theory. Additional topics as time permits.

---

<sup>1</sup>Information may change during the first two weeks of the term. Please consult the webpage for updates