

The Department of Mathematics

2023–24–A term

Course Name Introduction to Analysis

Course Number 201.1.1051

Course web page

<https://www.math.bgu.ac.il/en/teaching/fall2024/courses/intro-analysis>

Lecturer Prof. Izhar Oppenheim, <izharo@bgu.ac.il>, Office 316

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

Abstract

Requirements and grading¹

Course topics

Metric and normed spaces. Equivalence of norms in finite dimensional spaces, the Heine-Borel theorem. Convergence of sequences and series of functions: pointwise, uniform, in other norms. Term-by-term differentiation and integration of series of functions, application to power series. Completeness: completeness of the space of continuous functions on a closed interval and a compact metric space. The Weierstrass M -test. The Baire category theorem and applications, bounded linear functionals and the Banach-Steinhaus theorem. Compactness in function spaces and the Arzela-Ascoli theorem. Introduction to Fourier series: Cesaro means, convolutions and Fejer's theorem. The Weierstrass approximation theorem. L^2 convergence. Pointwise convergence, the Dirichlet kernel and Dini's criterion.

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