

The Department of Mathematics

2025–26–B term

Course Name Models and Equations: Mathematics and the Natural Sciences

Course Number 201.2.7081

Course web page

<https://math.bgu.ac.il/en/teaching/spring2026/courses/models-equations>

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

Abstract

Requirements and grading¹

Course topics

The course is intended to introduce the students to the field of applied mathematics. It is concerned with the construction, analysis, and interpretation of mathematical models that shed light on significant problems in the natural sciences. It is aimed to provide material of interest to students in mathematics, science, and engineering at the upper undergraduate and graduate level. Nature of applied mathematics. Deterministic systems and Ordinary Differential equations (ODEs). Poincaré perturbation theory. Random processes and Partial Differential equations (PDEs). Heat Flow and Fourier Analysis. Advanced Fourier Analysis and Fourier Transform. Fundamental applied mathematics procedures illustrated on ODEs. Introduction to theories of continuous fields: motion of a bar, the continuous medium, field equations of continuum mechanics, inviscid fluid flow, elements of potential theory.

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