

# The Department of Mathematics

2021–22–A term

**Course Name** Partial Differential Equations For Biotechnology

**Course Number** 201.1.9591

**Course web page**

<https://www.math.bgu.ac.il/en/teaching/fall2022/courses/partial-differential-eq>

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

## Abstract

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

## Course topics

1. Classification of linear Partial Differential Equations of order 2, canonical form.
2. Fourier series (definition, Fourier theorem, odd and even periodic extensions, derivative, uniform convergence).
3. Examples: Heat equation (Dirichlet's and Newman's problems), Wave equation (mixed type problem), Potential equation on a rectangle.
4. Superposition of solutions, non-homogeneous equation.
5. Infinite and semi-infinite Heat equation: Fourier integral, Green's function. Duhamel's principle.
6. Infinite and semi-infinite Wave equation: D'Alembert's solution.
7. Potential equation on the disc: Poisson's formula and solution as series.

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