

# The Department of Mathematics

2024–25–B term

**Course Name** Branching Processes

**Course Number** 201.2.1061

**Course web page**

<https://math.bgu.ac.il/en/teaching/spring2025/courses/branching-processes>

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

## Abstract

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

## Course topics

“Branching processes” are a family of discrete valued random processes, characterized by a very strong correlation between the state of the process and the transition probabilities.

The original model was derived by Galton & Watson during the late 19th century, in order to investigate the dynamics of the aristocrat families in Victorian Britain, but soon found numerous applications in many scientific disciplines, such as computational biology, nuclear engineering, epidemiology and economics. In the course, we will introduce the basic concepts in branching processes, underlining the mathematical formalism, and discuss two applications: epidemiology (and the COVID pandemic in particular), and fission chain models in nuclear engineering.

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