

## The Department of Mathematics

2018–19–B term

**Course Name** The  $p$ -adic numbers and their usage in number theory

**Course Number** 201.2.0021

**Course web page**

<https://www.math.bgu.ac.il/en/teaching/spring2019/courses/the-p-adic-numbers-and-their-usage-in-number-theory>

**Lecturer** Prof. Eitan Sayag, <sayage@bgu.ac.il>, Office 107

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

### Abstract

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

### Course topics

The course will discuss arithmetic, analysis and geometry over  $p$ -adic fields. The primary aim is to provide the necessary background for Dwork's rationality theorem of Weil Zeta functions and to further developments in the subject.

In the first part of the course we will cover some classical applications of  $p$ -adic numbers to elementary number theory including the local to global principle for quadratic forms.

In the second part we will study analysis:  $p$ -adic functions and  $p$ -adic power series and present Dwork's proof.

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