אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2022—23—B term

Course Name Problem Solving

Course Number 201.1.0811

Course web page
`https://www.math.bgu.ac.il//en/spring2023/courses/problem-solving`

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

Office Hours `https://www.math.bgu.ac.il/en/hours`

Abstract

Requirements and grading[1]

Course topics

The purpose of the course is to provide students with the ability to deal with mathematical problems in a variety of subjects by becoming familiar with common strategies for solving mathematical problems. The course requires active participation of the students during class and includes both group and individual work. The meetings will be conducted as a seminar where initially a classical problem and its solution will be presented. The strategy for solving problems arising from the solution will be discussed and then the participants will be challenged to use this strategy with specfiic examples. In addition, problems/riddles given as weekly homework will be discussed. We will cover a variety of techniques for solving problems: exploiting parity, pigeonhole principle, checking extreme cases, double counting, the method of geometric transformations in dealing with sophisticated geometric problems, methods of Dynamic programming, the principle of induction and Fermat's descent method for treating Diophantine equations. The method of generating functions.. Probabilistic considerations and their uses.

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