אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2020–21–B term

Course Name Ordinary Differential Equations for BE

Course Number 201.1.9581

Course web page
`https://www.math.bgu.ac.il//en/teaching/spring2021/courses/ordinary-differential-equations-for-be`

Lecturer Dr. Natalia Gulko, <gulko@post.bgu.ac.il>, Office מינוס 108

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

Abstract

Requirements and grading[1]

Course topics

1. Basic notions: equations of the first order, general solution, initial value problem, particular solution. Linear equations, separable equations, exact equations, homogeneous equations, integrating factor. The existence and uniqueness theorem (without proof). The Riccatti equations, the Bernoulli equations. Linear systems of the first order differential equations. Solution via the matrix calculus. The second order linear equations. Non-linear equations and the Wronskian. The Euler equations. Linear equations of the first order. 2. The Laplace transformation, properties of the Laplace transformation, solutions of the linear non-homogeneous equations via the Laplace transformation, the Heaviside functions, the delta functions.3. The Fourier transformation, properties of the Fourier transformation. Cosine and sine Fourier transformation. Solution of the integral equations via the Fourier transformation.

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