

The Department of Mathematics

2016–17–B term

Course Name Introduction to Singularity Theory

Course Number 201.1.0361

Course web page

<https://www.math.bgu.ac.il/en/teaching/spring2017/courses/introduction-to-singularity-theory>

Lecturer Prof. Dmitry Kerner, <kernerdm@bgu.ac.il>, Office 217

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

Abstract

Requirements and grading¹

See on the web page²

Course topics

- .1 An introductory sketch and some motivating examples. Degenerate critical points of functions. Singular (nonsmooth) points of curves.
- .2 Holomorphic functions of several variables. Weierstrass preparation theorem. Local Rings and germs of functions/sets.
- .3 Isolated critical points of holomorphic functions. Unfolding and morsification. Finitely determined function germs.
- .4 Classification of simple singularities. Basic singularity invariants. Plane curve singularities. Decomposition into branches and Puiseux expansion.

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

²<https://www.math.bgu.ac.il/~kernerdm/Teaching/2017.Singularities/2017.Intro.Singularity.Theory.html>



- .5 Time permitting we will concentrate on some of the following topics: a. Blowups and resolution of plane curve singularities; b. Basic topological invariants of plane curve singularities (Milnor fibration); c. Versal deformation and the discriminant.