

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>

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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://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.