The University of Western Ontario
Department of Mathematics

Mathematics 9612B, Winter 2018
INTRODUCTION TO SINGULARITIES AND DEFORMATIONS

Lectures: Wed/Thu/Fri, 3:30–4:30pm, MC-107

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Office Hours: by appointment
Course Website: `http://uwo.ca/math/faculty/adamus/teaching/9612B2018/`

Course outline: This course is concerned with the local topological, algebro-geometric and differential structure of a complex analytic set near a singular point, and the concept of (analytic) deformation. Our primary references will be:

- G.-M. Greuel, C. Lossen and E. Shustin, "Introduction to Singularities and Deformations", Springer Monographs in Mathematics. Springer, Berlin, 2007.
- J. Milnor, "Singular points of complex hypersurfaces", Princeton Univ. Press, 1968.
- H. Whitney, *Local properties of analytic varieties*, Differential and Combinatorial Topology, Princeton Univ. Press, 1965.
- H. Whitney, *Tangents to an analytic variety*, Ann. Math. **81** (1965), 496–549.

The topics will include, but need not be restricted to, the following:

- Whitney's tangent cones.
- Link of a singularity and Milnor fibre.
- Milnor's fibration theorem.
- Milnor and Tjurina numbers of isolated singularities.
- Left- right- and contact equivalence.
- Unfoldings and deformations.
- Finite determinacy.
- Arnold's classification of simple singularities.
- Existence of versal deformations.

Evaluation: The course mark will be based on class participation and one in-class project presentation.