

MATH 532

Selected Topics in Algebraic Geometry

(2017 Spring Semester)

by
Ayberk Zeytin

Prerequisites: Consent of the instructor

Credits: (3-0)3 / 7 ECTS

Outline(tentative): The main aim in this class is to study algebraic curves. This is a very classical subject on which one may find many different viewpoints. Each viewpoint, e.g. function theoretic, geometric, arithmetic, etc., has its own advantage and specific target and of course own set of references. We will follow the algebraic viewpoint which is well suited for a generalization in higher dimensions. I will assume some familiarity with algebraic concepts, like rings, ideals, homomorphisms, UFDs, PIDs etc., though I will assign exercises for you to get a working knowledge on these objects.

2 weeks Affine Algebraic Sets
3 weeks Affine Varieties
2 weeks Local Properties of Plane Curves
3 weeks Projective Varieties
2 weeks Projective Plane Curves
2 weeks Varieties, Morphisms, and Rational Maps

We will touch Riemann-Roch if we have time...

Bibliography: As mentioned in the outline, the literature is very extensive. I do not recommend to use google... Here are some classical texts:

- W. Fulton, *Algebraic Curves: An Introduction to Algebraic Geometry*, available online at <http://www.math.lsa.umich.edu/~fulton/>
- K.E. Smith, L. Kahanpää, P. Kekäläinen, W. Traves, *An Invitation to Algebraic Geometry*
- I.R. Shafarevich, *Basic Algebraic Geometry*
- Q. Liu, *Algebraic Geometry and Arithmetic Curves*

Program: Monday and Wednesday, 09h30 - 10h45 (FEF 09)

Evaluation: Every two weeks, you will be assigned problems some of which will be homework. There might be a Mid-Term. You will be notified at least two weeks in advance if this is the case.

- Homework/MT: %60
- Final: % 40