

Math 202a: Algebraic Geometry

Fall 2008

Instructor: Prof. Ivan Horozov

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Office: Goldsmith 205

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Class schedule: Tue, Fri 10.30am – 12pm; Goldsmith 101

Office hours: by appointment

Textbooks:

- I. Lectures on Riemann Surfaces by O. Forster
- II. Riemann Surfaces by H. Farkas and I.Kra
- III. Algebraic Geometry by R. Hartshorne
- IV. Principles of Algebraic Geometry by P.Griffiths and J. Harris

Prerequisites: Introduction to complex analysis, introduction to manifolds (mostly for the use of differential forms), Commutative algebra (rings, modules, tensors, Hom, localizaiton).

Structure of the course: It will be an one-semester course. The first part of the course will be about Riemann surfaces (one dimensional over the complex numbers). We are going to use both algebraic and analytic methods. Topics will include;

Syllabus:

- Riemann-Hurwitz Theorem
- Differential forms
- Invariance of residues
- Reciprocity between differential forms on a Riemann surface
- Jacobians
- Sheaves (analytic)
- Riemann- Roch Theorem
- Serre's Duality
- Abstract sheaves
- Schemes
- Fiber product of two schemes over a third scheme
- Kaehler differentials
- Periods

Students with disabilities: If you are student with a documented disability on record at Brandeis University and wish to have a reasonable accommodation made for you in 202a, please see me as soon as possible. Note that accommodation for an exam or an assignment cannot be made retroactively.