

SYLLABUS
MATH 514, COMPLEX ALGEBRAIC GEOMETRY
FALL 2022

Time: MWF 2:00pm–2:50pm

Room: 347 Altgeld Hall

Instructor: Sheldon Katz, katz@math.uiuc.edu, 265-6258,

Office and hours: TBA, 301 Altgeld Hall, or by appointment.

Course webpage: <http://www.math.uiuc.edu/~katz/class/f22/>

Prerequisite: Math 448 or equivalent, or permission of the instructor

Text: Hodge Theory and Complex Algebraic Geometry, I, Claire Voisin, Cambridge studies in advanced mathematics **76**.

Reserve texts: All are available in the Mathematics Library and electronically

Principles of Algebraic Geometry, Griffiths and Harris

Several Complex Variables, Grauert and Fritzsche

The course textbook has also been placed on reserve.

Links to electronic copies are available on the course website. As additional texts are placed on reserve, they will be added to a list on the course webpage.

Course Summary: This course develops the theory of complex manifolds, with particular attention to compact Kähler manifolds, which include complex projective varieties. In the process, a foundation is established for further study in complex geometry and algebraic geometry. Geometric methods frequently come to the forefront in a complex analytic approach.

The course will include most of the first two chapters of the text, plus background material from the reserve texts and related material from other sources. Selected topics from Chapters III and IV will be included as time permits.

Lectures will parallel the topics in the text but the treatment will frequently diverge from the text. Students are advised to attend the lectures, read the book, and stay on top of the homework.

Homework and Grades: Homework problems will be assigned, but they will neither be collected nor graded. You will have the opportunity to go over problems during bi-weekly problem sessions. Since this is an advanced graduate course, grades are a non-issue.