

Syllabus for Math 559-2, Fall 2017

Instructor Name: Dustin Cartwright

Office Hours and Location: M 2:25-3:30, Th 1:30-3:00 and by appointment, Ayres 210

Email: cartwright@utk.edu

Course web page: Further information will be posted on the Canvas page for this course.

Learning Environment: I expect you to attend every lecture, pay attention, and participate in discussions. During lectures, you should not be using your laptop, cell phone, or any other electronic devices.

Text: *Algebraic Geometry: A First Course* by Joe Harris

In addition to the required text, if you wish to have a written reference for some of the topics in commutative algebra that are introduced, I recommend:

- *Commutative Algebra with a View Toward Algebraic Geometry* by David Eisenbud
- *Introduction to Commutative Algebra* by Michael Atiyah and Ian MacDonal

Course Requirements, Assessment and Evaluations: Your grade will consist of:

- 50% homework
- 25% final project, written
- 25% final project, presentation

Homework will be due every other Wednesday at 11:30am, and the assignments will be posted on Canvas two weeks before the due date. You must submit your homework online by uploading a PDF file through Canvas. You are encouraged to typeset your homework solutions using LaTeX, but legible scans will also be accepted. Your homework solutions should acknowledge anyone you worked with or any resources beyond the course that you used in coming up with the solution, and you should always write your answer in your own words.

In lieu of exams, you will complete a final project on a topic of your choice, in consultation with me. Your project will consist of both a written report and an in-class presentation, which will take place in the last days of the

course. You should discuss possible topics with me, and I would be happy to make suggestions based on your interest.

If you have on-going research independent of this class, your project may be connected to your research, but you should be sure to connect it to the context of this course. Your written report must be entirely original and may not use any material that has previously been used for another purpose.

Make up Policy: Late homework will only be accepted with a valid excuse.

If you have a religious obligation which conflicts with one of the requirements of this course, please let me know by the second week of class.

How to be Successful in this Course: Go over the lecture material after class, either your own notes, or the textbook. Start the homework early. Use other resources with your homework, but use them to help you learn, not just complete the assignment. Go to office hours.

You are *strongly encouraged* to work with other students in the course on your homework. You will find that your peers know things which can help you solve problems when you would otherwise be stuck for a long time. When you have a partial solution, they will help you refine your ideas and find gaps in your arguments. Even just the process of explaining your ideas to someone else will help you understand the material better. There is a discussion thread on Canvas set up to help you find homework collaboration groups.

Course Outline: This course will cover the basics of projective and affine algebraic varieties, including irreducibility, dimension, degree, and singularities. We will discuss the properties of hypersurfaces, Grassmannians, quadrics, and possibly dual varieties and cubic surfaces.

Schedule:

- Fri, Nov. 3: one-paragraph project summary due, by email
- Wed, Nov. 29 - Mon, Dec. 4: presentations
- Mon, Dec. 11, 12pm: project write-ups due

Campus Syllabus

If the instructor finds it necessary to make informational changes (e.g. office hours, schedule adjustments) due to students' needs or unforeseen circumstances, students will be notified in writing/email of any such changes.