MA 526: Algebraic Geometry, Fall 2013

Class website: http://www.math.ncsu.edu/~jdhauens/ma526
8:30 – 9:45 am TH
SAS 1218

Instructor: Dr. Jonathan Hauenstein

Office Hours: SAS 3152
Tuesday: 10 – 11 am, Thursday: 1 – 2 pm
Other times by appointment or drop-in

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Textbook: *Introduction to Algebraic Geometry*. B. Hassett, 2007.

Additional Reading: *Ideals, Varieties, and Algorithms.* D. Cox, J. Little, and D. O'Shea, 2010.
Using Algebraic Geometry. D. Cox, J. Little, and D. O'Shea, 2005.

Prerequisites: MA 521 (Abstract Algebra I) or permission from the instructor.

Description: Algebraic geometry is the field of mathematics which studies the solution sets of systems of polynomial equations. Students will learn to translate between algebraic and geometric statements and study solution sets using both commutative algebra and geometry. This course will incorporate both theory and computations to introduce algebraic geometry. When possible, examples from applications will be used.

Topics: This course will closely follow the textbook and discuss the following topics:

- Gröbner bases
- Affine and projective varieties
- Morphisms and rational maps
- Elimination theory
- Irreducible varieties and primary decomposition
- Nullstellensatz
- Grassmannians
- Hilbert functions

Collaboration: Collaboration is encouraged in this course for completing the homework. However, copying someone else's work is not acceptable and this act of academic dishonesty will be prosecuted following University policy. Each homework problem should include a statement of who (or what) you consulted to develop your solution.

Attendance: Each student is expected to attend every class lecture.

Electronics: Please respect your fellow students and prevent your electronic equipment from disrupting class.

Reading: The class website will contain information regarding topics covered in upcoming lectures and the corresponding sections in the textbook.

Homework: Homework is designed to help students understand the material and will be assigned regularly. The assignments will be announced in class and listed on the class website. Seth Sullivant has produced a file explaining how to prepare your homework, which is available at http://www.math.ncsu.edu/~smsulli2/MA591_Fall2011/hwhowto.pdf. **Assignments are due at the beginning of class on their due dates. Late homework will not be accepted.**

Exams: There will be a take-home midterm exam and an in-class comprehensive final exam. Midterm exam will be given Tuesday, October 8 and will be due Tuesday, October 15 at 8:30 am. **Late midterm exams will not be accepted.**
The final exam is Tuesday, December 17, 8:00 – 11:00 am.

Grading: The final grade will be computed using the follow weights.

Homework	60 %
Midterm Exam	15 %
Final Exam	25 %

This course will use a grading policy that is no stricter than the standard NCSU +/- grading system. I reserve the right to extend the grading scale and consider other factors (e.g., attendance, participation, and final exam score) for border line cases.

Absences and makeup work: Students are expected to arrive on time, stay the entire class, and contribute to the class discussion and group work. Excused absences and makeup exams will be handled according to University policy. Please notify the instructor in writing (email message is acceptable) prior to the date of absence when this is feasible. In cases where advance notification is not feasible (e.g., accident or emergency), the student should notify the instructor as soon as possible.

Incompletes: Incompletes will be considered following University & Graduate School policy.

Disabilities: Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, the student must register with the Diasability Services Office (http://www.ncsu.edu/dso, 919-515-7653). For more information on University policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at http://policies.ncsu.edu/regulation/reg-02-20-01.

Copyright: All materials disseminated in class or on the web are protected by copyright laws. Copies or downloads are allowed for personal use. Distribution or sale of any of these materials in any form is strictly prohibited.

Academic Integrity: Students are required to comply with the University policy on academic integrity found in the Code of Student Conduct. When turning in your homework or exams, you are acknowledging the following statement: "I have neither given nor received unauthorized aid on this test or assignment."

Evaluation: Online class evaluations will be available for students to complete during the last 2 weeks of class. Students will receive an email message directing them to a website where they can login using their Unity ID and complete the evaluations. All evaluations are confidential: instructors will not know how any one student responded and students will not know the ratings of any particular instructor.