

Classroom: PKH 304

Time: Wed 7:00-9:50 pm

Contact info: PKH 462, (817) 272 3932, vancliff@uta.edu

Web: <http://www.uta.edu/math/vancliff/T/S08>

Office Hours: Mon 5:00-5:30 pm, Wed 6:00-6:50 pm, or by appointment

Text Book: Ideals, Varieties, and Algorithms: An Introduction to Computational Algebraic Geometry and Commutative Algebra, Undergraduate Texts in Mathematics, by David A. Cox, John Little, Donal O'Shea, Springer, 3rd ed. (March 2, 2007), 576 pages.

Tests: none

Grading: homework solutions (due every few weeks), attendance, participation & presentation of some material

Important Dates: Mon Jan 21 = Martin Luther King Jr. Day (UTA holiday),  
Wed Jan 30 = Census date, Mar 17-21 = Spring break,  
Fri April 11 (Mar 28) = last day to drop course with W (undergrad),  
Wed April 30 = last class.

## COURSE CONTENT & LEARNING OUTCOMES

Expected Learning Outcomes: upon completion of this course, for any of the topics listed below, you should be able to: 1. write the definition of many of the terms; 2. solve problems; 3. construct correct & detailed mathematical arguments to justify your claimed statements, i.e., write proofs of some basic results.

This course will be an introduction to algebraic geometry. The main topics to be covered will be theory of ideals in polynomial rings, Nullstellensatz, Hilbert Basis Theorem, Gröbner bases with computation in polynomial rings, affine and projective varieties, singular and smooth points on varieties. This material is essentially Chapters 1, (some of) 2, 4, 5, and 8. The main focus throughout will be on theory, ideas and examples. There might be a little focus on computational aspects, but not much. If time, applications of algebraic geometry to solving problems in noncommutative algebra & physics will also be discussed, together with noncommutative algebraic geometry.

Some new ideas will be introduced in the homework, and lectures will appeal to the homework from time to time. The homework will be handed out in class, but also posted at my website, and revised from time to time.

## HELP OUTSIDE CLASS TIME

Feel free to ask me questions during class & after class. You can also e-mail me your questions, or e-mail me to schedule an appointment. My office hours are times I am planning to be in my office or in a predecided classroom where you can drop by without an appointment to ask me questions.

My web page (given above) will list the homework as the semester progresses as well as other miscellaneous information pertinent to this course. You are advised to check it every couple of days.

I also recommend that, if possible, y'all discuss the class material with each other & collaborate on homework. Being able to converse mathematically is a skill, & is practiced by discussion with classmates & with the instructor.

## DISABILITY ACCOMMODATIONS

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 — The Rehabilitation Act of 1973 as amended. With the passage of the Americans with Disabilities Act (ADA), pursuant to Section 504 of the Rehabilitation Act, there is renewed focus on providing this portion of the population with the same opportunities enjoyed by all US citizens. In particular, students in this situation should notify the Disabilities Office at the start of the semester with official authorized documentation. Furthermore, if a student has an officially recognized disability, and would like special arrangements, then s/he should notify me ASAP.

## SCHOLARLY INTEGRITY

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline includes suspension or expulsion from the University and a grade of FAIL in the class given to involved student(s). Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22 of the Regents' Rules and Regulations states the following. "Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or material that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts".

The University reserves the right to impose disciplinary action for any kind of infraction of University policies. Engagement in conduct which disrupts, obstructs or interferes with activities authorized by the University will result in disciplinary action against the perpetrator(s). Such action includes leaving and returning to the room frequently. It also includes the use of a cellular phone, ringing cellular phones, etc.

## TUITION AND GRADE REPLACEMENT/EXCLUSION

If you are dropped from this class for nonpayment of tuition, you may secure an Enrollment Loan through the Bursar's Office. You may not continue to attend class until your Enrollment Loan has been applied to outstanding tuition fees. For other UTA information, such as grade replacement/exclusion (for undergrads), see <http://www3.uta.edu/registrar/gradeExclusion.asp> .