Instructor: Prof. M. Vancliff    PKH 462  vancliff@uta.edu  817-272-3932

Web pages:  http://www.uta.edu/math/vancliff/T/F16     http://www.uta.edu/math/vancliff
            https://www.uta.edu/profiles/michaela-vancliff

Course Classroom: PKH 319    Course Time: Tues/Thurs 5:30-6:50 pm.

Instructor's Office Hours: see http://www.uta.edu/math/vancliff/T/F16/index.html#5330

Textbook:  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,

Prerequisite: Math 4321 (or equivalent).

Attendance: the instructor of this class chooses to record attendance and it will factor into the students' grades
(see "weighting" below). You are responsible for any, and all, announcements made in class and on the
course website. You are responsible for any, and all, material missed during lecture. If you miss a lecture,
you can figure out the material covered by checking the homework assignment for that day.

Note that the U.S. Department of Education requires that UTA have a mechanism in place to mark when
Federal Student Aid recipients "begin attendance in a course." UTA instructors will report when students
begin attendance in a course as part of the final grading process. Specifically, when assigning a student a
grade of F, faculty report the last date the student attended their class; this date is reported to the
Department of Education for federal financial aid recipients.

Tests: None.

Grading: homework solutions (due every 2 or 3 weeks), attendance, participation & possibly presentation of
some material.

Important Dates: Mon Sept 12 = Census date; Wed Nov 2, 4 pm = last day/time to drop course with W (see pg 2);
Nov 24-25 = Thanksgiving Holiday;  Tues Dec 6 = our last class.  Note these dates in your calendar!

Course Content & Learning Outcomes: upon completion of this course, for any of the topics listed below,
students should be able to:  1. write the definition of many of the terms;  2. solve problems;  3. construct
correct & detailed mathematical arguments to justify 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 (3 weeks), (some of) 2 (1 lecture), 4 (4 weeks), 5 (3 weeks), 8 (2 weeks) and (some
of) 9 (3 lectures). 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. Of course, snow/ice days etc will interfere with exact date of coverage.

Some new ideas will be introduced in the homework, and lectures will appeal to the homework from
time to time. The homework will be posted online and so will suggestions for additional reading. In
particular, algebraic geometry written by applied mathematicians and/or by physicists will likely give a
different viewpoint of the material.
Expectations for Out-of-Class Study: beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least 9 hours/week outside class in course-related activities. The best way to guarantee a good grade in this course is to take good lecture notes & to read them over after class before starting the homework, & to do ALL the assignments on a regular basis & to discuss the material with each other. After completing any one assignment, put together a list of the ideas you learned in doing that assignment. It is very important that you know how to work out the homework problems correctly. If you use a solutions manual, be sure to use it in a way that helps you understand & remember the concepts & arguments. See my website for a link to a list of techniques on how to study.

Help Outside Class Time: feel free to ask the instructor relevant questions during class & right after class. You can also go to the instructor's office hours. You can also e-mail the instructor questions, or you can ask the instructor to look over your solution to a homework problem. No appointment is necessary for office hours.

Student Support Services: in addition to the resources provided by this class (& on the course website, which you should check every couple of days), UTA provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students should either visit the reception desk at University College, or call the Maverick Resource Hotline at 817-272-6107, or send a message to resources@uta.edu, or view the information at http://www.uta.edu/universitycollege/resources/index.php. The IDEAS Center (2nd Floor of Central Library) offers free tutoring to all students (with focus on transfer students, sophomores, veterans and others undergoing a transition to UTA). To schedule an appointment with a peer tutor or mentor, e-mail IDEAS@uta.edu or call (817) 272-6593. Also, a list of tutors is available from the Mathematics Department Office, but note that this list is not endorsed by the Mathematics Department.

Americans with Disabilities Act: UTA is on record as being committed to both the spirit & letter of all federal equal-opportunity legislation, including The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA), and Section 504 of the Rehabilitation Act. All instructors at UTA are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities (OSD), & only those students who have officially documented a need for an accommodation will have their request honored. See the OSD for more information on accommodations and conditions that qualify for accommodations.

Drop Policy: students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if s/he does not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through UTA might be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/faq/). See page 1 above for the drop date for this semester.

In-Class Behavior: during all classes, cellular phones should be SWITCHED OFF and any electronic device not used for learning the class material should be out of sight. UTA reserves the right to impose disciplinary action for any kind of infraction of UTA policies. Engagement in conduct that disrupts, obstructs or interferes with activities authorized by UTA will result in disciplinary action against the perpetrator(s). Such conduct includes (but is not limited to) leaving and returning to the room frequently during class (even for restroom breaks), refusing to put one's belongings by the wall when asked to do so, the use of a cellular phone, ringing cellular phones, etc.

Counseling: counseling and psychological services are available to all students by calling 817-272-3671; see www.uta.edu/caps. 
**Academic Integrity:** students enrolled in UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UTA faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of a test or requiring students incorporate the honor code into any work submitted. Per UT System Regents’ Rule 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with UTA policy, which might result in the student's suspension or expulsion from UTA & a grade of FAIL in the class given to involved student(s). In particular, the Regents' Rules and Regulations states: 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 a test for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts”.

**Emergency Exit Procedures:** should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, i.e., use the stairs to the right (or left) and go to the first floor. When exiting the building during an emergency, one should never take an elevator but should use the stairs. During a tornado warning siren, students are advised to congregate in PKH 110 or in a classroom near PKH 110 without a window. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

**Campus Carry:** effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows licensed individuals to carry a concealed handgun in buildings at UTA, except in locations UTA has established as prohibited. Under the new law, openly carrying handguns is not allowed at UTA. For more information, visit [http://www.uta.edu/news/info/campus-carry/](http://www.uta.edu/news/info/campus-carry/).

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at [http://www.uta.edu/oit/cs/email/mavmail.php](http://www.uta.edu/oit/cs/email/mavmail.php).

**Final Review Week:** a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the course grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; instructors may introduce new concepts as appropriate.

**Student Feedback Survey:** at the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit [http://www.uta.edu/sfs](http://www.uta.edu/sfs).
Non-Discrimination Policy: UTA does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX: UTA is committed to upholding Title IX of the Higher Education Amendments Act of 1972 (Title IX), Title VII of the Civil Rights Act of 1964 (Title VII), and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual harassment and sexual misconduct in any form are prohibited and will not be tolerated; any individuals who engage in such conduct will be subject to disciplinary action. For more information, visit www.uta.edu/titleIX.

Writing Center: the Writing Center, 411 Central Library, offers individual 40-minute sessions to review assignments, Quick Hits (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit https://uta.mywconline.com to register and make appointments. For hours & other information visit www.uta.edu/owl.

Some Library Resources:

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<td>Subject Guides</td>
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Emergency Phone Numbers: in case of an on-campus emergency, call the UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911. (For non-emergency, call the UTA police at 817-272-3381.)

UTA Police Emergency: 817-272-3003