

# MATH 523

## Geometric and Algebraic Structures

Nicholls State University, Fall 2012

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My office hours are 9:30-12:00 MWF and 2:00-3:30 TTH. Please contact me (phone, email, or in person) during these times if you have any questions. If you need assistance at a different time, let me know and we'll work something out.

*Prerequisite/Corequisite:* MATH 509

*Text:* None. We will use class notes.

*Course Description (catalog):* Examination of the complementary relationships between geometry and algebra, and among the structures in each discipline. Focuses on the interdependence among geometric and algebraic properties of objects. Spatial reasoning, non-Euclidean representations of curves and space, fractal geometry, calculus of higher dimensions. Representation of geometric structures and other phenomena via semigroups, groups, rings, and other algebraic constructs.

*Course Description (instructor):* This course could easily be called "Algebraic Geometry", except that it will involve a bit more algebra than normally covered in such a course. Algebraic geometry is a wonderful field of mathematics that explores the connections between algebraic topics such as polynomial rings and geometrical topics such as curves in the plane.

We will begin by reviewing the origins of the field and the algebraic and geometrical foundations needed. Our course outline is as follows:

- Introduction
- Chapter I Algebraically Closed Fields
- Chapter II Affine Lines and Curves
- Chapter III Projective Space
- Chapter IV Further Topics

A few words need to be said about the Internet aspect of this course. All assignments, notes, and announcements will be posted on Blackboard. All students

enrolled in an Internet course should have basic computer skills (such word processing, e-mail, navigating the Internet, etc). Some tips on preparing yourself for an online course are available at [www.nicholls.edu/distance](http://www.nicholls.edu/distance). As an online student, you will be somewhat self-paced. This therefore requires self-discipline and self-motivation. The problem sets need to be turned in on time. It is the responsibility of the student to notify the instructor of technical and/or personal problems that may interfere with online participation. All students must check their e-mail account regularly. E-mail will be our primary means of communication. If you need more personalized assistance, I invite you to contact me (either in person or on the phone) during office hours. Just like a typical class, instances of academic dishonesty, such as plagiarism, will not be tolerated.

**Grading Policy:** Your course grade will be composed of a problem set grade (50%), an "in-class" midterm exam grade (25%), and a take-home final exam grade (25%). The midterm exam will obviously not actually be in-class, since we do not have class. What I mean is that it will be a typical closed-book, timed exam that students will take at a specified time and place (as opposed to a take-home exam that you can complete when and where you want during the time you are working on it). *\*\*Distance education students need to choose an approved testing center in their local area and complete a Proctor Approval Form to taking the exam. Once the form has been uploaded to Moodle, I will give you two weeks to inform me of your choice. That will allow me ample time to contact your designated proctor and approve (or not) the selection.\*\** Students located near campus will be able to arrange their midterm exam with me. The problem set grade will consist of fairly regular assignments, roughly one a week, such as problems to work out, discussion boards, independent research, etc.

At the conclusion of the semester, letter grades will be assigned based on the usual 10% grading scale (A: 90-100%, B: 80-89%, C: 70-79%, etc). Late assignments will not be accepted unless there are VERY unusual circumstances, and make-up exams will only be administered if the student provides a valid excuse. The instructor decides which excuses are valid and which circumstances are unusual. As I said above, academic dishonesty (i.e. cheating, plagiarism, etc.) will not be tolerated. Sanctions for such behavior are outlined in the *Code of Student Conduct* (Section 1.9).

*Special Note: Section Five of the Code of Student Conduct, 'Academic Dishonesty and Disruptive Behavior,' includes a requirement that faculty file a charge complaint statement with their respective dean whenever a student is confronted or disciplined for cheating. The Office of Academic Affairs will maintain these records, and any student confronted and/or disciplined for multiple offenses of academic dishonesty will be brought before the Academic Affairs Integrity Committee for further review and potential sanctions. Please read the Code of Student Conduct for further details regarding this policy."*

### **Important Dates**

'W' Day – Wednesday, November 7, 2012

*Academic Grievances:* The proper procedure for filing grade appeals or grievances related to academic matters is listed in Section 5 of the *Code of Student Conduct* and at the following link: [www.nicholls.edu/documents/student\\_life/code\\_of\\_conduct.pdf](http://www.nicholls.edu/documents/student_life/code_of_conduct.pdf).

*Continued Learning following an Extreme Emergency:* In order to make continued learning possible following an extreme emergency

**students are responsible for:**

- reading regular emergency notifications on the NSU website;
- knowing how to use and access Blackboard (or university designated electronic delivery system);
- being familiar with emergency guidelines;
- evacuating textbooks and other course materials;
- knowing their Blackboard (or designated system) student login and password;
- contacting faculty regarding their intentions for completing the course.

**faculty are responsible for:**

- their development in the use of the Blackboard (or designated) software;
- having a plan for continuing their courses using only Blackboard and email;
- continuing their course in whatever way suits the completion of the course best, and being creative in the continuation of these courses;
- making adjustments or compensations to a student's progress in special programs with labs, clinical sequences or the like only in the immediate semester following the emergency.

*ADA Compliance:* If you have a documented disability that requires assistance, you will need to register with the Office of Disability Services for coordination of your academic accommodations. The Office of Disability Services is located in 158A Shaver Gym. The phone number is (985) 448-4430 (TDD 449-7002).