

Math 5370 (3 credits)
CRN 27546
TuTh 5:00–6:20, PSCI 314

ALGEBRAIC STRUCTURES
Syllabus

Spring 2020

Instructor: **Dr. Art Duval**

office: **Bell Hall 303**

phone: **747-6846**/office (24hrs./day; if I'm not in, please leave a message)

747-6502/fax (include a cover sheet with my name, please)

545-1788/home (9am–9pm only, please)

internet: adual@utep.edu

<http://www.math.utep.edu/Faculty/duval/home.html>



Office hours: **Mon, Wed, 1:00-2:00; Tue, Thu, 10:00-11:00**. Please feel free to come by my office any time during scheduled office hours. You are welcome to visit at other times, but in that case you might want to make an appointment, just to make sure that I will be there then. You can make an appointment simply by talking to me before or after class, by calling me at my office or at home, or by sending e-mail.

As this is an evening class, I will make an extra effort to be available both before and after class.

You may also ask any questions directly via phone or e-mail. If I'm not in when you call, please leave a message on the voice-mail or answering machine with your name, number, and a good time for me to call you back. I will try to respond to your phone or e-mail message as soon as possible.

Website: <http://www.math.utep.edu/Faculty/duval/class/5370/201/home.html>

Here you will find this syllabus with relevant links, including homework and reading assignments for the whole semester, as they are announced. Other resources may become available.



Prerequisites: MATH 3325 or equivalent. In particular, I will assume that you are comfortable reading and writing rigorous mathematical proofs.

COURSE OBJECTIVES: Upon successful completion of this course, you will be able to rigorously justify and explain the results and techniques from elementary algebra that show up in the standard high school algebra curriculum. You will be able to use fields, rings, and groups to analyze objects including polynomial rings, the ring of integers, and fields of real and complex numbers. Additionally, you will increase your ability to think mathematically.

Textbook: **Elements of Modern Algebra, Linda Gilbert, 8th ed., Chs. 3–8.** We will skip some sections, as announced in class. We will generally discuss two sections per week.

Reading: Read each section that we cover in class, both before and after class. Skim the section before class, even if you don't understand it fully, to have some idea of what we'll be doing in class. Read it more carefully after class to clarify and fill in details you missed in class.

Warning: Sometimes, we will not "cover" all the material from a section in class, but instead focus on a particular aspect of the section. In such cases, I will point out in class (and on the course's website) which other parts of the section I expect you to read on your own.

GRADES:

Participation (10%) Your active participation in class is necessary for the success of both you and your classmates. This participation will take many forms: Thursdays will generally be centered on introducing new material, when you will need to work in class on new problems whose solutions will provoke the need for new ideas. But you will also need to actively question new definitions and theorems I introduce, work with the class on proofs to theorems, and work with classmates on solutions to examples.

Tuesdays will generally be centered on reviewing ideas from the previous Thursday, including your presentations of solutions to routine problems from the textbook, while I serve as moderator. When you are in the audience, you are still expected to be actively engaged in the presentation. This means checking to see if every step of the presentation is clear and convincing to you, and speaking up when it is not, so that we can all work together to fill in any gaps in reasoning, and create sound mathematics. Sometimes a good question is more valuable than a correct answer.

Your participation grade will be based on your **overall** contribution to this part of the course. I will use the following rubric:

- A** Insightful contributions to class discussions that move the conversation forward; clear, correct presentations to problems; helpful audience participation, including appropriate feedback and good questions.
- B** Active participation in class discussions; correct presentations to problems; good questions and suggestions during audience participation.
- C** Responsive participation in class discussions; reasonable presentations to problems; asking questions when you are confused.
- D** Regular polite participation; attempted solutions to problems.

Both quality and quantity factor into this. Note that sometimes a good question, or even a mistake we can learn from, is more valuable than a correct answer.

Homework (30%) Written homework will be assigned weekly, announced in class, and posted on the course website. These solutions should be written clearly and completely. Assignments will be due at the *beginning* of class, and will not be accepted after then, except in extenuating circumstances that you explain to me as soon as possible. Incomplete homeworks will be accepted, though, so please turn in whatever work you have completed when homework is due. You are encouraged to work together on your homework, but you must write up your solutions by yourself. Your lowest homework score will be dropped.

Midterm (20%) The midterm will cover all material we have discussed to that point. It will be on

Thu. 12 Mar.

Final (40%) The final exam will be comprehensive over all material we discuss in class. The final will be on

Tue. 12 May, 4:00–6:45 p.m.

Makeup exams can be given only in extraordinary and unavoidable circumstances, and with advance notice.

Once you begin an exam, you will not be allowed to leave the classroom until you have finished the exam. There will be no bathroom breaks. If you have a medical reason for needing more frequent bathroom breaks, please provide documentation in advance.

POLICIES:

Academic dishonesty: It is UTEP's policy, and mine, for all suspected cases or acts of alleged scholastic dishonesty to be referred to the Office of Student Conduct and Conflict Resolution for investigation and appropriate disposition. See Section II.1.2.2.1 of the Handbook of Operating Procedures.

Attendance: Due to the course structure, attendance is mandatory. There is no particular penalty for missing a particular class, but you cannot get a good participation grade if you miss too many classes. I will usually "excuse" an absence if you tell me about it in advance, or, in cases of emergencies, as soon as possible afterwards. My goal is for class meetings and activities to complement, rather than echo, the textbook, and thus for every class to be worth attending.

Drop date: The deadline for student-initiated drops with a *W* is Friday, April 3. After this date, you will not be able to drop the class (as per the Dean's office). Furthermore, a grade of incomplete is only for extraordinary circumstances, such as a missed exam.

I hope everyone will complete the course successfully, but if you are having doubts about your progress, I will be happy to discuss your standing in the course to help you decide whether or not to drop. You are only allowed three enrollments in this course, and students enrolled after Fall 2007 are only allowed six withdrawals in their entire academic career, so please exercise the drop option judiciously.

Courtesy: We all have to show courtesy to each other, and the class as a whole, during class time. Please arrive to class on time (or let me know when you have to be late, and why); do not engage in side conversations when one person (me, or another student) is talking to the whole class; turn off your cell phone (or, for emergencies, at least set it to not ring out loud), and do not engage in phone, email, or text conversations during class.

Disabilities: If you have, or suspect you have, a disability and need an accommodation, you should contact the Center for Accommodations and Support Services (CASS) at 747-5148, cass@utep.edu, or Union East room 106. You are responsible for presenting to me any CASS accommodation letters and instructions.

Exceptional circumstances: If you anticipate the possibility of missing large portions of class time, due to exceptional circumstances such as military service and/or training, or childbirth, please let me know as soon as possible.