

Course Syllabus  
Math 677.01  
Abstract Algebra  
Fall 2009

**Location:** LDB 418  
**Time and Days:** Monday, Wednesday 8:30 a.m. – 9:50 a.m.  
**Professor:** Dr. Luis Garcia-Puente  
**Office:** 417B Lee Drain Building  
**Telephone:** (936) 294 – 1581  
**e-mail:** lgarcia@shsu.edu  
**course web site:** <http://www.shsu.edu/~ldg005/mth677/>  
**Office hours:** Monday, Wednesday 11:00 – 1:00 and by appointment.

**Course Description:** Algebra is a core mathematical discipline and its various ramifications constitute much of the contemporary mathematics: algebraic, arithmetic and non-commutative geometries, representation theory, homological algebra, modern combinatorics etc. Even the disciplines seemingly far away from algebra are unthinkable without the intensive algebraic reincarnation they have gone through in the post-WWII decades: functional analysis, logics etc.

Algebraic structures are emphasized in this course, which includes a study of groups, rings, modules, vector spaces and their applications.

**Prerequisite:** MTH 477 or MTH 586 or consent of instructor.

**Required Materials:** D. Dummit and R. Foote, *Abstract Algebra*, 3rd edition, Wiley, 2003

**Course Objectives:** This course is on core algebra concepts and techniques.

The first half of the course is devoted to group theory which will culminate in The Fundamental Theorem of Finitely Generated Abelian Groups; in the second half of the course we will study rings (both commutative and noncommutative), and Modules. In more detail, the topics to be covered are: groups and their actions, rings, ideals, isomorphism theorems, special classes of these structures, modules and abstract linear algebra. A detailed plan, broken up in sections/lectures, is posted on the course page.

**Attendance Policy:** Regular and punctual attendance for this course is mandatory. If class must be missed, the student is expected to get the notes from a classmate, and to check the web-page for announcements and updated assignments.

**Make-up Policy:** Students are expected to show appropriate cause for missing or delaying major assignments or examinations. Excuses must be presented in writing. Wherever possible, students should inform the instructor before an exam is missed. Students are required to notify the instructor by the end of the next working day after missing an exam. Otherwise, they forfeit their rights to a make-up.

**Homework:** The homework for this course is crucial. Hence the grading policy below. Often problems will be invented by me and there will be opportunities to earn extra credit. Solutions, updates etc will be posted on the course web page in timely manner.

An ideal work means a complete argument without unnecessary elaboration. In fact, empty extra words only spoil the general impression! Please write clearly and readably. I encourage you to use (la)tex if you can, but this will have no effect on the grading - it will help you to develop very useful skills.

Graduate algebra really involves deep general concepts and this is what makes it notrivial to follow. Moreover, the concepts will become even deeper as we move further. This is why the homework is so crucial for this course, as reflected on the grading policy. The only way of studying this subject is to digest the concepts by working on the problems I assign, and then studying the complete solutions I post. The solutions I post can serve as a substantial supplement to the text. Only following lecture notes is not enough at all.

**Exams:** There will be a midterm and a final exam. Both exams will be take-home.

**Grading:** The course grade is based on:

|         |      |
|---------|------|
| Quizzes | 60 % |
| Midterm | 20 % |
| Final   | 20 % |

The course grade will be assigned via the following scale.

|   |              |
|---|--------------|
| A | 90 % – 100 % |
| B | 80 % – 89 %  |
| C | 70 % – 79 %  |
| D | 60 % – 69 %  |
| F | 59 % or less |

**Academic Dishonesty:** All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. **Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action at the discretion of the instructor.** The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.

**Classroom Rules of Conduct:** Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Cellular telephones and pagers must be turned off before class begins. Students are prohibited from eating in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.

**Visitors in the Classroom:** Unannounced visitors to class must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom.

**Student Absences on Religious Holy Days Policy:** Section 51.911(b) of the Texas Education Code requires that an institution of higher education excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from

which the student is excused within a reasonable time after the absence.

University policy 861001 provides the procedures to be followed by the student and instructor. A student desiring to absent himself/herself from a scheduled class in order to observe (a) religious holy day(s) shall present to each instructor involved a written statement concerning the religious holy day(s). This request must be made in the first fifteen days of the semester or the first seven days of a summer session in which the absence(s) will occur. The instructor will complete a form notifying the student of a reasonable time-frame in which the missed assignments and/or examinations are to be completed.

**Disabled Student Policy:** It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic or Student Life program or activity. Disabled students may request assistance with academically related problems stemming from individual disabilities by contacting the Director of the Counseling Center in the Lee Drain Annex or by calling (936) 294-1720. Please bring all the necessary paperwork to the instructor before the end of the first week of classes in order to proceed with the requested accommodations. All disclosures of disabilities will be kept strictly confidential. NOTE: no accommodation can be made until the student registers with the Counseling Center.

**Copyright policy:** All printed materials disseminated in class or on the web are protected by Copyright laws. One xerox copy (or download from the web) is allowed for personal use. Multiple copies or sale of any of these materials is strictly prohibited.

**Additional Information:** All information on this syllabus is subject to change. Any changes will be announced in class.