

COURSE SYLLABUS
Math 5381, Section 01
ALGEBRA: STRUCTURE AND APPLICATIONS
CREDIT HOURS: 3
Fall 2017

Classroom and Schedule: The Woodlands Center, Room 251
Mondays, 5:30-8:20 p.m.

Instructor information:

Dr. Beth Cory

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Office hours: By appointment either at TWC or the Huntsville Campus

COURSE DESCRIPTION: This course includes the study of algebraic structures (such as groups, rings, integral domains, and fields) and their properties, and activities and concepts related to the algebra of real numbers that are applicable to middle school teachers. The course is designed for inservice middle school mathematics teachers.
Prerequisite: Graduate standing. Credit 3.

COURSE OBJECTIVES: Upon completion of this course, students will be able to:

- Display proficiency in identifying and using general algebraic structures
- Solve equations in different algebraic systems
- Describe patterns algebraically using recursive and explicit rules
- Use and apply algebra and algebraic thinking in middle school mathematics

Required Materials:

In November, we will begin discussing research on algebraic thinking and learning. You may be required to purchase two to three books a few weeks prior to these classes.

In addition, I will provide you with a number of handouts. Up-to-date course information will be posted on Blackboard.
Please check Blackboard regularly.

ATTENDANCE AND PARTICIPATION: Regular and punctual attendance is expected of every student. If absent or tardy, you are still responsible for all material covered in class, and you will need to check with a classmate about what was discussed. Serious health or family problems that are well documented will be handled individually.

ASSIGNMENTS: Throughout the semester, homework will be assigned. Some of these assignments will be collected and assessed for credit.

PROJECT: Each student will complete a course project. The tentative plan is to have each student summarize a research article (or articles) on a particular topic within the area of algebraic thinking and learning. The finished product would consist of a power point presentation effectively summarizing this information.

TESTS: There will be one midterm exam and a comprehensive final exam. These tests will contain problems similar to those worked in class and contained in homework assignments. Test items will be in a variety of formats, such as multiple choice, short answer, or more extended items that require explanations.

No make-up tests will be given unless the student has an official University excused absence. Arrangements must be made in advance of the exam.

Tentative Test Dates:

Midterm: Monday, October 16

Comprehensive Final Exam: Wednesday, December 6th

COURSE EVALUATION: Each student's grade will be based on the following:

Assignments	15% of final grade
Project	25% of final grade
Midterm Exam	30% of final grade
Comprehensive final exam	30% of final grade

Grading Scale

Percent, p	$90 \leq p \leq 100$	$80 \leq p < 90$	$70 \leq p < 80$	$p < 70$
Course grade	A	B	C	F

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. 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 and magazines, 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.

This policy is not intended to discourage the occasional visiting of classes by responsible persons. Obviously, however, the visiting of a particular class should be occasional and not regular, and it should in no way constitute interference with registered members of the class or the educational process.

AMERICANS WITH DISABILITIES ACT: 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.

STUDENT ABSENCES ON RELIGIOUS HOLY DAYS: University policy states that a student who is absent from class for the observance of a religious holy day must be allowed to take the examination or complete an assignment scheduled for that day within a reasonable time after the absence. Students will be excused to travel for observance of a religious holy day. A student who wishes to be excused for a religious holy day must present the instructor with a written statement describing the holy day(s) and the travel involved. The instructor will then provide the student with a written description of the deadline for the completion of missed exams or assignments.

TENTATIVE SCHEDULE

AUG 28	Sets: representations, common sets used in mathematics, cardinality, subsets
SEPT 4	<i>Labor Day Holiday</i>
SEPT 11	Operations on sets
SEPT 18	Properties of operations
SEPT 25	Modular Arithmetic (EDC Material) Solving equations in modular algebraic structures
OCT 2	More with Modular Arithmetic Arithmetic Groups: properties and examples
OCT 9	Nonabelian groups and distributive property
OCT 16	<i>Midterm Exam</i>
OCT 23	Rings: examples, solving equations Matrices
OCT 30	Properties of rings, zero divisors, fields
NOV 6	Relationships between abstract algebra and middle school mathematics Multiple Pathways to a Solution
NOV 13	Understanding Patterns, Relations, and Functions
NOV 20	Analyzing Change in Various Contexts Exploring Linear Relationships, Using Algebraic Symbols
NOV 27	Presentation of Projects
DEC 6	<i>Final Exam</i>

This is a tentative schedule and is subject to change. You will be advised of changes in class. You may always turn in assignments early. If you know that you will miss a test, see me in advance. I look forward to a great semester!