MTH 550-Foundations of Abstract Algebra
Course Syllabus: Summer II-2016

INSTRUCTOR INFORMATION
Instructor: Padmapani Seneviratne, Ph.D.  Office: BIN 316
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Office Hours: TBA

COURSE INFORMATION

Class Schedule:  MW: 08:00 – 11:50

Location: BA 224


Technology:
We will be using the Magma computer algebra system to understand and construct groups and related structures. Software will be provided. Students will need to bring laptop computer to the classroom. Laptop computers are available to rent from the library.

Course Description (Catalogue):
This course will cover the fundamental properties of algebraic structures such as properties of the real numbers, mapping, groups, rings, and fields. The emphasis will be on how these concepts can be related to the teaching of high school algebra.

Prerequisite: MATH 331 or MATH 500.
Topics to be covered: Algebraic reasoning, algebraic preliminaries, group theory, finite groups, group isomorphisms, direct products, Abelian groups, and rings, fields and modules.

Student Learning Outcomes:

- Students will have a working knowledge of important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element.

- Students will be knowledgeable of different types of subgroups such as normal subgroups, cyclic subgroups and understand the structure and characteristics of these subgroups.

- Students will be introduced to and have knowledge of many mathematical concepts studied in abstract mathematics such as permutation groups, factor groups and Abelian groups.

- Students will see and understand the connection and transition between previously studied mathematics and more advanced mathematics. The students will actively participate in the transition of important concepts such homomorphisms & isomorphisms from discrete mathematics to advanced abstract mathematics.

- Students will gain experience and confidence in proving theorems. A blended teaching method will be used requiring the students to prove theorems give the student the experience, knowledge, and confidence to move forward in the study of mathematics.

Additional Graduate Requirements:

- Each of graduate students will select a person or important contribution in the development of group theory, with instructor approval, and share their research in their chosen topic with both a paper to the teacher and a presentation to the class.

- Graduate students will be able to extend the results from group theory to study the properties of rings and fields.

- Graduate students will explore connections between abstract algebra and how these concepts can be useful in teaching high school mathematics.

- Graduate students will complete additional reading assignments from an advanced text on abstract algebra.
COURSE REQUIREMENTS

Attendance:
It is expected that you attend classes daily.

Exams: There will be 2 exams for this course.

Make-up Policy:
No late tests will be given. If you miss a test, the final will be used to replace that score.

Project:
Graduate students are required to complete a written project and present their work on a topic in abstract algebra with the consent of the instructor.

In class activities:
In the class 40% of the grade will be determined by student participation in the classroom activities. You will be required to solve problems, write proofs and use a computer algebra system to illustrate abstract concepts using examples. Further 10% of the grade will be for the project and the presentation.

Reading Assignments:
Week 1: Read Chapter 1: Group Fundamentals.
Week 2: Read Chapter 2: Ring Fundamentals.
Week 3: Read Chapter 3: Quotient groups and homomorphisms.
Week 4: Read Chapter 4: Field Fundamentals.
Week 5: Read Chapter 5: Module Fundamentals.

Home Work: Each week you will be assigned homework problems from each Chapter and this will be counted as 40% of the total grade.

COURSE GRADES

Grading policy: The course grade consists of

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>HW</td>
<td>40%</td>
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<tr>
<td>Project/presentation</td>
<td>10%</td>
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<tr>
<td>Midterm exam</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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Total: 100%
Grading Scale:
A: 90 – 100%, B: 80 – 89%, C: 70 – 79%, D: 60 – 69%, F: 0 – 59%

Withdrawal Policy:
Concerning the deadlines and consequences of withdrawals please check on: https://ems.tamuc.edu/MasterCalendar/MasterCalendar.aspx

Academic Integrity:
Texas A&M University – Commerce has explicit rules and regulations governing academic dishonesty and academic misconduct. These policies are stated in details in the student’s Guide Handbook. Each students is expected to read this document and abide by the contained polices. These university polices will be followed in class. The minimum penalty an act of academic dishonesty will be a grade of 0 on the examination or homework assignments.

University Specific Procedures

Students with Disabilities
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University- Commerce
Gee Library- Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

Nondiscrimination Statement

A&M-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See Code of Student Conduct from Student Guide Handbook).