# Math 422 Section V

**Modern Algebra I**

## Course Description
Introduction to the theory of groups, rings, integral domains, and fields.

## Prerequisite
Math 421, or permission of department head.

## Text Book
*(Required)*

## Instructor
Karen Aucoin

Office Hours and Class Schedule:

<table>
<thead>
<tr>
<th>Time</th>
<th>Mon</th>
<th>Wed</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 AM - 08:50</td>
<td>Office</td>
<td>Office</td>
<td>Office</td>
</tr>
<tr>
<td>09:00 AM - 09:50</td>
<td>Math 175</td>
<td>Math 175</td>
<td>Math 175</td>
</tr>
<tr>
<td></td>
<td>Sec B1</td>
<td>Sec B1</td>
<td>B1</td>
</tr>
<tr>
<td>10:00 AM - 10:50</td>
<td>Math 190</td>
<td>Math 190</td>
<td>Math 190</td>
</tr>
<tr>
<td></td>
<td>Sec A</td>
<td>Sec A</td>
<td>Sec A</td>
</tr>
<tr>
<td>11:00 AM - 11:50</td>
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<tr>
<td>12:00 PM - 12:50</td>
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<td></td>
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<tr>
<td>01:00 PM - 02:15</td>
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</tr>
<tr>
<td>02:25 PM - 03:40</td>
<td>Office 3-4:00</td>
<td></td>
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<tr>
<td>04:00 PM - 05:15</td>
<td>Math 422/552</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05:25 PM - 06:40</td>
<td>Math 422/552</td>
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</tbody>
</table>

Policy on Assistance During Office Hours:
First, I will want to see your work on the problem in question. You should read the section in the book before coming for help. Bring all the materials that relate to your question.

Student Learning Outcomes and Objectives:
The student will be able to

- prove statements involving familiar number systems as well as abstract algebraic structures using a variety of techniques;
- understand the algebraic properties of rings and fields through the exploration of examples from familiar number systems, modular rings, matrices, and polynomial rings;
- demonstrate knowledge of ideals and factor rings;
- compare structures using the concepts of homomorphism and isomorphism.

### COURSE CONTENT

Course material will include the following topics:

<table>
<thead>
<tr>
<th><strong>TOPIC</strong></th>
<th><strong>CHPT.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to rings</td>
<td>Ch. 12</td>
</tr>
<tr>
<td>Integral domains</td>
<td>Ch. 13</td>
</tr>
<tr>
<td>Ideals and factor rings</td>
<td>Ch. 14</td>
</tr>
<tr>
<td>Ring homomorphisms</td>
<td>Ch. 15</td>
</tr>
<tr>
<td>Polynomial rings</td>
<td>Ch. 16</td>
</tr>
<tr>
<td>Factorization of polynomials</td>
<td>Ch. 17</td>
</tr>
<tr>
<td>Divisibility in integral domains</td>
<td>Ch. 18</td>
</tr>
</tbody>
</table>

Special Topics from the later chapters of the text

Topics and applications may be added or deleted at the instructor’s discretion.

### METHOD OF INSTRUCTION

Lecture, presentation and explanation of problems by students, collaborative group problem solving
The semester grade for the course will be calculated by using the weights (%’s) indicated below.

<table>
<thead>
<tr>
<th>MIDTERM TEST</th>
<th>30%</th>
<th>Chapters 12-15</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAILY PRESENTATION OF</td>
<td>40%</td>
<td>As determined</td>
</tr>
<tr>
<td>PROBLEM SOLUTIONS,</td>
<td></td>
<td>by the instructor on a daily basis</td>
</tr>
<tr>
<td>GROUPWORK,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AND ASSIGNMENTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FINAL EXAM</td>
<td>30%</td>
<td>Comprehensive</td>
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<td>(with greater emphasis on the material not covered by the midterm exam)</td>
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</tbody>
</table>

Notes:
In case of an excused absence, the instructor reserves the right to reweigh the final exam in lieu of a make-up test.

In the case where a student’s score on the final exam indicates exceptional achievement above and beyond that indicated by the semester average (all items above except the final), the instructor reserves the right to reweigh the final exam in computing the semester grade.

The Department of Mathematics, Computer Science, and Statistics does not assign the mark WN.

<table>
<thead>
<tr>
<th>Semester Grade</th>
<th>Semester Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 - 100</td>
<td>A</td>
</tr>
<tr>
<td>80 - 89</td>
<td>B</td>
</tr>
<tr>
<td>70 - 79</td>
<td>C</td>
</tr>
<tr>
<td>60 - 69</td>
<td>D</td>
</tr>
<tr>
<td>0 - 59</td>
<td>F</td>
</tr>
</tbody>
</table>

All cell phones and electronic devices should be in silent mode.

No food or drinks are allowed in the classrooms.

Respect and courtesy to one another are expected at all times.

Late arrival and/or early departure will be considered an unexcused absence unless resolved with the instructor before or after the class.
<table>
<thead>
<tr>
<th>ATTENDANCE POLICY</th>
<th>Please read the Department's <a href="#">Attendance Policy</a>.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students should visit the MSU web page at <a href="http://www.mcneese.edu/policy/diversity.htm">http://www.mcneese.edu/policy/diversity.htm</a> for information about diversity awareness and sexual harassment policies and procedures, as well as the Americans with Disabilities Act.</td>
</tr>
<tr>
<td></td>
<td>Students should also visit the MSU web page at <a href="http://www.mcneese.edu/integrity">http://www.mcneese.edu/integrity</a> for information on the Academic Integrity Policy.</td>
</tr>
<tr>
<td></td>
<td>It is each student’s responsibility to register with the Office of Services for Students with Disabilities when requesting an accommodation. Any student with a disability is encouraged to contact the Office of Services for Students with Disabilities, Drew Hall, Room 200, (337) 475-5916 Voice, (337) 475-5878 FAX, (337) 562-4227 TDD/TTY, Hearing Impaired. 475-5722.</td>
</tr>
<tr>
<td></td>
<td>In compliance with federal regulation 29CFR1910.3, the National Fire Protection Association Standard NFPA 101, Life Safety Code, Section 4.7, and the State of Louisiana Office of Risk Management, McNeese State University will periodically conduct fire drills. In the event of a fire drill or a related building emergency, all persons in a classroom are required to exit the building using posted escape routes or the Area of Refuge for individuals with disabilities. All persons in class are required to follow the faculty member outside of the building to safety and are required to check in with the faculty member to ensure that everyone has safely exited the building. It is everyone’s responsibility to ensure that emergency responders such as University Police or Building Coordinators are made aware of missing or injured persons and individuals with disabilities who evacuated to the Area of Refuge. No one may re-enter the building until an official all-clear is given by emergency responders.</td>
</tr>
<tr>
<td>SUMMER SCHOOL</td>
<td>One week of summer school is equivalent to 2 ½ weeks of Fall or Spring classes</td>
</tr>
</tbody>
</table>