Math 701 Algebra I
Fall 2015

Instructor: Matthew Ballard
Office: LeConte 317M
Email: ballard@math.sc.edu (best method of contact!)
Office hours: In LeConte 317M,

Thursdays 11:50am–2:50pm
Or by scheduled appointment.

Course webpage: http://people.math.sc.edu/ballard/teaching/14fall/701/.

Locations and Times: Tuesday and Thursday, 2:50-4:05pm in LeConte 310.

Prerequisites: Familiarity with the basics of sets and functions. Some mathematical maturity.


Course Description: An introduction to abstract algebraic structures: groups, rings, fields, and categories.

Learning Outcomes: Upon completion of this class, time allowing, you will be able to

1. Gain comfort and facility with abstract definitions and statements in algebra.

2. Understand the basics of group theory, including homomorphisms, group actions, structure results for finite groups and Abelian groups.

3. Understand the basics of ring theory, including ideals, modules, irreducibility and factorization properties.

Homework: Unless otherwise indicated, homework will be assigned each Thursday and due the following Thursday at the beginning of class. Homework assignments will be taken mainly from the course text and will be posted in the course Dropbox folder. You are encouraged to work together in solving the problems but you must write up your own solutions in your own words. All homework must be submitted via email as a PDF document, compiled in LATEX.

Midterm exams: There will be 2 midterm exams: the first on October 6 and the second on November 24. Each exam will last the class period.

Final exam: The final exam will take place Tuesday, December 8, 12:30–3:00 p.m. LeConte 310. The final exam is cumulative.

Lifelines: After receiving a scored exam, a student may attempt to achieve full credit on a single problem by performing the following steps: one, contact me with time to meet in Office Hours and with the problem in question. Two, present a complete solution to that problem at the board without any aids and fully addressing any questions I may have. This must be completed within two weeks of the return of the exam or before grades are due, whichever is first. No exceptions. You are limited to two lifelines total.
**Attendance** While appearance in class is not required (but strongly recommended), attendance at departmental Colloquia and Graduate Colloquia is.

**Grades** Will be based on the following distribution

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Final</td>
<td>30%</td>
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<tr>
<td>Midterms</td>
<td>30% total</td>
</tr>
<tr>
<td>Homework</td>
<td>30%</td>
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<tr>
<td>Attendance</td>
<td>10%</td>
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</tbody>
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Letter grades will be assigned on the following basis:

- **A** - You have a strong chance of passing the algebra qualifying exam if you prepare reasonably,
- **B+** - You have a decent chance of passing the algebra qualifying exam if you prepare reasonably,
- **B** - You should dedicate a serious amount of time, going above and beyond the norm, preparing for the algebra qualifying exam,
- **< B** - This indicates a dangerous problem.

**Students with disabilities** Students with disabilities may receive assistance through the Student Disabilities Services.

**Late policy** Late work will not be accepted. If there is a documentable emergency, please stop by office hours or contact me, as soon as possible, to arrange a meeting to discuss the situation.

**Academic and personal conduct** As you should always be aware, the University of South Carolina operates under an [Honor Code](https://www.sc.edu/honor/). While in class, please silence all electronic devices, including cell phones and tablets. In general, please strive to be minimally disruptive to your fellow students. I expect all students in the class to practice personal and academic integrity.