MATH 421/621, Abstract Algebra II, Spring 2011
MWF 11:00–11:50 AM, Dolve Hall 202

INSTRUCTOR: Sean Sather-Wagstaff
OFFICE: Minard Hall 305C
E-MAIL: Sean.Sather-Wagstaff@ndsu.edu
PHONE: 231-8105
OFFICE HOURS: Tu 11:00-11:50, W 1:00-1:50, F 10:00–10:50 and by appointment
OPTIONAL EXTRA MEETING: F 3:00-3:50, Putnam 101

PREREQUISITE: MATH 420/620

USEFUL WEBPAGES:
Course webpage: http://www.ndsu.edu/pubweb/~ssatherw/sp11/421/
Instructor webpage: http://www.ndsu.edu/pubweb/~ssatherw/
Anonymous evaluation form: http://www.ndsu.edu/pubweb/~ssatherw/ssw-eval.html
Math department webpage: http://math.ndsu.nodak.edu/
NDSU webpage: http://www.ndsu.edu
NDSU blackboard site: https://bb.ndsu.nodak.edu/
NDSU webpage on academic responsibility/conduct: http://www.ndsu.nodak.edu/policy/335.htm
How to read a math book: http://www.tc3.edu/instruct/sbrown/math/read.htm

COURSE DESCRIPTION: Topics include fields, structure of groups, Galois theory, and unique factorization.

This will not be a traditional mathematics course. I will not lecture during most class meetings. Instead, class time will be devoted to group discussion of the assigned reading and exercises and individual presentations of solutions to assigned exercises.

COURSE GRADES: Student grades are based on weekly homework assignments, attendance and participation, two (2) midterm examinations, and one (1) comprehensive final examination covering students’ understanding of topics covered in MATH 421/621. Weights are summarized in the following table along with grade ranges.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Grade Range</th>
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<tbody>
<tr>
<td>Homework</td>
<td>25%</td>
<td>A 85–100%</td>
</tr>
<tr>
<td>Attendance and Participation</td>
<td>20%</td>
<td>B 75–84.9%</td>
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<tr>
<td>Midterm Exams</td>
<td>15% each</td>
<td>C 60–74.9%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
<td>D 50–59.9%</td>
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Your grades will be updated throughout the semester at the NDSU Blackboard site.

READING: Reading assignments are listed on p. 4 of this syllabus. Much of our class meetings will be based on discussions of the reading. Your participation score for that day will be based in part on your ability and willingness to discuss the reading in class, so you must keep up with the reading.

Reading a math book is not like reading other types of books. I recommend that you read the article “How to read a math book” by Stan Brown; see the link above. This article gives some good specific tips on how to (and how not to) read a math book.

In order to get ready for the day’s discussion, you should be prepared to summarize in your own words the main points from the reading. What is the overall theme of the reading? What are the main ideas, results, definitions, examples, and methods from the reading? What questions do you have from the
reading? You may find it helpful to keep a reading journal as part of your course notes. You should also read the statements of all the exercises in each section.

HOMEWORK: Daily assignments are listed on p. 4 of this syllabus. Much of our class meetings will be based on individual presentations of solutions to assigned exercises. Your participation score for that day will be based in part on your ability and willingness to present your own solutions, so you must keep up with the assigned exercises.

I will select several exercises each week for which you are to submit written solutions. Most (but not all) written exercises will come from the daily homework assignments. These exercises will be assigned in class on Fridays and solutions will be due at the beginning of class on the following Friday. (Solutions will be accepted early, of course.) Assignments will also be listed on the course webpage and on blackboard. Each exercise will be worth the same amount. I will drop the lowest 10% of your homework scores. Late assignments will not be accepted.

You are encouraged to work on assignments in small groups, but each member of the class is required to turn in a neatly written, organized set of solutions, written in their own words. You will receive no credit for solutions with no work or justification. You will receive partial credit for solutions with partial work or justification. Pages should be stapled with “fringe” removed. I reserve the right to deduct points for messy papers.

ATTENDANCE AND PARTICIPATION: It is in your best interests to attend all class meetings. Good attendance is critical to your success in the class for a number of reasons. First, attendance and participation are worth 20% of your course grade. This will be measured by your presence in class and your willingness and ability to discuss the daily reading and to present solutions to assigned exercises. Second, your presence, attention, and participation in lecture will greatly help your performance in this class. For these reasons, I will take attendance each class period. Officially excused absences will not be counted against you, but you must document such situations with me personally.

Rubric: Attendance is worth 50%. Reading discussion is worth 25%. Exercise presentation is worth 25%, and I expect each of you to present at least six (6) exercises or parts of exercises.

EXAMS: Midterm exams will be take-home. You will be allowed to use the text and your notes on the midterm exams, but you must work alone on them. (You can ask me questions, but you may not work with other students, tutors, friends, instructors, etc., and you may not use any online resources.) The final examination will be comprehensive and will last 2 hours. Books, notes and calculators will not be allowed during the final exam.

Make-up exams will only be allowed under extreme circumstances. If you have a conflict with one of the exam dates, you are responsible for making alternative arrangements beforehand.

OPTIONAL EXTRA MEETINGS: I will schedule a once-per-week extra meeting for us to work on exercises from daily assignments that we do not have time for in class. Attendance at these meetings will not count toward your attendance/participation score for the class. Exercises presented during these meetings will count toward your attendance/participation score for the class.

MATH 621: Students enrolled in MATH 621 will be required to submit additional written exercises. Exams for these students will have more questions.

COURSE NOTES: Clear and thorough notes from readings and discussions will provide you with a basis for your homework assignments and exams. You are responsible for taking notes during class, as I will not make course notes publicly available.
WORKLOAD: You should plan to spend 10–15 hours per week working on this course outside of class.

ANNOUNCEMENTS: Course announcements will be sent to your ndsu.edu email account. It is your responsibility to check this email account regularly.

GRAPHING CALCULATORS: are not required for this course, and will not be allowed in the exams.

QUESTIONS: If something said or written in class is unclear, raise your hand and ask a question. I will try to clarify the point being made.

GROUP STUDY: You are required to find at least one person in the class with whom you can study. Not only does this help you study better, but also, in the event you miss a lecture, you can get notes and assignments from this person.

OFFICE HOURS: Come to my office hours for help. This gives me the opportunity to focus on specific problems you may be having and to explain things in a more personal manner. If the scheduled times are bad for you, make an appointment with me.

INSTRUCTOR FEEDBACK: At the course webpage, there is a link to an anonymous evaluation form where you can submit comments or suggestions for me at any time during the semester.

COURTESY: Cellular telephones, pagers, and other similar devices are not to be used and are to be turned off or set to vibrate-mode during class-time. Students violating this policy will receive one warning per semester. After the warning, violations will result in loss of attendance/participation credit for that day.

ADA STATEMENT: The Americans with Disabilities Act requires that reasonable accommodations be provided for students with physical, cognitive, systemic, learning and psychiatric disabilities in order to ensure their equal access to course content. If you have a documented disability and require accommodations, please let your instructor know as soon as possible. For more information, please contact Disability Services at 231-7671 or go to http://www.ndsu.edu/counseling/disability.shtml.

ACADEMIC HONESTY: All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct. First violations of this policy in this course will result in a 0 for the homework or exam on which academic misconduct occurred. Further violations will result in more severe penalties. You can read the Senate Policy at http://www.ndsu.nodak.edu/policy/335.htm.

TENTATIVE SCHEDULE: I reserve the right to make reasonable changes to the schedule.

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<thead>
<tr>
<th>IMPORTANT DATES</th>
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<tr>
<td>Martin Luther King Day holiday</td>
<td>Mon 17 Jan</td>
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<tr>
<td>Last day for No Record Drop of classes</td>
<td>Th 20 Jan</td>
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<tr>
<td>President’s Day holiday</td>
<td>Mon 21 Feb</td>
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<tr>
<td>Midterm 1</td>
<td>available Fri 25 Feb, due at 11:00AM on Fri 04 Mar</td>
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<tr>
<td>Spring Break</td>
<td>Mon 13 Mar to Fri 18 Mar</td>
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<tr>
<td>Midterm 2</td>
<td>available Fri 08 Apr, due at 11:00AM on Fri 15 Apr</td>
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<tr>
<td>Last day to Drop Classes (W)</td>
<td>Fri 08 Apr</td>
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<tr>
<td>Holiday/Recess</td>
<td>Fri 22 Apr to Mon 25 Apr</td>
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<td>Classes end</td>
<td>Fri 06 May</td>
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<tr>
<td>Final Exam</td>
<td>Thu 12 May, 8:00–10:00 AM, Dolve 202</td>
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COURSE OUTLINE

Wed 12 Jan  Course policies, §5.4 discussion
Fri 14 Jan  §5.4 discussion plus exercise presentation .......... 4, 5, 6, 10
Mon 17 Jan  Holiday
Wed 19 Jan  §A.5 discussion plus exercise presentation .............. 4, 6, 8
Fri 21 Jan  §A.7 discussion plus exercise presentation .............. 1, 2
Mon 24 Jan  §6.1 discussion (up to Ex. 6.1.3) plus exercise presentation . 2, 3, 5
Wed 26 Jan  §6.1 discussion plus exercise presentation .............. 7, 8, 9
Fri 28 Jan  §6.2 discussion (up to Ex. 6.2.5) plus exercise presentation . 1(a-c), 2, 4
Mon 31 Jan  §6.2 discussion plus exercise presentation .............. 7, 8, 10
Wed 02 Feb  §6.3 discussion plus exercise presentation .............. 3, 4
Fri 04 Feb  §6.4 discussion (up to Ex. 6.4.2) plus exercise presentation . 4, 5, 7
Mon 07 Feb  §6.4 discussion plus exercise presentation .............. 10, 11, 12
Wed 09 Feb  §6.5 discussion (up to Ex. 6.5.2) plus exercise presentation . 2, 5, 8
Fri 11 Feb  §6.5 discussion plus exercise presentation .............. 9, 12
Mon 14 Feb  §6.6 discussion (up to Cor. 6.6.2) plus exercise presentation . 3, 6
Wed 16 Feb  §7.1 discussion (up to Def. 7.1.5) plus exercise presentation . 1, 4, 5
Fri 18 Feb  §7.1 discussion plus exercise presentation .............. 3, 6, 7
Mon 21 Feb  Holiday
Wed 23 Feb  §7.2 discussion (up to Ex. 7.2.3) plus exercise presentation . 1, 2, 10
Fri 25 Feb  §7.2 discussion plus exercise presentation .............. 12(a), 15, 17
Fri 25 Feb  Midterm 1 distributed, covers §§5.4, A.5, A.7, 6.1–6.5
Mon 28 Feb  §7.3 discussion (up to Ex. 7.3.8) plus exercise presentation . 1, 2, 3
Wed 02 Mar  §7.3 discussion plus exercise presentation .............. 6, 7, 12
Fri 04 Mar  §7.4 discussion (up to Ex. 7.4.2) plus exercise presentation . 1, 2
Fri 04 Mar  Midterm 1 due in class at 11:00 AM
Mon 07 Mar  §7.4 discussion plus exercise presentation .............. 9, 10, 11, 14
Wed 09 Mar  §7.5 discussion (up to Prop. 7.5.8) plus exercise presentation . 2, 5, 7
Fri 11 Mar  §7.6 discussion (up to Cor. 7.6.7) plus exercise presentation . 1, 7
Mon 14 Mar  Spring Break
Wed 16 Mar  Spring Break
Fri 18 Mar  Spring Break
Mon 21 Mar  §7.6 discussion plus exercise presentation .............. 2, 6, 9
Wed 23 Mar  §7.7 discussion (up to Thm. 7.7.4) plus exercise presentation . 2, 7, 8
Fri 25 Mar  §8.1 discussion (up to Ex. 8.1.2) plus exercise presentation . 1, 2, 4
Mon 28 Mar  §8.1 discussion plus exercise presentation .............. 5, 6, 7
Wed 30 Mar  §8.2 discussion (up to Prop. 8.2.4) plus exercise presentation . 1, 2, 3
Fri 01 Apr  §8.2 discussion plus exercise presentation .............. 4, 8, 9
Mon 04 Apr  §8.3 discussion (up to Ex. 8.3.2)
Wed 06 Apr  §8.3 discussion plus exercise presentation .............. 3
Fri 08 Apr  §8.3 exercise presentation ................................. 4, 6, 7
Fri 08 Apr  Midterm 2 distributed, covers §§6.6, 7.1–7.7
Mon 11 Apr  §8.4 discussion
Wed 13 Apr  §8.4 exercise presentation ................................. 3, 4, 8
Fri 15 Apr  §8.5 discussion (up to Thm. 8.5.3) plus exercise presentation . 2, 3, 4
Fri 15 Apr  Midterm 2 due in class at 11:00 AM
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Mon 18 Apr</td>
<td>§8.5 discussion plus exercise presentation</td>
<td>7, 8</td>
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<tr>
<td>Wed 20 Apr</td>
<td>§9.1 discussion (up to Prop. 9.1.3) plus exercise presentation</td>
<td>2, 3</td>
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<tr>
<td>Fri 22 Apr</td>
<td>Holiday</td>
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<tr>
<td>Wed 27 Apr</td>
<td>§9.1 discussion plus exercise presentation</td>
<td>4, 9, 10</td>
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<tr>
<td>Fri 29 Apr</td>
<td>§9.2 discussion</td>
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<tr>
<td>Mon 02 May</td>
<td>§9.2 exercise presentation</td>
<td>2, 3, 4, 5, 6</td>
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<tr>
<td>Wed 04 May</td>
<td>Final Review</td>
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