Math 8240: Commutative Algebra/Geometry  
(Fall 2008, CRN 86982)  
4:00–5:15pm @ 621 General Classroom Building (GCB), Tuesday and Thursday

Instructor: Yongwei Yao  
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Email: yyao@gsu.edu  
Phone: (404)413-6454 (office)

Lecture: 4:00–5:15pm @ 621 General Classroom Building (GCB), Tuesday and Thursday.

Office Hours: 12:30–1:30pm Monday and Thursday (at 766 COE). Or by appointment.


Alternative textbooks: The materials we are going to cover can be found in many textbooks. If you would like to use a textbook other than the one above, feel free to talk to your instructor.

Course content/outcome: The course offers an introduction to commutative algebra and algebraic geometry covering the most basic concepts. The course will emphasize the understanding of the concepts, through examples and proof writing. The course will study algebraic structures through an axiomatic approach. In particular, the course will cover commutative rings, ideals, quotient rings, homomorphisms, primary decompositions, chain conditions, rings of fractions (localizations), Zariski topology, algebraic varieties, dimension theory, etcetera. The students passing the course will be able to present proofs of the majors results as well as apply them in solving routine exercises.

Prerequisites: Math 8220 with a grade of C or higher, or equivalent. During the first two weeks of the semester the Department of Mathematics and Statistics checks the computer records to determine whether or not each student has met the prerequisites for this course. If you do not have the prerequisites please so inform your instructor and change to another course. If you do not attend class during the first two weeks you will be administratively withdrawn.

Homework: There will be weekly homework assignments that will be graded. You can discuss the problems among yourselves, but the write-up of the solutions has to be done individually according to your own understanding. Identical solutions will not be graded. Show your work/steps. No late homework is accepted. Homework weighs 25% of your overall performance.

Exams: There will be two midterm exams and one final exam, all held at 621 GCB.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Exam</td>
<td>September 25 (Thursday), 2008</td>
<td>4:00–5:15pm</td>
<td>621 GCB</td>
<td>25%</td>
</tr>
<tr>
<td>Second Exam</td>
<td>October 30 (Thursday), 2008</td>
<td>4:00–5:15pm</td>
<td>621 GCB</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>December 11 (Thursday), 2008</td>
<td>2:45–4:45pm</td>
<td>621 GCB</td>
<td>25%</td>
</tr>
</tbody>
</table>

The final exam is comprehensive and required. Also, the final exam grade will replace one (and only one) of the lowest midterm grades in case the final exam grade is higher. No midterm exam grade may replace the final exam grade. Make-up exams will only be allowed for extreme emergencies that must be documented, such as medical emergencies. It is the instructor’s role to determine if a specific emergency is a valid one.

(more on the next page)
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Grading Scheme: First the total scores are computed by using the weights as follows:

<table>
<thead>
<tr>
<th>component</th>
<th>Homework</th>
<th>First Exam</th>
<th>Second Exam</th>
<th>Final Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>overall weight</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Then the letter grades will be assigned as follows (A+ not available):

<table>
<thead>
<tr>
<th>score (%)</th>
<th>90–100</th>
<th>87–89</th>
<th>80–86</th>
<th>77–79</th>
<th>70–76</th>
<th>60–69</th>
<th>0–59</th>
</tr>
</thead>
<tbody>
<tr>
<td>letter grade</td>
<td>A</td>
<td>B+</td>
<td>B</td>
<td>C+</td>
<td>C</td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

Attendance: You are expected to attend regularly for the entire period of the class. That is, you are expected to arrive on time and stay for the duration of the class. Attendance will be taken periodically. After five or more absences a student can be withdrawn from this class. In case of an absence, the student is responsible for knowing all the materials covered. See page 64, item 1334 in [http://www.gsu.edu/images/Downloadables/Undergrad_06-07_catalog.pdf](http://www.gsu.edu/images/Downloadables/Undergrad_06-07_catalog.pdf)

Important withdrawal dates: Remember that a student who fails to attend any lecture during the first two weeks can be withdrawn by the instructor.

Last day to drop a class with full refund: Friday, August 22. You may do this at GoSolar.
Last day to withdraw from term length classes and possibly receive a W: Wed., October 01.
For information about withdrawals, see [http://www.gsu.edu/es/withdrawals.html](http://www.gsu.edu/es/withdrawals.html)

Disruptive behavior: Any disruptive behavior will be handled according to the University’s policy on disruptive behavior found at the following site [http://www2.gsu.edu/~wwwdos/codeofconduct_adminpol_a.html](http://www2.gsu.edu/~wwwdos/codeofconduct_adminpol_a.html)
This includes the possibility of withdrawing the student from the class.

Academic (dis)honesty: Academic honesty is expected from all students. Cheating will not be tolerated and will be handled according to the University’s policy on academic honesty found at [http://www.gsu.edu/~wwwdos/codeofconduct_conpol.html](http://www.gsu.edu/~wwwdos/codeofconduct_conpol.html)
which includes academic as well as disciplinary penalties.

Other Important dates:
- Labor Day: September 01 (Monday), 2008
- Classes End: December 05 (Friday), 2008

Changes: This course syllabus provides a general plan for the course; deviations may be necessary.

Course URL: [http://www2.gsu.edu/~matyxy/2008F/math8240.html](http://www2.gsu.edu/~matyxy/2008F/math8240.html)
Relevant information (homework assignments, etc.) will be posted there as the course progresses.

Welcome aboard!