The interplay between generality and individuality, deduction and construction, logic and imagination—this is the profound essence of live mathematics.

--Richard Courant

Instructor: Dr. Terri Magnus, Regis Hall (downstairs)
Contact information: 897-8462, tmagnus@rivier.edu
Office hours: Please let me know whenever you need help. You are invited to stop by my office whenever I am there or make an appointment. I will also respond to e-mail questions. My regular hours are T 10am-12pm, 5-6 pm, W 9:30-11:30am, R 4-6pm. Office hours will take place in Regis Hall. I will also respond to questions via e-mail.


Course description: Course designed for students who wish to study geometry following the intuitive, materials-oriented approach. The course encourages explorations and reasoning based on using software (SketchPad) in the computer lab, constructions, manipulatives, and in-class investigations (“labs”) in groups. Not available for credit to students who have successfully completed precalculus or calculus in high school or a course equivalent to MA 130 or higher. Exceptions must be approved by the chair of the department of mathematics and computer science. May be writing assisted.

Further description for Fall 2006 writing assisted course: In this course, students will discover geometrical concepts as they answer exploratory questions in small groups. Students will hone their writing skills through a series of papers in which they summarize their geometrical discoveries. Topics include measurement, polygons, paths of a billiard ball, classical constructions, tilings, symmetry, and polyhedra.

Required Course Materials: sharpened pencils, paper or notebook, eraser, small ruler with standard and metric units, protractor, compass, stapler, scissors, glue stick or scotch tape, campus network account

Recommended Courses Materials: colored pencils, graph paper, tracing paper, calculator (must have square root)

Course Objectives:
• To build upon students’ writing skills and help them use precise and technical language in papers
• To involve students in the active investigating and doing of geometry
• To engage students in mathematical thinking, logical reasoning, and discussions focused on geometrical concepts
• To help students develop and use problem solving strategies
• To help students learn to explore, to read, and to visualize mathematics
• To help students become independent learners
• To make students aware of some of the current and historical questions and research in geometry

Teaching Strategies:
• Student writing about mathematical ideas on a regular basis
• Instructor, peer, and individual assessment of writing
• Exploratory, intuitive activities that involve students in the active doing of geometry
• Active student engagement in group work and discussions
• Use of geometrical software and manipulatives

Course Requirements:
• Attendance in class
• Active participation and engagement in full-class and small-group activities
• Frequent short writing or computational assignments based on in-class work
• One short research paper
• Revision of researched paper
• Two mid-term tests
• Final project which involves the revision and expansion of a written assignment

Tests: October 17, November 30

Assessment and computation of grades:

- Homework assignments (writing and computational) 10 points each (80-130 points total)
- Researched mid-semester paper 30 points
- Tests 40 points each (80 points total)
- Participation in class activities and peer writing reviews 20 points total
- Final revision of paper 40 points
- Total 250-300 points

Participation and peer review grade will be based on the following rubric.

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<thead>
<tr>
<th>Level of Attendance</th>
<th>high participation</th>
<th>avg participation</th>
<th>low participation</th>
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</thead>
<tbody>
<tr>
<td>High (0-1 absences)</td>
<td>30</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>Medium (2-3 absences)</td>
<td>26</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td>Low (4 or more absences)</td>
<td>22</td>
<td>19</td>
<td>0-17</td>
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</tbody>
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Classroom Policies:

Workload: This course does require a significant amount of work outside of class. You should allow time for understanding the mathematics, outlining your ideas, proofreading your drafts, and rewriting assignments. Scanning the sections in the text and a more thorough reading after class is encouraged. Major definitions should be understood and memorized. Expect to study math four to ten hours outside of class per week. If you’re spending more time, talk to the instructor outside of class. She may be able to help you focus your energies more efficiently and productively as well as help you with your difficulties.

Attendance and Punctuality: Active participation requires attendance and arrival to class in time to be prepared for work when the class period begins. **You are expected to attend all classes.** Much of the learning will take place in classroom activities that cannot be duplicated easily outside of class. If you miss class, you are responsible for doing all classroom activities you missed, getting the notes from a classmate, and turning in all work on the day it is due. If you miss more than four classes, your absence will be reported to the registrar and you must meet with the professor to discuss the advisability of your remaining in the course for the remainder of the semester. Students who miss six classes may be withdrawn from the course and disciplined by the college. If you anticipate that job-related duties or prior commitments will cause several absences, please discuss the matter with the instructor outside of class before the absences occur.

Making up tests: If unavoidable circumstances keep you from attending class on the day of a test, you must contact the instructor promptly to explain the absence and (if approved) schedule a make-up. Postponing study time until the last minute is not an acceptable reason. Medical or court documentation of the reason for absence is advised.
Cell phones: Cell phones must not be used during class. Your calculator must be a separate device. If you need to be available for emergency phone calls, talk to the instructor before class and set the ringer to silent or vibrate. Leave the room to answer.

Asking questions: Questions are encouraged both in and out of class. All students have a right and responsibility to ask questions and give insight related to the understanding of course content. However, the instructor is also expected to cover a significant amount of material to prepare you for future coursework. For this reason students having a large number of questions or significant difficulty with a topic are expected to seek help from the instructor outside of class. It is in your best interest to ask questions as soon as you have discovered and confirmed that you do not understand something.

Honesty policy: All work turned in on tests, quizzes, and the final must be entirely your own. Behavior contrary to this will result in a grade of F on the test or assignment. When writing papers, you need to give credit for all sources and citations for any quotes. In addition, you must avoid long or excessive use of quotations. Serious infractions may result in an F for the course. A typical assignment in this course will involve working with students in class to make discoveries and then writing a paper on your results. It is expected that you and your teammates will have similar results and conclusions, but that the summaries will be written in your own words. Regarding homework, the instructor will not give you credit for any work that is copied from another source (from a classmate, instructor, a text, the answer key, web assistance, tutor, etc.). Take notes while getting help, but put aside the notes as you attempt to do the problems on your own. Show all work!

Working in groups: Participation in large and small group discussions in class is required and assessed for active engagement and contribution. This will also be your opportunity to uncover the information needed for your assignments. You do not need to answer every question, but the questions and answer should help to direct you to the key points. In particular, you might not need to complete repetitive problems once you’ve determined and verified the general principle or pattern. Try to encourage all members of your group to participate and avoid having a single member dominate. The instructor will not answer questions until everyone in the group has the same question. In addition, you are welcome to study together outside of class, but the work you turn in should be entirely your own. If you finished the recommended questions, you can discuss some ideas for papers and start to develop your outline.

E-mail: E-mail is a great way to keep in touch during the days we don’t meet. You will be expected to acquire e-mail access so that the instructor can notify you of any announcements. You will also be encouraged to dialogue with the instructor and other students via e-mail as a means of improving your mathematical writing and understanding. A Blackboard site has also been set up for your course. Look for announcements, this syllabus, assignments, and your homework grades there.

Netiquette: You are encouraged to exercise good writing and social behavior when corresponding via e-mail or discussion boards. Too often I receive e-mails from students that are difficult to comprehend due to missing punctuation, sentence fragments, and abbreviations. Reread your message before hitting send to make sure that the message will not be misinterpreted. Use complete English (not IM) sentences. Avoid criticizing other individuals especially in a public forum or discussion.

Summary Papers and Section Assignments are due at the beginning of class one week after the section has been explored in class. You are responsible for finding out what has been assigned. All work submitted must be clear and legible. Summary papers should be typed double-spaced using only one side of the paper. All papers will be assessed on use of language, organization of paper, mathematical correctness, and grammar. Mathematical notation and graphics in papers must be neat and used appropriately.

Geometer’s Sketchpad: Computer software designed for use in geometrical exploration. You will need to acquire a Rivier College computer account. You are responsible for completing all computer labs. If you are unable to finish during class time or unable to attend on the day of a lab activity, computers with Geometer’s Sketchpad are available for use in the campus public computer labs.
Bibliography:

Geometry Books:


Geometer’s Sketchpad 4.01 (computer software), Berkley, CA: Key Curriculum Press, 2001.


Writing Resources


