Math 271: Problem Solving Seminar – Modeling

Credit can be received for this course in at most four semesters.

Dr. Roland Minton, Trexler 270-C, 375-2358

This course meets every Monday evening from 7:00pm to 9:00pm in Trexler 271 from January 12 to February 9 plus the week of March 16.

Course Objectives: Develop an understanding of how applied mathematics problems can be solved using previous knowledge. Develop an ability to ask and answer questions about a proposed method of solving a problem. Develop an interest in and enjoyment of attempting difficult mathematics problems. Improve your problem-solving ability. Improve your perspective on how different areas of mathematics relate to applications. Improve your confidence when presented with a new problem.

Attendance Policy: Perfect attendance is necessary! This is a seminar course, where the students share presentation of material with the faculty. Participation includes doing presentations yourself, asking questions of classmates and generally being involved in the solution of each problem. If you have two unexcused absences, you will be dropped from the course.

Academic Integrity: The college policy is fully supported. You will gain more from solving a problem yourself than finding a solution online or in a book, but you may use any available resource as long as you give appropriate citations, can present the work in your own words and answer relevant questions about the work.

Study Problems: Problems will be assigned throughout the course. Many of these are problems from previous editions of the Mathematical Contest in Modeling. You are not expected to solve every problem completely or even one of the problems completely. The problems are open-ended enough that different students can reasonably make different assumptions and find different results. There are not unique solutions here; partial solutions can be great. Students who make progress on a problem should be prepared to present their work to the class, both orally and in writing. Team presentations are allowed. The assumptions and work will be discussed respectfully but thoroughly by the class. Along with making sure that the mathematics is correct, we want explanations to be clear and the logic to be elegant. The more contributions you make, the better your grade and the more you benefit from this course.

Teaching Style: This is a seminar course, so the role of the professor should be minimal. Students will present problems, discuss solutions and determine the content and value of a given class session. You will receive significant guidance, but be prepared to participate!

Tests: None. You should plan on competing in the Mathematical Contest in Modeling on February 5-9. The contest is administered on campus. Some students will be part of official Roanoke College teams, but students who compete unofficially will complete the same tasks.

Grading: To earn an A, you must attend every session, contribute to several models, participate in class discussions and “compete” in the Mathematical Contest in Modeling. The B grade represents competition in MCM but only moderate class participation. The C grade represents no competition or minimal class participation. To pass the course, you must attend most sessions and contribute to at least one model.