

Quantitative Methods

MA 103

Section 3

Spring 2009

10-10:55 a.m. M W F

12-12:55 p.m. T, discussion

BAC P107

Professor: Dr. Kim Roth

Office: BAC A302

Office Hours: 9-10, 1-2 M W F, 9-11, 4-5 T and Th
and by appointment

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Text: Quantitative Reasoning, by Sevilla and Somers, ISBN: 1-931914-90-7

Laptops to class: This course relies heavily on active learning, especially with the computer-based Activities. Since the class room has fewer computers than students, several students will need to bring their laptop to class. Laptops are available for checkout from the Juniata College help desk.

Course Moodle Site and webpage: There is a moodle site for this course which will be used to post homework and upload labs. You should enroll in the class at moodle.juniata.edu. The enrollment code is quantitative. The course webpage is at <http://www.juniata.edu/faculty/roth/QM/ma103s09syl.htm>

Course Description: Mathematics 103 prepares students to be quantitatively literate citizens in today's world. By learning to think critically about quantitative issues, students will be able to make responsible decisions in their daily lives. Problems are analyzed and solved using numerical, graphical, statistical, and algebraic reasoning. Technology is used to help visualize data and facilitate calculations, as well as to present quantitative output and verbal arguments.

Grading (tentative schedule):

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| Exam 1 - Friday, February 13 | 100 points |
| Exam 2 - Wednesday, March 4 | 100 points |
| Exam 3 - Monday, April 6 | 100 points |
| Exam 4 - Friday, May 1 | 100 points |
| Activities turned-in | 10 points per graded Activity |
| Projects | 40 points per graded Project |
| Class Attendance, Participation, and Professionalism | 25 points |

Grades will be awarded at the end of the semester on a 90-80-70-60 scale, with room at the ends for plusses and minuses. There is also the possibility of some downward flexibility in the scale, subject to instructor discretion.

Partnerships: Teams of two are allowed (but not required) on Exams, Activities and Projects. Teams will be required on certain Activities as noted, but not all. Teamwork should be shared and team membership is voluntary. Teams can be created and dissolved at will. If your partner is not contributing his/her fair share, you should feel free to form a new partnership or work on your own.

Attendance: Attendance at class is expected of every student, as participation in class is a crucial element of the learning process. When in class, I expect you to pay attention and not use the computer at your desk (for e-mail, internet, instant messenger, etc.). Disrupting class via use of the computer will be reflected in your participation grade.

Examinations: Exams will be open book and open notebook. You may use your scientific calculator, and you may log-in to the computer at your desk and use a blank Excel spreadsheet or the calculator. You should not expect to encounter exam problems designed to require Excel, since the in-class exams will be designed to test conceptual understanding, not computational aptitude. During an exam you will not be allowed to use any other application, such as: email, a web-browser, instant-messaging, cell-phones, text-messaging, etc. There is a "Zero-Tolerance" policy for violation of this policy. That is if you use any of these applications during an exam, you will receive 0 points.

Graded Assignments: Typically students will begin one of the Activities from the text in each class session. While the entire Activity will be checked for completeness, a question or two randomly selected after the Activities are collected will be graded in detail. The lowest Activity score will be dropped. Over the course of the semester, between two and five Projects will also be assigned. The Projects are more in-depth and open-ended than the Activities (as well as worth more points), and are an opportunity for the student to apply the concepts previously covered. All Activities and Projects should be turned in for grading in the format specified.

Assignments accepted via Moodle are configured with the "upload and review" format, so students have the responsibility to double-check the file that they upload. If there is a problem, they can still upload the correct version. There will not be any opportunity to send the "correct version" of the file after the assignment is due.

Supplemental Homework Problems: Students should read the upcoming Topic prior to class, and attempt the suggested Exploration problems in the course schedule. There will be time at the beginning of each class session for questions on Exploration problems. Completing these problems should help students prepare for the exams, and, in fact, these problems sometimes make great exam questions themselves!

Weekly Discussion Section: The weekly discussion section is designed to be a help session, where no new topics will be introduced. This hour is set aside for help on homework problems and/or computer assistance. Attendance at the weekly discussion section is optional if you currently have earned 80% or more of the total points; otherwise, attendance at the weekly discussion section is required. Failure to attend when required will be reflected in the participation grade.

Course Outline: Read sections of the text prior to class, since much of the mathematical content is "review" and class time may be more directed toward alternative methods and computer implementation.

Makeup policy: I do not accept late assignments or projects or give makeup exams unless you have a personal (e.g. a funeral) or medical reason for not attending. If you are sick, please e-mail me the day you are ill. If you know you are going to miss graded material for any other reason, please come talk to me beforehand.

Withdrawal Policy: . At the time of your withdrawal, I will assign a grade of WP or WF, depending on your average in the course. The last day to withdraw is the last day of classes, Tuesday May 5th.

Collaboration/Academic Integrity: Students are expected to follow the official College policy on Academic Honesty, as described in the Pathfinder, which can be found online at <http://services.juniata.edu/pathfinder/honesty.html>. At a minimum, an academic honesty violation will result in the following penalties: for the first offense, a zero on the assignment (with additional penalties possible depending on the severity of the offense); for the second offense, an F for the course.

Discussing mathematics with other people is absolutely the best way to learn it. I encourage you to discuss ideas and concepts with other students and other teams. On the other hand, you learn nothing at all from copying other peoples work. As stated earlier, you may work in teams of two on all parts of the course. You may discuss the content of the Activities and Projects with anyone in the class, but you must cite them. You, or you and your partner, must write up your explanations on your own. Using someone elses computer file or having someone else dictate phrasing to you does not constitute writing up the assignment on your own and is an academic integrity violation. If you hand in an assignment as a team of two, you are indicating that you worked together on every single problem. "You do the first two problems, I'll do the last three," or, even worse, "You do this week's assignment and I'll do next week's" does not constitute acceptable collaboration and is an academic integrity violation. You may not discuss exam questions beyond your team of two. If you are at all unsure about what kind of collaboration is acceptable on an assignment, please ask me.

Topics:

Outline of Topics from Textbook to be Covered - Tentative – See course website for up to date schedule

- Topic 1 Organizing Information Pictorially Using Charts and Graphs
- Topic 2 Bivariate Data
- Topic 3 Graphs of Functions
- Topic 4 Multiple Variable Functions
- Topic 5 Proportional, Linear, and Piecewise Linear Functions
- Topic 6 Modeling with Linear and Exponential Functions
- Topic 7 Logarithms and Scientific Notation
- Topic 8 Indexes and Ratings
- Topic 9 Personal Finances
- Topic 14 Apportionment
- Topic 16 Averages and Five-Number Summary
- Topic 17 Standard Deviation, z-Score, and Normal Distributions
- Topic 18 Basics of Probability
- Topic 19 Conditional Probability and Tables
- Topic 20 Sampling and Surveys