RIVIER COLLEGE
MA210 : Linear Algebra
Course Syllabus; Spring, 2005

Dr. Darien Lauten
Three credits Thursday 6:30 - 9:00 Room: Memorial Hall room 103
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Office Hours:
Mon.: 2:00 – 2:30 (Mem),
Wed. 2:00 – 2:30 (Mem), 4:00 - 6:00 (Regis), 6:00 - 6:30 & 9:00 – 9:30
Thurs. 2:00 - 6:00 (Regis), 6:00 - 6:30, 9:00 - 9:30
Other times by appointment

Brief Course Description: Linear algebra is an introduction to vector spaces and subspaces, linear dependence and independence, basis and dimension, matrix algebra, solution of equations by matrix reduction, determinants, matrix inversion, linear transformations, eigenvalues, and eigenvectors. The course also includes a proof component in which students learn about what is needed in proofs and develop the ability to read proofs.

Required Course Textbooks:

Course Objectives:
• To introduce mathematical abstraction and logical reasoning
• To study linear algebra in historical and cultural perspective
• To familiarize students with topics in linear algebra, including matrix operations and the theory of vector spaces, linear transformations, eigenvalues, and eigenvectors
• To help students learn to read mathematics and to become independent learners of mathematics
• To develop students’ conceptual understanding of the major ideas of linear algebra
• To develop students computational understanding of the problems in linear algebra
• To engage students in the solution of problems
• To develop students’ abilities to write clearly and concisely about mathematical ideas and problem solutions
• To develop students’ abilities to work together, recognizing that listening to each others’ ideas and approaches and learning to communicate clearly their own ideas is a critical skill in today’s world
• To give students hands-on experience using Maple software and the graphing calculator (used during each class meeting) to solve problems

Teaching Strategies:
Exploratory, intuitive activities that involve students in doing mathematics
Lecture and group discussions with an expectation of student participation and questioning at any time during lectures and discussions
Group work with an expectation of student participation and engagement
Student reading of mathematics
Student writing about mathematical ideas
Problem solving
Frequent quizzes and tests
Course requirements and policies:

**Attendance.** It is expected that students will attend all classes and arrive on time. Attendance will be taken at the beginning of each class meeting. In case of illness, work-schedule conflicts, family commitments, or other emergencies that require absence from class, students are expected to provide documentation. In the instance of absence for three class meetings, you are expected to set up a meeting with me to discuss the advisability of your remaining in the course.

**Assignments.** Assignments are due the class meeting after the material has been assigned. Late assignments will not receive full credit. Students are expected to correct carefully all assigned problems. The solution key will be available in the mathematics conference room after the assignment is due. Students are expected to have read the related textbook material before it is discussed in class.

**Active participation.** It is expected that students will participate and engage in full-class and small-group discussions and activities during the class meeting.

**Time commitment.** It is expected that time spent on this course should average four to eight hours per week. Depending on background and depth of inquiry, more or less time will be needed by individual students. The estimated time commitment includes reviewing class notes, reading the textbook, doing and reviewing assignments, and preparing for quizzes and tests. Learning mathematics requires repeated attention, effort, and revision. Therefore, it is essential that you space out study hours over the entire week and not expect to do assignments on the day they are due.

**Class notes.** It is expected that if you miss a class, you will obtain the notes from a classmate before the next class meeting.

**Email.** Have an email account and check it regularly. I will communicate with you via email when necessary.

**Materials.** Each student should have a 3-ring binder for handouts. Submit homework on 3-ring loose-leaf paper. Provide a heading on the homework for each section that includes your name, the textbook section number, the page number, and assigned problems.

**Calculator.** You are expected to have a calculator that has matrix operations and to bring it to class each class meeting. We recommend the TI-83 or TI-84. The TI-83 is used in the calculus sequence and can be projected on the screen during class meetings.

**Project(s).** Project(s) and graded assignments will be done individually or in small student groups as assigned. Make arrangements to submit work on time even if you are absent. There is a mailbox near my office door. The general rule is that late work is not accepted. For any appropriately documented exceptions to this policy communicate with me in advance. Generally there will be full letter grade penalties.

**Extra help.** There are several excellent sources. First, seek help from your classmates, since they have also been working on the same problem set. Second, seek help from the mathematics tutor or me. A few well-posed questions may clarify the problem. I will be available in my office from 2 p.m. on Thursdays before the class meeting. Some students like to compare and complete assignments in the mathematics conference room before the class meeting when I am available in my office. Questions are welcome at this time. I will be available for questions after class. I also welcome e-mail questions that are submitted in time for a response before the class meeting.

**Quizzes.** A short quiz will be given each class meeting at which a test is not given. The best 6 quiz grades will be counted. There are no make-up quizzes.

**Tests.** There will be three one-hour tests. Provide approved documentation for make-up tests, and notify me in advance. Make-up tests are only given under extreme circumstances and must be taken within one week of the missed test.

**Final examination.** Regular class meeting time during exam week.

**Plagiarism.** All individual work submitted (for example: on quizzes and tests) must be entirely your own. Examination questions may not be discussed with other class members. The plagiarism policy that appears in the Rivier College catalog will be followed.
Examinations (approximate dates):
Test #1  Thursday, February 10, 2005
Test #2  Thursday, March 3, 2005
Test #3  Thursday, April 7, 2005
Final Test.  Last class meeting during exam week

Methods of Assessment and Computation of Grades:
- Assignments, projects, and graded assignments  20%
- Attendance, active participation in full-class and group discussions and activities  15%
- Tests, quizzes, and final examination  65%

Bibliography