

MAT 183 - Elements of Modern Mathematics

Sect. 100, MW 2:15-3:35; Sect. 200, MW 3:45-5:05; Sect. 300, TH 2:00-3:20

Syllabus for Fall 2012

Course Instructors

Jeremy Entner 104B Archbold, Exe. 3-3353, Email jentner@syr.edu
Office Hours: Monday & Wednesday 1:00-2:00, Thursday 3:30-4:30

Jack Graver 229E Physics, Ext. 3-1576, Email jegraver@syr.edu,
Office Hours: Tuesday & Thursday 3:30-4:15, Wednesday 11:00-11:30

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Office Hours: Monday & Wednesday 1:00-2:00, Tuesday 3:30-4:30

Course Description: This course is designed for students in the School of Management. The course will involve no calculus, and a thorough background in high school mathematics is the only prerequisite. The course has three main components: **Linear Algebra, Probability & Statistics**, and the **Mathematics of Finance**.

Text: Goldstein, Schneider, and Siegel (2004). *Finite Mathematics and its Applications* (2nd custom ed.). Prentice Hall, Custom Edition for Syracuse University.

Calculator: This course involves extensive use of the TI-84 graphing calculator. Each student is required to own a TI84 calculator. The calculator will prove to be an indispensable tool throughout the course, particularly in the Mathematics of Finance component. Since the TI84 will be useful, if not essential, for virtually every topic, it is important to familiarize yourself with the calculator as soon as possible. Though the main techniques will be demonstrated in class, it is up to you to become proficient with the calculator on your own. **The TI-84 is the only calculator that may be used on quizzes, tests or the final exam** without prior approval from your instructor. **In particular, calculators on cell phones may not be used on quizzes, tests or the final.**

Quizzes and Homework: There will be *regular quizzes* in the recitation sections. *Homework will be done online* using WebAssign. You are required to purchase your entry code for this online system – it is bundled with the custom edition of the text. WebAssign problems for a section open the day that section is covered in class; they will be discussed during the following week's recitations and will be due at 11.59pm on the Sunday of that week. Extensions of one week for illness or family problems are automatic; further extensions only for DOCUMENTED EXTENDED ILLNESSES.

Week 1: Topic is covered in Lectures
Week 2: Discussed in recitation DUE!
Week 3: Grace Period for illness or family problems

The Class Key for WebAssign: syr 7220 5308

The assignment "Intro to webAssign" is recommended but not required.

Attendance and Class Preparation. Students are expected to attend every lecture and every recitation and are responsible for any announcements made during the recitations and lectures. Students should read the appropriate sections of the text before the class in which the material is presented. **All electronic devices other than the calculator should be turned off and put away during class.**

Tests: There will be NO makeup tests. For students with an EXCUSED absence, the portion of the final exam corresponding to the missed test will be substituted for the missing score. The FINAL EXAM will be given on **Wednesday, December 12. Every student must take the exam at that time - no exceptions!**

DO NOT PLAN TO LEAVE TOWN BEFORE DECEMBER 12!

HELP! The main lecturers and your recitation instructor will hold regular office hours. The times and places will be listed on Blackboard. In addition, the Mathematics Department offers regular math clinics. These will start the second week of classes and will be held in the 233 Physics. A schedule of clinic hours will be available in the math office, 215 Carnegie and posted outside of 233 Physics.

You should see your recitation instructor or your class instructor for questions requiring detailed explanations; such question cannot be taken care of by email.

Grading Policy. The grade for this course will primarily be based on the student's performance on the three tests and the final.

Test 1: Linear Algebra & Counting	20%	Final Exam	25%
Test 2: Probability & Statistics	20%	Quizzes	06%
Test 3: Markov Processes & Finance	20%	Homework	09%

Test and Exam scores will NOT be curved! Letter grades will be assigned as follows:

A	93-100%	B+	87-89%	C+	77-79%	D	65-69%
A-	90-92%	B	83-86%	C	73-76%	F	0-64%
		B-	80-82%	C-	70-72%		

Learning Outcomes.

- The ability to select an appropriate mathematical model for a given real world problem;
- The ability to understand and enunciate the limitations of conclusions drawn from mathematical models;
- The ability to effectively use appropriate mathematical technology;
- A mastery of the basic properties of matrices and the ability to solve simple matrix equations;
- A mastery of the basic properties and formulas of probability and statistics and the ability to compute simple probabilities in a statistical setting and to interpret the results;
- A mastery of the basic formulas from the mathematics of finance and the ability to apply these formulas in a variety of settings that arise in personal finance.

Tentative Lecture Calendar

Mon./Tue.	Sections	Wed./Thur.	Sections
Aug. 27-28	2.1, 2.2	Aug. 29-30	2.3
Sept. 3-4	No Class	Sept. 5-6	2.4
Sept. 10-11	2.6	Sept. 12-13	5.2, 5.3
Sept. 17-18	5.3, 5.4	Sept. 19-20	5.4, 5.5
Sept. 24-25	5.5, 5.6	Sept. 26-27	Test #1
Oct. 1-2	6.1, 6.2	Oct. 3-4	6.3, 6.4
Oct. 8-9	6.4, 6.5	Oct. 10-11	6.5, 6.6
Oct. 15-16	7.1, 7.2, 7.3	Oct. 17-18	7.3, 7.4
Oct. 22-23	7.5, 7.6	Oct. 24-25	7.7
Oct. 29-30	Test #2	Oct. 31-Nov. 1	8.1
Nov. 5-6	8.2	Nov. 7-8	8.3
Nov. 12-13	10.1, 10.2	Nov. 14-15	10.3
Nov. 19-20	Vacation	Nov. 21-22	Vacation
Nov. 26-27	10.4	Nov. 28-29	10.4
Dec. 3-4	10.4	Dec. 5-6	Test #3
		Dec. 12	Final Exam

IMPORTANT: You must notify your instructor using an official notification form (on MySlice) by Sept. 9 if you will miss a test or quiz due to a religious obligation!

Tentative Recitation Schedule

Week starting	Activities
Aug. 27	Matrices on the TI84 Workshop
Sept. 3	Quiz 1 (Matrices on TI) Review 2.1-2.4
Sept. 10	Quiz 2 (Matrices 2.1-2.4) Review 2.6 & 5.2, 5.3
Sept. 17	Quiz 3 (Basic Counting 5.2-5.3) Review 5.4-5.5
Sept. 24	M,T,W, Review; No Th, F recitations*
Oct. 1	Return Test #1, Review 6.1-6.3
Oct. 8	Quiz 4 (Probability 6.1-6.3) Review 6.4-6.5
Oct. 15	Quiz 5 (Probability 6.4-6.5) Review 6.6 & 7.1-7.3
Oct. 22	Quiz 6 (Statistics 7.1-7.3) Review 7.4-7.6
Oct. 29	No M, T recitations*; W,Th,F Return Test #2
Nov. 5	Review 8.1-8.2
Nov. 12	Quiz 7 (Markov Process 8.1-8.2) Review 8.3, 10.1-10.2
Nov. 19	Vacation
Nov. 26	Quiz 8 (10.1-10.2) Review 10.3-10.4
Dec. 3	M,T,W, Review; No Th, F recitations*

* Students in canceled recitations can attend any other recitation that week that fits in their schedule

College and Department Policy Statements

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS),

<http://disabilityservices.syr.edu>,

located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact your instructor privately to discuss your academic needs although arrangements for disability-related accommodations must be done through ODS.

**Making arrangements with ODS takes time.
DO NOT wait until just before the first test.**

Religious Observances Policy: SU religious observances policy recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to are religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice (Student Services - > Enrollment -> My Religious Observances) from the first day of class until the end of the second week of class.

Related link: http://supolicies.syr.edu/studs/religious_observance.htm

Academic Integrity Syracuse University sets high standards for academic integrity. Those standards are supported and enforced by students, including those who serve as academic integrity hearing panel members and hearing officers. The presumptive sanction for a first offense is course failure, accompanied by the transcript notation “Violation of the Academic Integrity Policy”. The standard sanction for a first offense by graduate students is suspension or expulsion. Students should review the Office of Academic Integrity online resource “Twenty Questions and Answers About the Syracuse University Academic Integrity Policy” and confer with instructors about course-specific citation methods, permitted collaboration (if any), and rules for examinations. The Policy also governs the veracity of signatures on attendance sheets and other verification of participation in class activities. Additional guidance for students can be found in the Office of Academic Integrity resource: “What does academic integrity mean?”

Related links:

Academic Integrity Policy: <http://academicintegrity.syr.edu/academic-integrity-policy/>

Twenty Questions and Answers about the Academic Integrity Policy:

<http://academicintegrity.syr.edu/faculty-resources/>

What does academic integrity mean?: <http://academicintegrity.syr.edu/what-does-academic-integrity-mean/>

EXERCISES

The following exercises from the text are selected to help the student understand the material. Problems in WebAssign will be similar to problems in this list.

Linear Algebra

- 2.1 17, 19, 25, 27, 31, 37, 38
- 2.2 9, 15, 23, 26, 27, 30, 35, 36
- 2.3 7, 15, 17, 21, 26, 33, 37, 43, 46, 47, 49, 51
- 2.4 11, 15, 16, 17, 19, 27, 31
- 2.6 5, 7, 8, 12, 13, 16, 19

Counting

- 5.2 2, 3, 5, 9, 11, 13, 15, 17
- 5.3 5, 7, 13, 15, 17, 19, 23, 25, 41, 43, 45
- 5.4 11, 17, 19, 23, 24, 25, 31, 33, 37, 52*
- 5.5 5, 7, 11, 21, 25, 27, 32, 34, 38, 41, 52, 59, 76
- 5.6 1, 3, 5, 7, 9, 10, 11, 17, 19, 23, 30, 31, 36, 46

Probability

- 6.2 1, 3, 7, 9, 11, 15, 19, 24
- 6.3 2, 3, 4, 7, 10, 17, 19, 23
- 6.4 1, 3, 9, 13, 15, 17, 19, 21, 22, 35, 36
- 6.5 1, 2, 3, 4, 6, 7, 10, 12, 13, 15, 17, 22, 23, 30, 39
- 6.6 4, 6, 7, 8, 13, 15, 20, 24

Statistics

- 7.2 1, 7, 9, 10, 22
- 7.3 1, 3, 5, 7, 10, 12, 19
- 7.4 2, 9, 10, 11, 12, 16, 24, 26
- 7.5 1, 3, 7, 8, 11, 12, 13
- 7.6 1, 3, 5, 7, 25, 26, 31, 33

Markov Processes

- 8.1 1, 7, 9, 10, 11, 13, 14, 15
- 8.2 1, 5, 7, 14, 15, 16, 18
- 8.3 3, 5, 7, 12, 13, 14, 15, 16, 17

Mathematics of Finance

- 10.1 1, 4, 6, 8, 11, 15, 19, 23, 37, 40, 49
- 10.2 1, 4, 7, 9, 11, 14, 17, 19, 21, 25, 27*, 36, 41
- 10.3 1, 2, 3, 5, 7, 11, 17, 20, 21, 27
- 10.4 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 42, 44, 46, 48