

MA114 SYLLABUS for FALL 2000
(Section 002 in Harrelson 307 at 11:20 AM on MWF)

- Prerequisites:** Successful completion of MA 111 or its equivalent.
Additional information can be obtained at:
http://www2.acs.ncsu.edu/reg_records/crs_cat/MA.html
- Content:** Matrix arithmetic and the solution of systems of linear equations. Linear inequalities and linear optimization, including the simplex method. Elementary set theory and combinatorics, using Venn diagrams, tree diagrams and the multiplication principle. Elementary probability theory and Markov chains. Additional information can be obtained at:
http://www2.ncsu.edu/eos/info/math/ma114_info/www/
- Text:** Topics in Finite Mathematics by Page and Paur, Simon & Schuster Custom Publishing (required and available at the NCSU Bookstore).
- Instructor:** E. L. Peterson, Daniels Hall 207
Office hours: Immediately after class (in the classroom) or by appointment.
Phone: 515-4859 to leave your name, a number at which you can be reached, and a short message.
E-mail address: elpeters@eos.ncsu.edu (only when a single-sentence response is feasible).
- Teaching Assistant:** Asma Shaker
Office hours: Ten minutes before each class, in the classroom, or by appointment.
Phone: ____-____ (only when necessary)
E-mail: abshaker@unity.ncsu.edu (only when necessary)

- Grades:** Normally determined by averaging the overall semester WebAssign score (if requested by the student) and the scores on three 50-minute exams and a final exam that counts twice, with the lowest of the six or five scores (one and only one in the case of a tie) deleted. The transition from A to B (through A- and B+) occurs at an average score of approximately 90%, from B to C approximately 80%, and so forth. In borderline cases, improving exam scores during the semester coupled with a relatively high final exam score and relatively strong performances on the WebAssign homework results in the higher letter grade.
- Attendance:** Class attendance will normally be checked shortly after class begins; somebody arriving after that time may not be able to have the resulting unexcused absence removed. Class attendance records will be made available to university officials upon request but will have no influence on grading. This attendance policy is consistent with the academic regulations that can be found at: http://www2.ncsu.edu/unity/project/www/ncsu/provost/info/academic_regulations/attend/reg.html.
- Make-up:** There will be no make-up 50-minute exams or WebAssignments. You will receive an automatic 0 for a missed 50-minute exam or WebAssignment; unless you present a documented legitimate excuse to the teaching assistant within a reasonable period of time (as prescribed in the student handbook), in which event you will be graded as previously specified but on the basis of a smaller number of 50-minute exams and WebAssignments. You will receive an automatic 0 for a missed final exam; unless you present a documented legitimate excuse to the instructor within a reasonable period of time (as prescribed in the student handbook), in which event you will be given an "incomplete" letter grade for the course (whose removal is governed by procedures described in the student handbook).
- Academic Integrity:** Students are expected to follow the university guidelines given at http://www.ncsu.edu/provost/academic_regulations/integrity/reg.htm.

Student Information can be found at:
Disabilities: [http://www2.ncsu.edu/ncsu/stud_affairs/
counseling_center/dss/](http://www2.ncsu.edu/ncsu/stud_affairs/counseling_center/dss/)

Further NCSU Academic Regulations can be found at:
Information: [http://www2.ncsu.edu/unity/project/www/ncsu/
provost/info/academic_policies/](http://www2.ncsu.edu/unity/project/www/ncsu/provost/info/academic_policies/)

Course Goals and Expectations

1. Some of you may have to replace high-school notions of learning math with university-level notions. Although difficult for some, this must be done as soon as possible -- so that you will be capable of doing more than just parroting the concepts and methodologies you learn (something that computers can easily do). Our main goal is for you to be able to apply the concepts and methodologies learned to new situations through critical and creative thinking (something that computers can not do). Reaching that goal will help to prevent a computer from eventually replacing you professionally, and will also enrich your intellectual life.
2. Expect to have material introduced at two-to-three times the pace in high school. Since class time is in short supply, you can not be taught everything in class. Consequently, it is ultimately your responsibility to reach the goal described in paragraph 1. Since most progress must take place outside class, you should be willing to spend at least two hours outside for each hour inside.

3. The textbook gives a detailed account of the concepts and methodologies to be learned, as well as applications to a variety of situations. Since it is not a novel, you must read it carefully, which may be a very slow process. Use pencil and paper to work through the assigned sections and to fill in any omitted steps. As for when to begin, you have the following two choices:

a. [Highly recommended] Read the appropriate section(s) before they are presented in class; that is, come prepared for class. Then the faster-paced university-style class will be easier to comprehend and learn from. Do not take class notes if doing so detracts from your ability to comprehend the discussion.

b. If you haven't read the appropriate sections before class, try to learn what you can from the class by at least absorbing the general ideas. This choice usually produces less subject mastery for the total time spent (because the time you spend in class will be less productive).

With either choice, you are likely to obtain sufficient subject mastery only by thoroughly studying the appropriate sections after they have been discussed in class, and then doing both the assigned homework problems and the WebAssignments. If you then still have questions, seek the answers from other students, the instructor, the teaching assistant, or a tutor; do not delay doing so, because a lack of understanding of a current topic might make it impossible for you to properly understand subsequent topics.

4. The instructor is primarily a guide for you while you master the subject -- not someone who "programs" you with facts and approaches to certain problem types that might appear on tests. However, class attendance is important, because the instructor can frequently supply additional insight not in the textbook (giving you a better chance at achieving subject mastery), and can of course work other problems and answer your questions. As a courtesy to the instructor and other students, distractions such as conversations between students must not take place in class and will not be tolerated.

Extra Help

(The times listed are subject to change)

1. A schedule for introductory sessions on WebAssign can be found at <http://www.math.ncsu.edu/mmc/ha269.html>. Students can also go to Harrelson Hall 269 for help anytime a class is not scheduled there.
2. The Math Multimedia Center provides videotaped lectures covering each topic in the course, as well as tutorial help, on:

Monday through Friday from 8:00 AM - 5:00 PM in Harrelson 244.

The schedule for tutors and WebAssignment consultants can be found at: <http://www.math.ncsu.edu/mmc/index.html>.
3. The Academic Enrichment Center provides drop-in tutorial help at times indicated on their web homepage at:
http://www2.ncsu.edu/ncsu/undergrad_studies/math.html.
4. The Undergraduate Tutorial Center provides one-on-one tutorial help by appointment in Leazar Hall 147 (arranged by calling 515-3163).
5. An internet-based version of MA 114 is currently available at:
<http://courses.ncsu.edu/MA114/>

Tentative Course Schedule

<u>Dates</u>	<u>Sections</u>	<u>Topics</u>	<u>Homework Problems</u>
Aug 21		Course Description	
	1.1	Matrix Definitions	1, 3, 7, 13, 15.
	1.2	Matrix Multiplication	1, 3, 5, 7, 9, 11, 15, 17, 25.
28	1.3	Systems of Linear Equations	1, 3, 5, 7, 9, 19, 33, 39, 41.
	1.4	Inverses of Matrices	1, 5, 7, 17, 21.
Sep 4		HOLIDAY	
	2.1	Graphing Linear Equations	7, 9, 13.
		Graphing Linear Inequalities	1, 11, 19.
	2.2	Linear Programming	3, 7.
11	2.3	Geometric Approach	3, 27.
		Review (if time permits)	
15		EXAM I	
18	3.1	Standard LP Problems	1, 3, 5, 7, 11, 17, 25.
	3.2	Other LP Problems	1, 9, 13, 14.
25	4.1	Sets	1, 3, 5, 9, 11.
	4.2	Operations/Venn Diagrams	1, 7, 9, 13.
	4.3	Counting Techniques	1, 5.
Oct 2	4.4	Tree Diagrams/Mult. Princ.	1, 3, 7, 9, 11, 13, 15, 17, 21.
	4.5	Permutations/Combinations	1, 3, 9, 11, 13, 15,
9	4.5	Permutations/Combinations	19, 23, 25.
		Review (if time permits)	
13		EXAM II	
16		HOLIDAY	
	5.1	What is Probability?	1, 3, 5, 7, 9,
	5.2	Properties of Probability	1, 3, 5, 9, 11.
23	5.3	Uniform Distributions	1, 3, 5, 7, 9, 11, 15, 19.
	5.4	Conditional Probability	1, 3, 5, 9, 11.

Oct 30	5.5	Tree Diagrams/Bayes Princ.	1, 3, 5, 7, 9.
Nov 1	5.6	Independence/Ind. Trials	1, 3, 5, 7, 9, 11, 15, 17.
6	5.7	Expected Value	1, 3, 7, 9.
		Review (if time permits)	
10		EXAM III	
13	6.1	Markov Chains	1, 3, 7, 9, 11, 13, 15.
	6.2	Transition Probabilities	1, 3, 5, 9, 11, 13, 15.
	6.3	Regular Markov Chains	1(a, b, c, e, f, g), 3(a, c),
20		Regular Markov Chains	5, 9, 15.
24		HOLIDAY	
27	6.4	Regular Markov Chains	17, 21.
		Absorbing Markov Chains	1, 3, 5, 7,
Dec 1		Absorbing Markov Chains	9, 13, 15, 17,
4		Absorbing Markov Chains	23, 27.
		Review (if time permits)	
8		Last day of classes (with review if time permits)	
18		FINAL EXAM from 8:00 AM to 11:00 AM in HA 307	