MATH 114 (College Algebra & Trigonometry) SYLLABUS, Fall Sem. 2001-02
Lec. 2, MWF 1:20 – 2:10 p.m., B-130 Van Vleck

Prof. Richard A. Brualdi   Text is:
Office: 725 Van Vleck Hall   *Precalculus*
                                                                    3rd ed., by Stewart, Redlin, & Watson

Tel: 262-3298; E-mail: brualdi@math.wisc.edu

Office Hours: Monday (3:30–4:30 p.m.), Tuesday (3:30–4:30 p.m.), Friday (12:05–12:55 p.m.)

WEB Address: http://www.math.wisc.edu/~brualdi

Teaching Assistants (TAs):   Office Hours
Chun-Nen (Jim) Huang. sec. 323 (9:55 TR) & 327 (1:20 TR), 202 HiRay Hall   T 11-12:30
                                                                                            W 9-10:30

Gaurav Sharma, sec. 321 (7:45 TR) & 324 (11:00 TR), 205 HiRay Hall   T 9:00-10:30
                                                                                            F 2:30-4:00

Michael Lau, sec. 322 (8:50 TR) & 325 (12:05 TR), 718 Van Vleck Hall   9:55-10:45 T
                                                                                     4-5 W, 2:25-3:15 F

Duygu Unlu, sec. 329 (2:25 TR) & 331 (3:30 TR) 208 HiRay Hall   M 2:30-3:30
                                                                                           WF 9:30-10:30

Notes: HiRay Hall is at 1308 W. Dayton behind Union South and Wendt Library. Also, while it is expected that you would normally use your own TA's office hours, each TA's office hours are open to all students in this course.

Through DoIT I am creating an email list for this course through which I can communicate with you over the Internet.

Please Read Carefully for Very Important Information

Course Content As the title of the book indicates, Math 114 is a course on the mathematical fundamentals required for success in calculus. If you are not planning to take calculus (Math 211 or Math 221) probably you do not want to be in this course. For most, if not all, of you this course will look like a review of the algebra and trigonometry that you took in high school but (according to your placement scores) did not learn well enough to move directly into our fast-paced calculus courses. Topics covered should look very familiar to you: exponents, radicals, quadratic formula, functions, polynomial and rational functions, exponential and logarithmic functions, trig functions (Sines, Cosines, ...) trig identities, complex numbers, inverse (trig) functions, graphs, etc. You should **not** be lulled into thinking that you know it all and can just coast in the course. We will be covering the topics on a deeper level than you have encountered before, *and we will have higher expectations for your grasp of the material and your ability to reason with it clearly and efficiently.*

Lectures There are lectures on Monday, Wednesday, and Friday of each week from 1:20 p.m. to 2:10 p.m. It is expected that students will attend all the lectures. In the lectures,

I will motivate and highlight the material and set the tone for your study and work on the material. Of course, I will write stuff on the chalkboard but I cannot write the book on the board! You must, in addition, study the book.

It is rude and disruptive to both me and your fellow students to leave a lecture before the bell has sounded or the class has been dismissed for the day.

Discussion Sections In addition to the lectures you are also required to attend smaller discussion sections twice a week (Tuesday and Thursday - check your schedule) where a TA will help you in getting a good grasp of the material, answer questions that you may have about what was covered in the lecture or what is written in the book, and answer questions about the assigned problems. Your TA will be giving you a discussion section score (see the paragraph on Grades below) that will be crucial in earning a good grade in the course.

Study Habits This course requires sustained work throughout the semester. It being a 5 credit course (so about one-third of your total credits) you should devote **8-10 hours a week** to it outside of lectures and discussions - reading and re-reading the book, doing exercises, thinking about the ideas and concepts and how they relate to each other, talking with some of your classmates about them (study groups are encouraged), etc. If you are not prepared to make the effort, you should re-examine the reasons why you are taking this course.

Assignments, Exercises, & Quizzes There will be regular reading and homework assignments (see attached). The reading assignments (sections of the book) are best done for the first time **before** the class in which they are covered, so that you can follow the development better. Your TA will give **5 quizzes** and collect (and selectively grade) 5 of the weekly homework assignments. The lowest two of the ten resulting scores will be dropped and the remaining eight will be the basis for your **discussion score scaled using 100 points as a maximum**.

The lectures, the discussions, and the book will reinforce each other - they are each an important part of the course "puzzle." We will be covering many pages in the book. *In the lectures, you will learn what emphasis I am placing on the various topics in the course, and this should inform you on how to study what is in the book.* The assigned exercises also give an indication of the emphasis in the course. It is important that you do the exercises regularly so that you become proficient by exam time, at which time you will be expected to be able to read a problem and quickly know how to attack it.

Exams There will be **three in-class Exams** during the semester (**each worth 100 points**) and a **final exam (worth 150 points)** - see the accompanying schedule. The scores on the exams will be based on a uniform scale; the lowest of your three in-class exams will be dropped (but see below). **All the exams must be taken at the regularly scheduled time; there will be no make-up exams.** If you miss one of these exams (for whatever reason), then that is the exam whose score is dropped. Your final exam score will be replaced

by the following:

$$\max\{f, \tfrac{1}{2}l + \tfrac{2}{3}f\} \ge f$$

where f is your score on the final exam and l is the lowest of the three in-class exams. So it is to your advantage to take all three in-class exams and to do well on all three. For instance, if you get $f = 90$ on the final exam and your lowest of the three in-class exams is $l = 80$, then in calculating your grade (see below), your final exam score will be replaced by

$$\max\{90, \tfrac{1}{2}80 + \tfrac{2}{3}90\} = 100 \ge 90$$

a bonus of 10 points.

Grades will be based on a **total of 450 points** according to the following standard (and exams will be constructed and curved, if necessary, with this standard in mind):

Grade	Accomplishment level	Points
A	**superior**	415 ↑
AB	**excellent**	400 ↑
B	**proficient**	365 ↑
BC	**good**	350 ↑
C	**acceptable**	315 ↑
D	**mediocre**	260 ↑
F	**unacceptable**	0 ↑

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Calculator Policy Unless otherwise stated, it is acceptable to use **scientific calculators** on exams to do arithmetic computations. **Graphing or programmable calculators will not be allowed on exams, so you may need to buy a cheap calculator.** Computations, in general, are to be exact. So an answer which has $\sqrt{2}$ in it is to be presented as such and not as 1.414. In general, I will write problems for which use of a calculator is of no special advantage.

Office Hours My office hours are listed on page 1 and so are TA office hours. *Office hours are for students who need additional help beyond that given in the class; office hours are not substitutes for class.* Routine problems should be first brought to the attention of your TA. Other problems such as policy, extreme difficulty being experienced, advice, referrals, etc. should be brought to my attention.

Other Information

Math Lab: Free drop-in help from Math TAs is available in B227 VV, Monday through Thursday, from 3:30 to 5:30 p.m. and 6:30 to 8:10 p.m. This usually starts during the second and third week of class.

Math Board: Bulletin Board across from B207 VV has information that helps you form a study group with students taking the same course as you.

Math Tutorial Program: Free small group tutoring for students who are retaking Math 114, in danger of earning a "D" or and "F", or haven't had a math course in several years. A referral from the instructor or your TA is necessary. Students who enroll in this program should expect to commit substantial additional time and effort to the course.

GUTS: GUTS (Greater University Tutoring Service) is a free peer tutoring service offered either as one on one, in small groups, or in drop-in centers. The drop-in centers are located in Gordon Commons, Helen C. White Library, Kronshage Hall, and Union South. The GUTS office is 303 Union South (263-5666). They also have an exam file in their office.

Private Tutors: The receptionist office on the 2nd floor of Van Vleck has a list of private tutors.

Note to McBurney Disability Resource Center students: Students of the Center who are recommended for some accomodation (e.g., extended time on exams) should contact the instructor about this no later than September 12.

The Department of Mathematics; Van Vleck Hall (VV):

Chair: A. Adem (219 VV)

Associate Chair: D. Uhlenbrock (421 VV)

Department Administrator: G. Novara (223 VV)

Undergraduate Advisor: D. Shea (316 VV)

TA Supervisor: R. Wilson (411 VV)

Undergraduate Secretary: P. Conklin (203 VV)

Sexual Harrassment Contact Persons: G. Benkart (817 VV) D. Rivard (B207 VV)

Access and Accomodation Coordinator: D. Uhlenbrock (421 VV)

Faculty Minority Liaison: D. Rider (821 VV)

Information is available concerning diversity and multicultural issues (e.g. support services, academic internships and grants/fellowships). Prof. Rider is also available to discuss minority students' concerns about mathematics courses: 263-3603, drider@math.wisc.edu).

SCHEDULE

With possible minor deviations, we shall follow the schedule (referring to sections in the book):

Week of	Sections	Topics
September $3 - 7$	$1.2 - 1.5$	Basic algebraic stuff
September $10 - 14$	$1.6 - 1.8$	Applics., Inequalities, Geometry
September $17 - 21$	$1.10, 2.1 - 2.2$	Lines, Functions and Graphs
September $24 - 28$	$2.3 - 2.5$	Applics., Transformations, Extreme Values
October $1 - 5$	$2.6, 3.1$	Composition, Polynomial Functions
October 5, Friday	**In-class Exam**	
October $8 - 12$	$3.2 - 3.3, 3.5, 4.1$	Complex numbers, Rat'l Exp. Functions
October $15 - 19$	$4.1 - 4.4$	Exp. and Log functions
October $22 - 26$	$4.5 - 4.6, 5.1 - 5.2$	Applics. and Trig functions
Oct. 29-Nov. 2	$5.3 - 5.4$	Trig Graphs
November 2, Friday	**In-class Exam**	
November $5 - 9$	$6.1 - 6.4$	Angles, Right Triangles, Sines Law
November $12 - 16$	$6.5, 7.1 - 7.2$	Cosines Law and Trig Identities
November $19 - 23$	7.3	Some Trig Formulas
November $26 - 30$	$2.7, 7.4 - 7.5$	Inverse functions and Trig equations
December $3 - 7$	$7.6 - 7.7, 8.1 - 8.2$	Trig and Complex Numbers, Equations
December 7, Friday	**In-class Exam**	
December $10 - 14$	$9.1 - 9.3$	Parabolas, Ellipses, Hyperbolas
December 21, Friday	**Final Exam**	$5 : 05 - 7 : 05$ p.m.

Exercise List

Below is a minimal set of exercises on the topics covered in the first examination. These should be worked out on a regular basis - not just before the examination. If you need more exercises, just pick some near those assigned. There are also review exercises and a sample test at the end of each chapter. **Experience has shown that a student's performance on examinations is directly related to having worked through the assigned exercises in a timely manner.**

Section	Exercises
1.2	$1, 4, 6, 10, 12, 17, 22, 27, 37, 42, 48, 50, 52, 55, 58, 75$
1.3	$5, 6, 9, 12, 17, 22, 27, 31, 32, 36, 57, 58, 75, 82, 92, 94$
1.4	$1, 4, 8, 9, 13, 16, 20, 22, 33, 35, 36, 41, 43, 44, 45, 49, 53, 54, 66, 67, 73$
1.5	$3, 10, 14, 17, 20, 24, 33, 36, 39, 46, 47, 51, 60, 61, 64, 71, 73, 75, 79, 86, 90, 92, 95$
1.6	$1, 6, 8, 9, 13, 16, 22, 23, 24, 28, 37, 44, 49, 54, 59, 61$
1.7	$6, 14, 15, 20, 21, 27, 32, 35, 38, 44, 47, 52, 56, 58, 64, 65, 69$
1.8	$3, 6, 10, 12, 14, 16, 17, 20, 25, 26, 30, 32, 44, 49, 54, 55, 59, 61, 66, 73, 78, 83$
1.10	$3, 8, 9, 11, 16, 21, 26, 29, 41, 42, 49, 50, 52, 56, 57, 61$
2.1	$3, 4, 13, 16, 20, 26, 28, 32, 38, 41, 43, 48, 50, 54$
2.2	$3, 5, 7, 17, 19, 24, 41, 43, 64, 71, 72, 77, 78$
2.3	$2, 5, 9, 11, 14, 17, 20, 22, 23, 26, 35, 38, 39, 43, 47$
2.4	$1, 5, 7, 11, 13, 22, 25, 26, 34, 35$
2.5	$6, 8, 17, 19, 25, 31, 35, 39, 40, 42, 43$
2.6	$2, 4, 6, 7, 15, 16, 20, 23, 30, 33, 39, 43, 46, 53$
3.1	$2, 5, 9, 15, 18, 23, 27 - 30, 64$
3.2	$1, 7, 10, 23, 27, 34, 40, 45, 47$
3.3	$2, 3, 11, 14, 17, 21, 24, 28, 32, 43, 47, 49$
3.5	$1, 5, 7, 12, 14, 21, 24, 32, 35, 42, 62$
4.1	$1, 4, 9, 11, 15 - 20, 25, 26, 34, 35, 39$
4.2	$5, 10, 12, 13, 16, 18, 25, 27, 28$
4.3	$3, 4, 7, 9, 13, 17, 19, 24, 28, 33, 37 - 42, 48, 54, 59$
4.4	$2, 8, 9, 16, 21, 25, 30, 33, 39, 44, 46, 50, 57$
4.5	$1, 2, 10, 13, 20, 25, 32, 35, 38, 40, 42, 43, 48, 53$
4.6	$1, 5, 10, 13, 20, 25, 29, 32$
5.1	$1, 7, 10, 13, 19, 20$
5.2	$2, 3, 7, 14, 25, 32, 41, 43, 49, 54, 59, 64, 67$
5.3	$1, 7, 8, 11, 16, 23, 28, 32, 35$
5.4	$1, 9, 14, 21, 26, 34, 37, 43$

More to come