MATH 441 SYLLABUS, Spring Semester, 2004-05 Academic Year
Lec. 1, TR 11:00 AM - 12:15 PM, B341 Van Vleck Hall

Prof. Richard A. Brualdi
Office: 725 Van Vleck Hall

Text is:
A Concrete Into. to Higher Algebra
2th ed., by L.N. Childs

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Office Hours: Mon (1:15–2:15), Tues. (3:30–4:30 PM), Thur. (2:30–3:30 PM)
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I have an email distribution list by which I can communicate to the class.

Please read carefully

Course Content The title of this course is *Introduction to Modern Algebra*—a first course on modern algebra with emphasis on concrete structures, leading up to more abstract structures. It serves two purposes: (1) a stepping stone to Math 541 (Modern Algebra) for those who want to go there and (2) a course that enables the prospective secondary school teacher to understand "school mathematics" at an advanced, deeper, and more abstract level.

Briefly, the topics covered in the course this semester include: induction, the Euclidean algorithm and unique factorization, congruences and congruence classes, rings & fields, Fermat & Euler theorems, groups, polynomials and polynomial congruences, construction of roots of polynomials. Some applications will also be discussed.

Study Habits You should devote at least 6 hours a week outside of class to this course: reading the book, thinking about the ideas, concepts, and techniques, talking with some of your classmates about them, doing all the assigned exercises etc. If you are not prepared to make the effort, you should re-examine the reasons why you are taking this course.

There will be regular reading (see below). It is expected that students will read the book—not everything you should learn and know will be discussed in class. Of course, I will write stuff on the chalkboard but I will not write the book on the board! The class and the book will reinforce each other, and neither is a replacement for the other. Questions and comments from students are very much encouraged. Whenever possible, the reading assignments (sections of the book) should be done **before** the class in which they are discussed. In the class, we (you and I) will discuss the material—class participation is encouraged and expected.

Exercises Assigned exercises will be emailed to you at the end of each week. There will be two kinds of exercises: some to do and check your answers (after you've done them!) with those given in the back of the book; in addition, there are exercises to be handed in (after we finish each chapter) for marking (by a graduate student grader assigned to me). It is essential that you do both kinds of exercises with the not-to-be-handed-in exercises completed **before** you do the to-be-handed-in exercises. The assignments to be handed-in will have a **due date in class**; no late assignments will be accepted. Your work on these exercises should be well-presented in good English, and not written carelessly. While you can discuss the exercises with classmates, **the work you hand in should be your own**

write-up and not copied from someone else. The assigned homework will be scaled to 50 points. I allow myself the possibility to increase someone's scaled homework score based on class participation. For this I need to know your name, so I recommend that you identify yourself when you ask a question etc.

Exams There will be **two in-class exams** during the semester (**each worth 100 points**) and a **final exam** (**worth 150 points**) - see the accompanying schedule. I do not intend to give make-up exams.

Exam Schedule

- Exam 1 Tuesday, February 22 (in class)—Chapters 1-8.

- Exam 2 Thursday, April 14 (in class)—Chapters 9-15

- Final Exam: Monday, May 9, 2:45 pm.

Proposed Weekly Schedule

- Week of January 17: Chapter 1 and Chapter 2 (A,B,C,D–statement of theorem only)

- Week of January 24: Chapter 3 (A,B.C), Chapter 4 (A,B), Chapter 5 (A,B)

- Week of January 31: Chapter 5 (C,D,E) and Chapter 6 (A,B)

- Week of February 7: Chapter 6 (C,D,E), Chapter 8 (A)

- Week of February 14: Chapter 8 (B), Chapter 9 (A)

- Week of February 21 (one class plus exam): Chapter 9 (B)

- Week of February 28: Chapter 9 (C,D,E,F)

- Week of March 7: Chapter 10 (B), Chapter 11 (A,B)

- Week of March 14: Chapter 11 (C,D)

- Week of March 21: Spring Recess

- Week of March 28: Chapter 11 (E), Chapter 14

- Week of April 4: Chapter 15 (A,B,C)

- Week of April 11 (one class plus exam): Chapter 15 (D)

- Week of April 18: Chapter 20 (A), Chapter 28 (A)

- Week of April 25: Chapter 28 (B,C)

- Week of May 2: Chapter 28 (D)

Grades These will be based on a **total of 400 points** according to the following standard (and exams will be constructed with this standard in mind' if necessary I will adjust exam scores by adding points):

Grade	Accomplishment level	Points
A	**superior**	370 ↑
AB	**excellent**	355 ↑
B	**proficient**	330 ↑
BC	**good**	310 ↑
C	**acceptable**	275 ↑
D	**mediocre**	240 ↑
F	**unacceptable**	0 ↑

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Because of this absolute standard, you are not in competition with your classmates nor does their performance influence positively or negatively your performance. You are encouraged to form study/problem groups with your classmates; things not clear to you may become obvious when you try to explain them to others or when you hear other points of view. Sometimes just verbalizing your mathematical thoughts can deepen your understanding. As already mentioned, if you discuss with others the exercises, each person should write up her/his own version of the solution.

Calculator Policy: It is acceptable to use calculators on exams to do arithmetic computations, but the computations are to be exact. So an answer which has $\sqrt{2}$ in it is to be presented as such and not as 1.414.

Attendance: It is expected that each student will be present at all of the classes. Office hours are for students who need additional help beyond that given in the class; they are not substitutes for class.

Other Information

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 accommodation (e.g., extended time on exams) should contact the instructor about this no later than January 30.

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

Chair: D. Griffeath (219 VV)

Associate Chair: J. Robbin (313 VV)

Department Administrator: V. Whelan (223 VV)

Undergraduate Advisor: G. Mari-Beffa (309 VV)

TA Supervisor: P. Milewski (809 VV)

Undergraduate Secretary: J. Schwantz (207 VV)

Sexual Harrassment Contact Persons: G. Mari-Beffa (309 VV), D. Rivard (720 VV)

Access and Accomodation Coordinators: J. Robbin (313 VV)

Faculty Minority Liaison: D. Camacho (321 VV) [Information available concerning diversity and multicultural issues (e.g. support services, academic internships and grants/fellowships). Dr. Camacho is also available to discuss minority students' concerns about mathematics courses: 263-3603, camacho@math.wisc.edu)]