Math 464A, Numerical Analysis

Lecture:	MWF 9:30, EEB 026
Instructor:	Jim Morrow
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Web address:	`http://www.math.washington.edu/~morrow/464_08/464.html`
Office Hours:	MW 8:30-9:20 C439 Padelford
Text	*Numerical Analysis*
Authors	L. W. Johnson & R. D. Riess
Text	Notes by Greenbaum and Chartier; see the link on the 464 website

Math 464-5-6 is an introduction to numerical analysis. The topics for Math 464 are:

1. Machine arithmetic
2. Numerical solutions of systems of linear equations
3. Numerical Solution of non-linear equations
4. Polynomial interpolation and splines
5. Interpolatory Quadrature

The homework will count 30% of the course grade. There will be one 50 minute midterm test which will count 30% of the course grade. The midterm test will be closed book but you will be allowed to bring notes on one side of a notebook size sheet of paper. There will be a two hour closed book final exam which will count 40% of the course grade. For the final you will be allowed to bring notes on both sides of a notebook-size sheet of paper. You may use non-graphing scientific calculators in which no formulas or text has been stored on the midterm and final.

The following books have been placed on reserve in the Mathematics Research Library:

1. *Numerical Analysis* by Johnson and Riess (QA297 .J63)
2. *Elementary Numerical Analysis : An Algorithmic Approach* by Conte and de Boor (QA297 .C65 1980)
3. *Numerical Analysis* by Kincaid and Cheney (QA297 .K563)
4. *Handbook for Matrix Computations* by Coleman and Van Loan (QA188 .C64)
5. *Numerical Computing with IEEE Floating Point Arithmetic*, by Michael Overton (QA 76.9 .M35)

Classroom participation is encouraged. If you feel the urge to interrupt me with a question, please do so. I may not give you an instant answer but I do encourage your questions. I would like for you to understand that mathematics does not consist of one minute answers to one minute questions. You should not feel that every problem has a brief solution (or even any solution). Math is not simply arithmetic. After many days (months, years?) of thought you may find an elegant simple explanation to some problem. It might also happen that by luck you leap to the right explanation. In any case do not be discouraged if you have difficulties. The best tactic is to keep thinking. Faulty ideas are much better than no ideas.

I suggest that you use Matlab or SAGE for the computational parts of the course. Matlab is installed on the College of Arts and Sciences Computer Lab computers. You may use Matlab or SAGE to do the computations on the homework assignments. A link to SAGE is on the class homepage.

I will make modifications to this schedule as needed. Here are the homework assignments:

DATE	ASSIGNMENT (from Johnson & Riess) unless otherwise noted G&C means the notes of Greenbaum and Chartier
Sept 29	§1.3: 1b(iii, iv), 4(replace hex with binary), 8 (use J& R terminology); G&C: 3.1a, 3.3
Oct. 6	§2.1: 4, 6, 10, 11; §2.2.4: 9, 19; G&C: 5.1, 5.2
Oct. 13	§2.3: 3, 7, 8; §2.4: 5, 7, 8, 9
Oct. 20	§2.5: 1, 3, 4, 5a, 6a; §4.3.1: 1, 4, 6, 9
Oct. 27	§4.3.2: 5; §4.3.3: 2, 7, 9, 12
Oct. 31	**MIDTERM**
Nov. 10	§4.4.1: 2, 3, 4; §5.1: 4
Nov. 17	§5.2.1: 1a, 3a, 4a, 11; §5.2.2: 1, 2, 5, 8, 10
Nov. 26	§5.2.4: 3abd, 5, 6, 10, 13 §5.2.6: 1, 3
Dec. 5	§6.2.2: 2, 4, 8, 9, 14.
Dec. 10	8:30-10:20 a.m., **FINAL EXAM**

These assignments are due at the beginning of class on the due date.

The midterm will be on Friday, October 31, and the final is at 8:30 a.m. on Wednesday, December 10 in the classroom.