SYLLABUS

MATH3511 – NUMERICAL ANALYSIS II

SPRING SEMESTER 2019

http://www.phys.uconn.edu/~rozman/Courses/m3511_19s/

Last modified: January 29, 2019

Course description: The overall goal of numerical analysis is the design and analysis of techniques to give approximate but accurate solutions to hard problems. MATH 3511 *Numerical Analysis II* teaches this analysis associated with iterative methods of solution of linear equations and eigenvalue problems, zeros of non-linear equations, approximation theory, boundary value problem for ordinary differential equations, and numerical solutions of partial differential equations, with attention to generation and propagation of numerical errors and to computational speed.

Lectures: TuTh 5:00 – 6:15, Monteith 112

Course webpage: http://www.phys.uconn.edu/~rozman/Courses/m3511_19s/

Instructor: Michael Rozman

email:	michael.rozman@uconn.edu
office hours:	Tu 6:15 PM – 7:15 PM in MONT321, We 6:15 PM – 7:15 PM in GW121, Th 6:15 PM – 7:15 PM in MONT321, by appointments
gitlab username:	m3511_19s_in

Course TA: Lisa Darminova

email: lisa.darminova@uconn.edu
gitlab username: m3511_19s_ta

Textbook:

T. Sauer, *Numerical Analysis*, Pearson, any edition

Exams: Two midterm exams and a *cumulative* final exam. Parts of the exams may be substituted by take-home programming projects.

Grading scheme: The course grade will be calculated using the following scheme.

Homework projects	35%
2 Midterms	35%
Final exam	30%

Course grade = 0.35*HW + 0.35*[(M1 + M2)/2] + 0.3*F, correctly rounded to integer and capped at 100%.

The rounding to integers is done using the default rounding mode specified in the IEEE754 standard for floating point arithmetic.

The percent grades are converted to the letter grades as following.

Percent grade	Letter grade
94+	A
90-93	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-

Class schedule: this is a *preliminary* schedule.

Week(s)	Subject
1-3	Iterative techniques in matrix algebra
4-7	Approximating eigenvalues
6	**Midterm I** - Tue, Feb 26
8	Approximation theory
9	**Spring recess**
10	Nonlinear systems of equations
11	**Midterm II** - Tue, Apr 2
11-12	Boundary value problems for ordinary differential equations
13-15	Numerical solutions to partial differential equations

Communications: talking in person is the preferred method to contact the instructor; email is the next option.

- use your UConn email address for class communications.
- please include the tag "[math3511]" (without quotes) in the subject of your email, e.g. "[math3511] midterm II review"
- the subject line of your email should communicate exactly what the email is about so that the recipient can prioritize the email's importance without opening it. E.g. "[math3511] Tacoma bridge collapsed - cannot come to the final" would be a good email subject (assuming email existed in 1940 ...); "urgent", "important", "a question" are bad ones. Do not use your name as subject – the sender name is already visible as a part of email header.
- please no emails with attachments unless requested by the instructor. Use *UConn File DropBox* `https://dropbox.uconn.edu/dropbox` or *UConn FileLocker* `http://web2.uconn.edu/filelocker/` for submitting large files

Homework: Homework assignments submitted on time may be returned (at the discretion of the instructor) for corrections after initial grading.

Homework assignments are not accepted after the solutions had been discussed in class, and/or had been posted online, and/or graded assignments returned. Individual emergencies can be accommodated by extra credit assignments.

You are welcome to discuss the homework's problems with others in order to better understand them but the work you turn in must be your own. In particular, you must run your own calculations (where applicable) and communicate and explain the results in your own words.

Members of collaborating groups must consistently list all collaborators names and submit assignments together.

Assignments that are hard to understand are also hard to grade correctly, therefore: (a) use words and pictures to supplement your equations; (b) work must progress linearly down the page – recopy solutions that are too nonlinear.

Requirements for written assignments:

- Use letter-size paper. Use only one side of each sheet.
- $\boxed{\text{Box}}$ your final answer(s) and important intermediate results.
- Staple your notes together, (i.e. no paper clips, torn or folded corners) with the assignment cover page (if applicable).

Highly recommended: make copies of homework assignments for your own files.

Honors conversion: Students interested in honors conversion should contact the instructor during *the second week of classes*.

Computer programming:

Homework projects require writing simple computer programs. Matlab is used as a programming language for teaching in MATH3511.

The recommended version of Matlab to use in class is `Matlab R2018b` which is the latest stable release. This version is installed on *UConn Anyware* and available for installation on students' personal computers.

Computers are required for coding and submitting programming parts of homework assignments and exams. It is highly recommended to bring computers to every lecture to take full advantage of programming segments of the classes.