Mathematics 4701 (old number: 37.1; Numerical Analysis), Spring 2021 Section TY3; Code 14763 Tuesday, Thursday 03:40–05:20pm Classroom: online Instructor: Attila Máté

Office. Classes are online, so the office listed is inaccessible for now; the office phone is not answered. IH-1149b, 718-951-5000/2734, IH-1156 (the main Mathematics Department Office) 718-951-5246.

Office Hours. You may contact me home at reasonable hours. No fixed office hours as long as classes are online.

Main Textbook. Attila Máté, Introduction to Numerical Analysis with C programs, This textbook is available for download online at

http://www.sci.brooklyn.cuny.edu/~mate/numanal/numanal.pdf

Exams. Class exams count 60%, the final exam counts 40% in the course grade. For online teaching, 6 to 8 exams are planned at the second half of the class some meetings. This might change as I will need to assess the needs for online teaching. About two of these grades on these exams will be dropped if this improves your grades, except for the last few exams, to discourage behavior that one, being satisfied with the grades, does not take the last few exams. A grade zero assigned to an exam missed without a proper excuse will not be dropped either. No makeup exams will be given. In case of a missed exam, please talk to me how to re-weigh your other exams. A grade less than 30 out of 100 on the final will result in a course grade of F regardless of the class exam grades. Irregular attendance or being late to class often may result in a grade worse than indicated by exam averages.

Final Exam. Tuesday, May 25, 3:30-5:30 pm. The exam will be posted on Blackboard as an assignment.

Web Site. Course material may be put on the Web site:

http://www.sci.brooklyn.cuny.edu/~mate/numanal/

Note carefully that the character before "mate" in the above address is a *tilde*, found on the top left-hand side of the keyboard.

Department Web Site.

http://depthome.brooklyn.cuny.edu/math/

Material Covered. Most or all of the material in the main textbook will be covered.

Syllabus. (What follows is the official class syllabus. The actual material covered, and the order in which it is covered may be slightly different, to best take advantage of the resources offered by the textbooks.)

1. Fixed and floating point arithmetic; single and multiple precision. 2 hours.

2. Classification of errors in numerical calculations – approximation, truncation, rounding off. 3 hours.

3. Roots of equations – Newton's method; some other simple methods. 5 hours.

4. Interpolation and approximation. Polynomial approximations; finite difference methods; uniform and non-uniform intervals; Chebyshev approximations; optimality considerations. 10 hours.

5. Numerical differentiation and integration. 9 hours.

6. Simultaneous linear equations. Gaussian elimination methods; Gauss–Seidel iteration; matrix inversion. 10 hours.

7. Solution of ordinary differential equations. Replacement of ordinary differential equation by difference equation; Runge–Kutta methods. 10 hours.

8. Use of packaged programs. 3 hours.

The inclusion of the following in the syllabus is mandated by Brooklyn College

Academic Integrity. The faculty and administration of Brooklyn College support an environment free from cheating and plagiarism. Each student is responsible for being aware of what constitutes cheating and plagiarism and for avoiding both. The complete text of the CUNY Academic Integrity Policy and the Brooklyn College procedure for implementing this policy can both be found at this site:

http://www.brooklyn.cuny.edu/bc/policies

If a faculty member suspects a violation of academic integrity and, upon investigation, confirms that violation, or if the students admits the violation, the faculty member MUST report the violation.

Plagiarism. Submitting the work of another person or persons without proper attribution is considered plagiarism, and will be treated accordingly. Proper attribution requires identifying the source of your work. Failure to do so may result in a charge of plagiarism, and students can be subject to administrative actions, including

- A 0 grade on the assignment or exam,
- An F grade in the course.

Additional actions may be taken by the College, including admonition, warning, censure, disciplinary probation, restitution, suspension, expulsion, complaint to civil authorities, and ejection.

Students with disabilities. In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up and appointment with the Director of the Center for Student Disability Services at 718-951-5538. If you have already registered with the center for Student Disability Services please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.