

AMSC/CMSC 460 Section WB11 Summer 2021 I
Computational Methods

Time and place: The lectures will be delivered *asynchronously*. The scheduled times of MTuWThF 9:30am - 10:50am will be reserved for office hours and extra help.

Instructor: Dr. Stefan Doboszczak

Email: doboss27@umd.edu

Office hours: MTuWThF 9:30am - 10:50am (through Zoom)

Grader: Ying Li

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Tutor: Brendan Gramp

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Prerequisites: One course with a minimum grade of C- from MATH240, MATH461, or MATH341; and 1 course with a minimum grade of C- from (MATH340, MATH241); and 1 course with a minimum grade of C- from (CMSC106, CMSC131); and minimum grade of C- in MATH246.

Course Outline: This is an introductory course in numerical methods: basic computational methods for interpolation, least squares, approximation, numerical quadrature, numerical solution of polynomial and transcendental equations, systems of linear equations and initial value problems for ordinary differential equations.

Course Announcements: Information about homeworks, deadlines, etc. will be posted on ELMS.

Text: We will be using *A First Course in Numerical Methods* by Ascher and Greif (SIAM, 2011). This textbook is freely available through the UMD library. Go to <https://www.lib.umd.edu/> and search for it in the search bar. You'll need to be logged into your student account to access it.

MATLAB: Some of the homework problems will require basic programming skills, and it is assumed that you have some programming knowledge. In this class we will be using MATLAB, which is freely available for students and may be downloaded at <https://terpware.umd.edu>. MATLAB may also be run through the engineering department's Virtual Lab (<https://eit.umd.edu/vcl>).

Exams: There will be two exams, each covering roughly the first and second half of the course. No make-up exams will be given.

The exams will be submitted via scan/photo and uploaded to Gradescope. Exams will be open book/open notes, but no outside resources, including internet or other people will be allowed. Old exams can be found at the UMD Math Testbank: <https://www-math.umd.edu/testbank.html>

Homework: Expect assigned daily homework (\approx 2-3 problems), and due two days later (i.e. assigned Monday and due Wednesday). The lowest FOUR scores will be dropped. Ideally homework should be first attempted individually, after which collaboration is encouraged, though the submissions should be your own, i.e. no copying. Late homework will be penalized 10% per day late, and not accepted after 3 days late.

Important dates: First Day of Class: Tuesday, June 1
Juneteenth (no class): Friday, June 18
Last Day of Class: Friday, July 9

Please check the University of Maryland academic calendar for additional information.

Grading: Exams: $2 \times 25\%$
Homework: 50%

*Optional: Submit at least 6 homeworks typeset in LaTeX
(+1 point towards your final grade)*

End of semester grades will be assigned according to standard cutoffs ($97 \leq x \leq 100$ is A+, $93 \leq x < 97$ is A, $90 \leq x < 93$ is A-, and similarly for the B,C,D categories. F will be assigned for grades $0 \leq x < 60$.)

Appeals: If you think a mistake has been made in grading your work, submit it for re-grading no later than one week after the assignment grade was returned to the class. After the one week window no further appeals will be considered.

University Policies: Policies relevant to Undergraduate Courses are found here: <http://ugst.umd.edu/courserelatedpolicies.html>. Topics that are addressed in these various policies include academic integrity, student and instructor conduct, accessibility and accommodations, attendance and excused absences, grades and appeals, copyright and intellectual property.

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <https://studentconduct.umd.edu/>. All cases of academic dishonesty will be referred to the Dean of Students Office.

Disabilities: Students who require special examination conditions must register with the office of the Accessibility and Disability Service (ADS). Documentation must be provided to me and discussed within the first week of classes. Exams should be scheduled following ADS procedures.

Additional References:

D. Levy, *Introduction to Numerical Analysis*, Lecture Notes.
T. Sauer, *Numerical Analysis*, Pearson, 2006.
G. Golub, C.F. Van Loan, *Matrix Computations*, JHU Press, 2013.
D.F. Griffiths, D.J. Higham, *Learning LaTeX*, SIAM, 2016.