

Course Details

Web Page: Stored in WebCT Vista. Direct login by following the URL:
<https://www.vista.ubc.ca/webct/logon/3003409830121>

Lectures: 12:00–13:00, Monday/Wednesday/Friday, McLeod 242.

Instructor: Chen Greif, greif@cs.ubc.ca, ICICS/CS 219.

Teaching Assistants: Parnian Alimi, parnianalimi@gmail.com, and Essex Edwards, essex@cs.ubc.ca. TA office hours will be held in ICICS x150.

Office Hours: Instructor’s office hours, Monday 1:30-2:30. TA office hours are TBA.

Course Communications: Primarily through the web site or in class. Check the web site regularly for updates.

Questions regarding the homework can be posted to the discussions section of the course web site, directed to the TA via email during office hours, or directed to the instructor during office hours. Questions regarding homework grading should be directed to the TAs, who will refer concerns to the instructor if necessary. Questions regarding midterm or final grading should be directed to the instructor. Questions regarding course administration or issues of a confidential nature can be directed to the instructor by email or during office hours.

Topics: Numerical algorithms & error, interpolation, best approximation, numerical differentiation, numerical integration (quadrature) and numerical approximation of solutions of initial value ordinary differential equations.

Grading: The plan is to have 4 written homework assignments, 2 midterm exams and a final exam. The weighting is roughly 20% for the homeworks, 30% for the two midterms, and 50% for the final. The instructor reserves the right to change the grading scheme and/or give additional assignments if necessary.

Students who miss a midterm due to an illness must provide a doctor’s note to the instructor. There are **no** makeup midterm exams. Students may be refused permission to write the final exam if they have an unreasonably poor standing in the homeworks and midterms. If you are unsure what “unreasonably poor standing” means and you suspect your performance in the course may fall in this category, please consult with the instructor **before** the semester is over.

Midterm Exams: There are two midterm exams, in class, on Wednesday February 3 and on Wednesday March 17.

Course Notes: *A First Course on Numerical Methods* by Uri M. Ascher and Chen Greif. The notes are available for download from the course web page. We will closely follow these notes throughout the course.

Textbook: There is no required textbook for this course. A very good supplemental book is: *Scientific Computing: An Introductory Survey* (2nd edition) by Michael T. Heath, available at the bookstore. Another helpful book is: *Numerical Analysis* (8th edition) by Burden & Faires.

Course Calendar Description: CPSC 303: Numerical Approximation and Discretization. Numerical techniques for basic mathematical processes involving discretization, and their analysis. Interpolation and approximation, including splines and least squares data fitting; numerical differentiation and integration; introduction to numerical initial value ordinary differential equations.

Prerequisites: All of MATH 200 (Calculus III) and MATH 221 (Matrix Algebra). One of CPSC 111 (Introduction to Computation) or CPSC 260 (Object-Oriented Program Design) or the no longer offered CPSC 122, CPSC 126 or CPSC 152. Homework assignments will require some programming in MATLAB, which is easy to pick up if you have experience in C, C++, Java or Fortran. There will be a tutorial on MATLAB outside of class early in the term. CPSC 302 (numerical computation for algebraic problems) is **not** a prerequisite.

Homework submission policy: Homeworks should be submitted in hardcopy form to the CPSC 303 handin box in the basement of the ICICS building by **5pm** on the due date. They may also be submitted in class to the professor. There is no electronic submission.

Each student gets four late days to use during the term. Weekends count as a single day. For example, if the assignment is due on a Wednesday but is submitted after 5pm and before Thursday at 5pm, it would count for one late day. If handed in by Friday then it counts for two late days, and if handed in by Monday it counts for three late days. If all late days have been used up, late assignments are penalized 20% per day. Once a solution set has been posted, late assignments are no longer accepted; consequently, you may not always be able to use your late days.