Dynamic Schedule: Visit **Minerva Class Schedule (https://horizon.mcgill.ca/pban1/bwckschd.p_disp_dyn_sched)** for *course dates & times.*

MATH 478 Computational Methods in Applied Mathematics (3 credits)

Offered by: Mathematics and Statistics (Faculty of Science (/study/2022-2023/faculties/science))

Overview

Mathematics & Statistics (Sci) : Solution to initial value problems: Linear, Nonlinear Finite Difference Methods: accuracy and stability, Lax equivalence theorem, CFL and von Neumann conditions, Fourier analysis: diffusion, dissipation, dispersion, and spectral methods. Solution of large sparse linear systems: iterative methods, preconditioning, incomplete LU, multigrid, Krylov subspaces, conjugate gradient method. Applications to, e.g., weighted least squares, duality, constrained minimization, calculus of variation, inverse problems, regularization, level set methods, Navier-Stokes equations

Terms: Winter 2023

Instructors: Nave, Jean-Christophe (Winter)

- Prerequisites: MATH 315 (/study/2022-2023/courses/math-315) or MATH 325 (/study/2022-2023/courses/math-325) or MATH 263 (/study/2022-2023/courses/math-263); MATH 317 (/study/2022-2023/courses/math-317) or MATH 387 (/study/2022-2023/courses/math-387) or COMP 350 (/study/2022-2023/courses/comp-350) or MECH 309 (/study/2022-2023/courses/mech-309); or permission of the instructor
- This course will be taught in the winter semester.

This course may be used as a required or complementary course in the following programs:

Bachelor of Arts (B.A.) - Major Concentration Mathematics (https://www.mcgill.ca/study/2022-2023/faculties/arts/undergraduate/programs/bachelor-arts-ba-major-concentration-mathematics)

Bachelor of Arts (B.A.) - Major Concentration Mathematics (https://www.mcgill.ca/study/2022-2023/faculties/basc/undergraduate/programs/bachelor-arts-ba-major-concentration-mathematics)

Bachelor of Engineering (B.Eng.) - Honours Mechanical Engineering (https://www.mcgill.ca/study/2022-2023/faculties/engineering/undergraduate/programs/bachelor

-engineering-beng-honours-mechanical-engineering)

Bachelor of Engineering (B.Eng.) - Minor Mathematics (https://www.mcgill.ca/study/2022-2023/faculties/engineering/undergraduate/programs/bachelor-engineering-beng-minor-mathematics)

Bachelor of Science (B.Sc.) - Honours Applied Mathematics (https://www.mcgill.ca/study/2022-2023/faculties/science/undergraduate/programs/bachelor-science-bsc-honours-applied-mathematics)

Bachelor of Science (B.Sc.) - Honours Applied Mathematics (https://www.mcgill.ca/study/2022-2023/faculties/arts/undergraduate/programs/bachelor-science-bsc-honours-applied-mathematics)

Bachelor of Science (B.Sc.) - Honours Probability and Statistics (https://www.mcgill.ca/study/2022-2023/faculties/science/undergraduate/programs/bachelor-science-bsc-honours-probability-and-statistics)

Bachelor of Science (B.Sc.) - Honours Probability and Statistics (https://www.mcgill.ca/study/2022-2023/faculties/arts/undergraduate/programs/bachelor-science-bsc-honours-probability-and-statistics)

Bachelor of Science (B.Sc.) - Major Mathematics (https://www.mcgill.ca/study/2022-2023/faculties/science/undergraduate/programs/bachelor-science-bsc-major-mathematics)

McGill Minerva

Visit *Minerva Class Schedule* for **course dates & times**

Class Schedule (https://horizon.mcgill.ca/pban1/bwckschd.p_disp_dyn_sched

(https://www.mcgill.ca)

Copyright © 2023 McGill University

Accessibility (https://www.mcgill.ca/accessibility)

Log in 🔒 (/study/2022-2023/saml_login?destination=node/21720)