

MATH 480 (MAST 657/MAST 857) Sec. A
Geometry & Topology
Winter 2022

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Office hours: Tuesdays, 9:00-10:30 a.m.

Required Textbook: *Elementary Differential Geometry*, by A. Presley Springer (Second edition) ISBN 978-1-84882-890-2 (softcover) or ISBN 978-1-84882-891-9 (e-book).

The textbook is available online as electronic resource at Concordia's library.

In addition, graduate students have: *Differential Geometry: Curves – Surfaces – Manifolds* by Wolfgang Kühnel (Second edition).

Other material:

- Differential geometry of curves and surfaces by M. P. do Carmo
- Differential geometry of curves and surfaces by Kristopher Tapp
- Differential geometry by Theodore Shifrin (e-resource)
- Riemannian geometry by M.P. doCarmo (for MSc/PhD students)
- Riemannian manifolds by John M. Lee (for MSc/PhD students)

Topics: The topics below outline the content of MATH 480:

- Surfaces in three dimensions
- The first and second fundamental forms of surfaces
- Curvatures of surfaces (Principal, Gaussian and Mean)
- Geodesics
- Gauss' Theorema Egregium
- The Gauss-Bonnet theorem.

Graduate students will complement this content by independent reading at the instructor's recommendation.

Final Grade: Homework (20%), Midterm (30%), and Final Exam (50%).
Undergraduate and graduate evaluations will differ in content.
Exams are scheduled to be in person.

The homework will be assigned approximately every two weeks, during class, and posted on Moodle. In case of a student's absence or late arrival, it is the student's responsibility to find the assignment and submit it on time. **No late assignments will be accepted.**

A midterm exam will be scheduled in class during the 7th week of classes. The exact date will be announced before the end of January.
Please be aware that a missed test cannot be made up.

Other Notes: As the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." [Undergraduate Calendar, Sec 17.10.2]

Use of Zoom

Note: Zoom is included as an institutionally-approved technology. This means we have been assured of the privacy protections needed to use freely within the classroom)

Zoom will be used in this course to facilitate learning at a distance. It may be used to record some or all of the lectures and/or other activities in this course. If you wish to ensure that your image is not recorded, speak to your instructor as soon as possible.

Also, please note that you may not share recordings of your classes and that the instructor will only share class recordings for the purpose of course delivery and development. Any other sharing may be in violation of the law and applicable University policies, and may be subject to penalties.

Behaviour

All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

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