

## 2020 Spring Course Syllabus - Mathematics 9021

**Course:** Mathematics 9021.001.

**Course Title:** Riemannian Geometry.

**Time:** MW 10:30-11:50.

**Place:** Wachman 527.

**Instructor:** Gerardo A. Mendoza.

**Instructor Office:** Wachman 618.

**Instructor Email:** gerardo.mendoza@temple.edu

**Instructor Phone:** 1-5053.

**Office Hours:** By appointment, but you may come in any time and if I can, I will see you.

**Course Web Page:**

<http://math.temple.edu/~gmendoza/courses/math.9063.2019/HW.html>

**Prerequisites:** As specified in the Graduate Bulletin, or permission from instructor.

**Textbook:** Manfredo Do Carmo, *Riemannian Geometry*. Birkhauser Verlag, ISBN: 9780817634902.

**Course Goals:** An in-depth understanding of Riemannian geometry: metrics, affine & Riemannian connections, notions of curvature (Riemannian, sectional, Ricci, scalar), connections and curvature on general vector bundles, distance, theorems relating curvature to topology (Hopf-Rinow, Hadamard, and Sphere Theorems).

**Topics Covered:** Basic definitions as needed (manifolds, tangent and cotangent bundles, vector fields, de Rham differential; vector bundles and connections, curvature, normal coordinates, geodesic convexity. Hopf-Rinow, Hadamard, and Sphere Theorems; hyperbolic spaces, immersions; additional topics from the textbook as time allows.

**Course Grading:** This is an advanced graduate course.

**Exam Dates:** No exams; I'll post problems related to the material being covered for possible discussion in class or my office, for the purpose of self-evaluation.

**Attendance Policy:** Attendance is required.

Any student who has a need for accommodations based on the impact of a documented disability or medical condition should contact Disability Resources and Services (DRS) in 100 Ritter Annex (drs@temple.edu; 215-204-1280) to request accommodations and learn more about the resources available to you. If you have a DRS accommodation letter to share with me, or you would like to discuss your accommodations, please contact me as soon as practical. I will work with you and with DRS to coordinate reasonable accommodations for all students with documented disabilities. All discussions related to your accommodations will be confidential.

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02<sup>1</sup>).

Students will be charged for a course unless dropped by the Drop/Add deadline date. Check the University calendar<sup>2</sup> for exact dates.

During the Drop/Add period, students may drop a course with no record of the class appearing on their transcript. Students are not financially responsible for any courses dropped during this period. In the following weeks prior to or on the withdrawal date students may withdraw from a course with the grade of “W” appearing on their transcript. After the withdrawal date students may not withdraw from courses. Check the University calendar<sup>2</sup> for exact dates. Consult the full policy.<sup>3</sup>

The grade “I” (an “incomplete”) is only given if students cannot complete the course work due to circumstances beyond their control. It is necessary for the student to have completed the majority of the course work with a passing average and to sign an incomplete contract which clearly states what is left for the student to do and the deadline by which the work must be completed. The incomplete contract must also include a default grade that will be used in case the “I” grade is not resolved by the agreed deadline. See the full policy.<sup>4</sup>

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<sup>1</sup><http://policies.temple.edu>

<sup>2</sup><http://www.temple.edu/registrar/documents/calendars/>

<sup>3</sup><http://bulletin.temple.edu/undergraduate/academic-policies/withdrawal-policies/>

<sup>4</sup><http://bulletin.temple.edu/undergraduate/academic-policies/incomplete-coursework/>