Carlos Daniel Velázquez Mendoza, Master of Science (M.Sc.)

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Employment History

2026-2 **Adjunct Professor**[Universidad Anáhuac Sur] Cálculo Diferencial e Integral I.
Adjunct Professor[FC-UNAM] Variable Compleja I.
2026-1 **Adjunct Professor** [Universidad Anáhuac Norte] Álgebra Lineal II.
Adjunct Professor [FC-UNAM] Cálculo Diferencial e Integral IV.
2025-2 **Adjunct Professor** [FC-UNAM] Cálculo Diferencial e Integral III.
2025-1 **Teaching Assistant** [FC-UNAM] Análisis Matemático I.
2024-2 **Adjunct Professor** [FC-UNAM] Cálculo Diferencial e Integral IV.
2022-2 **Teaching Assistant** [FC-UNAM] Cálculo Diferencial e Integral III.
2022-1 **Teaching Assistant** [FC-UNAM] Cálculo Diferencial e Integral II.
2021-2 **Teaching Assistant** [FC-UNAM] Cálculo Diferencial e Integral I.
2021-1 **Teaching Assistant** [FC-UNAM] Cálculo Diferencial e Integral IV.
2020-4 **Teaching Assistant** [FC-UNAM] Cálculo Diferencial e Integral II.

Education

2025 **Ph.D. in Mathematics, Universidad Nacional Autónoma de México**
Project title: *Trace Theorems in Riemannian Manifolds with Boundary.*
Advisor: *Dra. María de los Ángeles Sandoval Romero*

2023-2025 **M.Sc. in Mathematics, Universidad Nacional Autónoma de México**
Thesis title: *The Rellich-Kondrashov Theorem in Riemannian Manifolds.*
Advisor: *Dra. María de los Ángeles Sandoval Romero*
GPA: *10/10.*
Latin Honors.

2024 **B.Sc. in Computer Science, Universidad Nacional Autónoma de México**
Current GPA: *9.8/10.*

2018-2022 **B.Sc. in Mathematics, Universidad Nacional Autónoma de México**
Thesis title: *Maximal P-Extensions and Realcompact Spaces.*
Advisor: *Dr. Alejandro Darío Rojas Sánchez*
GPA: *9.9/10.*
Latin Honors.

Skills

Languages — Strong reading, writing and speaking competencies for English and Spanish.

Mathematics — Linear Algebra, Calculus, Discrete Mathematics, Differential and Riemannian Geometry with a focus on Geometric Analysis and Global Analysis, Functional Analysis, Partial Differential Equations, Complex Analysis, Probability and Statistics (basic knowledge), Topology.

Computer Science — Java, Git , Python (basic knowledge), Algorithm Optimization, Data Structures, LaTeX (Experienced – Academic and Scientific Documents).

Skills (continued)

Academic Writing
- Development of advanced lecture notes and textbook-style manuscripts in multivariable Calculus, Global Analysis, and advanced Linear Algebra (linear structures for Data Science), written and refined from original course notes; experience transforming teaching material into structured book-length documents.

Misc.
- Academic research, teaching and training, strong communication, teamwork, leadership, and time management skills.

Miscellaneous Experience

Conferences and Seminars

2024
- Presenter, **57th National Congress of the Mexican Mathematical Society (SMM)**, *"Espacios de Sobolev en variedades riemannianas"*, Universidad Juárez del Estado de Durango, Durango, Mexico, October 2024.
- Presenter, **57th National Congress of the Mexican Mathematical Society (SMM)**, *"Espacios de Sobolev en variedades riemannianas y el teorema de Rellich-Kondrashov"*, Universidad Juárez del Estado de Durango, Durango, Mexico, October 2024.

2025
- Invited Speaker, **Diálogos Virtuales de Análisis y Geometría (DIVAGEO)**, *"El teorema de traza en variedades riemannianas con geometría acotada"*, Organized by the Department of Mathematics, Faculty of Sciences, UNAM, Virtual, February 2025.

2026
- Invited Speaker, **Seminario de Análisis Matemático y sus Aplicaciones**, *"El teorema de Meyers–Serrin en variedades riemannianas"*, Organized by the Department of Mathematics, Faculty of Sciences, UNAM.

Certifications

2015
- **Informatics**, certification awarded by Centro de Computación Profesional de México (CCPM), validated by SEP.
- **Graphic Design**, certification awarded by Centro de Computación Profesional de México (CCPM), validated by SEP.

Publications

2024
- **Book manuscript**, *Análisis global. Una introducción al análisis no lineal en variedades riemannianas y sus métodos variacionales*, currently under development in collaboration with Dr. María de los Ángeles Sandoval Romero and Dr. Romulo Diaz Carlos.

2026
- **Carlos D. Velázquez-Mendoza** and M. de los Á. Sandoval-Romero, *A Simple Proof of Metric Independence of Sobolev Norms on Compact Manifolds*, in *Analysis and PDE in Latin America*, Trends in Mathematics, vol. 15, Birkhäuser, Cham, 2026. DOI: 10.1007/978-3-031-99557-6_16.

- **Carlos D. Velázquez-Mendoza** and M. de los Á. Sandoval-Romero, *Geometric Integration by Parts and Sobolev Spaces on Vector Bundles: A Unified Global Approach*, arXiv:2602.01016, 2026. DOI: 10.48550/arXiv.2602.01016.