Andrés Esteban Merino Toapanta

Mathematician
Full professor

👤 October 18, 1990
✉ Mariscal Sucre, Quito - Ecuador
📞 (+593) 98 975 1881
@ aemerinot@gmail.com
@ aemerinot@puce.edu.ec
🏳 Ecuadorian

Online Profiles

Orcid **Github** **LinkedIn**

Languages

🇪🇸 Español ● ● ● ● ●
🇬🇧 English ● ● ● ● ○
🇫🇷 Française ● ● ○ ○ ○

Areas of Interest

☪ Descriptive Set Theory
☪ Foundations of Mathematics
☪ Data Science
☪ Machine Learning
☪ Editing and Composition in LaTeX
☪ Mathematics Education

Education

feb-2024	**Master's Degree in Data Science**	Universitat Oberta de Catalunya

Thesis: Automatic Image Recognition for Plant-Pollinator Network Reconstruction

mar-2017	**Master's Degree in Pure and Applied Mathematics**	Universidad Central del Ecuador

Thesis: Classification of Countable Compact Subsets in some Polish Spaces

oct-2014	**Master 1**	Université Jean Monnet

Master Mathematiques 1

oct-2014	**Mathematician**	Escuela Politécnica Nacional

Thesis: Classification of Countable Compact Subsets of the Reals
Summa Cum Laude

jul-2008	**High School Diploma**	Colegio Municipal Experimental "Sebastián de Benalcázar"

Specialization in Physics and Mathematics

Teaching Experience

apr-2017	**Full Professor**	Pontificia Universidad Católica del Ecuador

Mathematics Professor in the Faculty of Exact and Natural Sciences (current full-time job: 7 years)

apr-2021	**Postgraduate Lecturer**	Pontificia Universidad Católica del Ecuador

Lecturer in the Master's Degree in Experimental Sciences Education, major in Mathematics and Physics (part-time: 1 year and 6 months)

mar-2018	**Lecturer**	Escuela Politécnica Nacional

Mathematics Professor in the Department of Basic Education (half-time: 12 months)

oct-2014	**Adjunct Professor**	Escuela Politécnica Nacional

Mathematics Professor in the Faculty of Sciences (2 years and 5 months)

apr-2014	**Teacher**	Colegio Municipal "Sebastián de Benalcazár"

Mathematics Teacher (4 months)

Professional Experience (Non-teaching)

apr-2021	**Postgraduate Coordinator**	Universidad Central del Ecuador

Coordinator of the Master's Degree in Pure and Applied Mathematics in the Faculty of Sciences (part-time: 1 year and 9 months)

jun-2019	**Editor**	Ministerio de Educación

Editor of Mathematics modules for the 10th year of Basic General Education in the National Curriculum Directorate (1 month)

feb-2018	**Validator**	Instituto Nacional de Evaluación Educativa (INEVAL)

Validation of item production 2018 in the Item Production and Safeguarding Directorate (2 months)

may-2015	**Monitor**	Instituto de Altos Estudios Nacionales (IAEN)

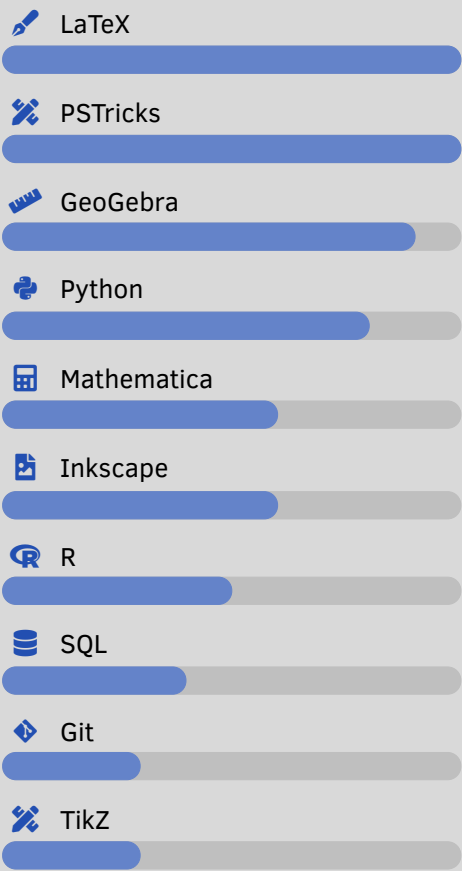Monitor of the virtual Mathematics course in the Continuing Education Center (CEC-EP) (1 month)

Andrés Esteban Merino Toapanta

Mathematician
Full professor

About Me

I have dedicated my career to teaching and research. In the latter, I collaborate in the areas of Descriptive Set Theory, Foundations of Mathematics, Mathematics Education, and Data Science. I have contributed knowledge and advancements through publications in scientific journals and participation in national and international conferences. My contributions include studies on the Cantor-Bendixson Derivative, Machine Learning models for data and image analysis, and innovative techniques for teaching Mathematics.

Software

- LaTeX
- PSTricks
- GeoGebra
- Python
- Mathematica
- Inkscape
- R
- SQL
- Git
- TikZ

| oct-2012 | **Laboratory Assistant** | Escuela Politécnica Nacional |

Support in the seed research project "Flow over granular assemblies" (1 year)

| dec-2011 | **Editing Assistant** | Abya Yala, Revista La Granja |

Layout, diagramming, and template design (3 years)

| mar-2011 | **Laboratory Assistant** | Escuela Politécnica Nacional |

Editing in LaTeX and support in classes of Single Variable Calculus and Foundations of Mathematics (1 year and 3 months)

| aug-2010 | **Editing Assistant** | Escuela Politécnica Nacional |

Editing and publication of books and journals in the Faculty of Sciences Publications Unit (6 months)

| nov-2010 | **Editing Assistant** | Analítika, revista de análisis estadístico |

Editing, diagramming, and layout. (3 years)

Appointments

mar-2025 Head of the Service Unit for Curriculum Development and Innovation
Pontificia Universidad Católica del Ecuador, Faculty of Exact, Natural and Environmental Sciences
Current appointment

jul-2023 Coordinator of the School of Physical and Mathematical Sciences
Pontificia Universidad Católica del Ecuador, Faculty of Exact and Natural Sciences, School of Physical and Mathematical Sciences
1 year and 8 months

mar-2020 Coordinator of Virtual Classrooms
Pontificia Universidad Católica del Ecuador, Faculty of Exact and Natural Sciences, School of Physical and Mathematical Sciences
3 years

apr-2021 Coordinator of the Master's Degree in Pure and Applied Mathematics
Universidad Central del Ecuador, Faculty of Sciences
1 year and 9 months

sep-2018 Coordinator of the Vector Calculus Course
Escuela Politécnica Nacional, Department of Basic Education
6 months

sep-2018 Coordinator of the Linear Algebra Course
Escuela Politécnica Nacional, Department of Basic Education
6 months

University Courses Taught

- Machine learning
- Single Variable Calculus
- Vector Calculus
- Mathematical Analysis
- Mathematical Logic and Set Theory
- Real Analysis
- Foundations of Mathematics
- Ordinary Differential Equations
- Linear Algebra
- Fuzzy Logic
- Discrete Mathematics
- Mathematics for Graphic Design

Courses and Conferences Delivered (last 5 years)

jun-2025	**Conference: Exploring the Didactic Potential of ChatGPT Hallucinations in Teaching** *Workshop Internacional INCOIN LEARNING: Inteligencia Artificial aplicada a la Educación Superior, edición PUCE 2025* Pontificia Universidad Católica del Ecuador
aug-2024	**Conference: Integrating ChatGPT into the Flipped Classroom Methodology** *Workshop INCOIN: Inteligencia Artificial en la Educación Superior, edición PUCE 2024* Pontificia Universidad Católica del Ecuador
feb-2024	**Presentation: Use of ChatGPT for Teaching Differential Calculus** *MEM 2024* Universidad Antonio Nariño
oct-2023	**Presentation: Does ChatGPT Know How to Derive? An Experience in the Classroom** *STEM Miami 2023 Seminar* Broward International University
aug-2023	**Minicourse: Reinforcement Learning** *Summer School in Machine Learning 2023* Pontificia Universidad Católica del Ecuador (6 hours)
jul-2023	**Panel: Coordinators of Undergraduate and Postgraduate Programs in Data Science** *I Meeting on Big Data and Artificial Intelligence Methods and Tools Applied to the Study of Social Phenomena in Ecuador* Flacso Ecuador
sep-2022	**Presentation: Activity Guide for Mathematics Reinforcement Based on Gamification Directed at Upper Basic Level** *II International Education Congress: Crisis, Creativity, and Educational Transformation* Pontificia Universidad Católica del Ecuador
feb-2022	**Workshop: Innovative Didactics for Teaching and Learning Mathematics** La Salle, Distrito Lasllista Norandino (30 hours)
nov-2021	**Video Presentation: Designing Fonts through Bézier Curves and GeoGebra** *VIII International Workshop "Trends in Mathematics Education Based on Research in Alliance with the GeoGebra Latin American Community"* Benemérita Universidad Autónoma de Puebla
sep- 2021	**Course: Intermediate Level GeoGebra Software Management** Universidad Regional Amazónica Ikiam (10 hours)
dec-2020	**Conference: A Generalization of the Cantor Ternary Set** *II Ecuadorian Mathematics Days* Universidad Universidad Técnica de Manabí
dec-2020	**Conference: Equivalence of the Axiom of Choice with the Function Redefinition Problem** *II Ecuadorian Mathematics Days* Universidad Universidad Técnica de Manabí
dec-2020	**Conference: Ruled Surfaces in GeoGebra as a Link between Mathematics and Architecture** *II Ecuadorian GeoGebra Day* Universidad Nacional de Educación

Conferences Attended (last 5 years)

Aug-2024	**INCOIN Workshop: Artificial Intelligence in Higher Education, PUCE 2024 edition** *Pontificia Universidad Católica del Ecuador* Quito–Ecuador (18 hours)

Oct-2023	**STEM Miami Seminar 2023**
	Broward International University
	Miami–United States (8 hours)

sep-2022	**II International Education Congress: Crisis, Creativity, and Educational Transformation**
	Pontificia Universidad Católica del Ecuador
	Quito-Ecuador (40 hours)

jun-2022	**I International Symposium on Physics and Mathematics**
	Pontificia Universidad Católica del Ecuador
	Quito-Ecuador (10 hours)

feb-2022	**XII Symposium on Mathematics and Mathematics Education, XI International Congress on Mathematics Assisted by Computer (MEM2022)**
	Universidad Antonio Nariño
	Bogotá-Colombia (20 hours)

jan-2022	**Applied Data Science Research Congress – II National Congress of R Users Group**
	Escuela Politécnica Nacional
	Quito-Ecuador (34 hours)

nov-2021	**VIII International Workshop "Trends in Mathematics Education Based on Research in Alliance with the GeoGebra Latin American Community"**
	Benemérita Universidad Autónoma de Puebla
	Puebla-Mexico (10 hours)

Teacher Training Courses (last 5 years)

jul-2025	**Challenge-Based Learning**
	Tecnológico de Monterrey
	Monterrey–México (26 hours)

sep-2025	**Diploma in University Teaching**
	Pontificia Universidad Católica del Ecuador
	Quito–Ecuador (140 hours)

feb-2025	**Advanced Exploration of Moodle Tools**
	Pontificia Universidad Católica del Ecuador
	Quito–Ecuador (40 hours)

jan-2025	**Designing AI-Mediated Learning Experiences**
	Tecnológico de Monterrey
	Monterrey–México (24 hours)

feb-2024	**AI to Improve the Teaching and Learning Process**
	IDEA-USFQ
	Quito-Ecuador (6 hours)

jul-2023	**Artificial Intelligence Applied to Education**
	Universidad Israel
	Quito-Ecuador (80 hours)

jul-2022	**PUCE INNOVA: Towards a University Pedagogical Transformation**
	Reimagine Education
	Barcelona-Spain (16 hours)

dec-2021	**Concept and Development of a Prototype for Educational Transformation Using the RIEDUSIS Methodology**
	Reimagine Education
	Barcelona-Spain (65 hours)

oct-2021	**Certification in Neuroscience and Education Applied to Teaching**
	Pontificia Universidad Católica del Ecuador
	Quito-Ecuador (50 hours)

apr-2021	**Creating Self-Evaluative Activities with GeoGebra**
	Instituto GeoGebra Extremeño
	Mérida-Spain (30 hours)

feb-2021	**Advanced Course for Virtual Classroom Management**
	Pontificia Universidad Católica del Ecuador
	Quito-Ecuador (24 hours)

Other Training Courses (last 5 years)

mar-2025	**Introduction to Reinforcement Learning**
	CEDIA
	Cuenca–Ecuador (40 hours)

feb-2025	**Efficient Academy Writer with AI**
	Sociedad Ecuatoriana de Estadística
	Quito–Ecuador (20 hours)

feb-2025	**General Information Security Policy**
	Pontificia Universidad Católica del Ecuador
	Quito–Ecuador (20 hours)

nov-2024	**Elements of AI**
	University of Helsinki
	(50 hours)

nov-2024	**Gender-Based Violence Prevention**
	Pontificia Universidad Católica del Ecuador
	Quito–Ecuador (20 hours)

nov-2022	**Amazon Web Service for Data Science**
	SDC Learning
	Lima-Peru (64 hours)

mar-2021	**Machine Learning with Python**
	Universidad Peruana Cayetano Heredia
	Lima-Peru (32 hours)

Publications

dec-2023	**Scientific Article**
	Merino, A. and Heredia, S. (2023). Relationship of the Cantor-Bendixson Derivative with Set Algebra. Selecciones Matemáticas, 10(2), 339-351.
	`https://doi.org/10.17268/sel.mat.2023.02.10`
	Area: Descriptive Set Theory

jan-2023	**Scientific Article**
	Jiménez, S. and Merino, A. (2023). Machine Learning Models Based on CRISP-DM for the Analysis of Depression Levels in Students of the Escuela Politécnica Nacional. Latin-American Journal of Computing, 10(1), 22-43.
	`https://lajc.epn.edu.ec/index.php/LAJC/article/view/335`
	Area: Data Science

aug-2022	**Scientific Article**
	Merino, A., Cueva, M., Sarmiento, M., and Paredes, A. (2022). Analysis of the Concepts of Variable and Constant in Students of the Unified General Baccalaureate of Ecuador. 593 Digital Publisher CEIT, 7(4-2), 175-185.
	`https://doi.org/10.33386/593dp.2022.4-2.970`
	Area: Mathematics Education

jun-2021	**Scientific Article** *Merino, A. and Ortiz-Castro, J. (2021). Continuity of Functions Based on Rearrangements of β-Expansions of a Number. Digital Journal of Mathematics, Education, and Internet, 22(1).* `https://doi.org/10.18845/rdmei.v22i1.5758` Area: Real Analysis
feb-2021	**Scientific Article** *Álvarez-Samaniego, B. and Merino, A. (2021). Some Properties Related to the Cantor-Bendixson Derivative on a Polish Space. New Zealand Journal of Mathematics, 50, 207-218.* `http://dx.doi.org/10.17268/sel.mat.2020.02.04` Area: Descriptive Set Theory
dec-2020	**Scientific Article** *Merino, A. and Heredia, S. (2020). A Generalization of the Cantor Ternary Set. Selecciones Matemáticas, 7(2), 222-233.* `http://dx.doi.org/10.17268/sel.mat.2020.02.04` Area: Real Analysis
may-2020	**Scientific Article** *Merino, A. and Trujillo, J. C. (2020). Equivalence of the Axiom of Choice with the Function Redefinition Problem. Revista Politécnica, 45(2), 51-56.* `https://doi.org/10.33333/rp.vol45n2.05` Area: Foundations of Mathematics
nov-2019	**Scientific Article** *Álvarez-Samaniego, B. and Merino, A. (2019). Countable Ordinal Spaces and Compact Countable Subsets of a Metric Space. Australian Journal of Mathematical Analysis and Applications, 16(2), article 12.* Area: Descriptive Set Theory
jun-2019	**Scientific Article** *Ortiz, J. and Merino, A. (2019). Schematic Representation of the Set Classification Problem. The Classification of the Quadratic Equation of Two Variables. Mathematics ESPOL-FCNM JOURNAL, 17(1), 1-14.* Area: Mathematics Education
sep-2016	**Scientific Article** *Álvarez-Samaniego, B. and Merino, A. (2019). A Primitive Associated to the Cantor-Bendixson Derivative on the Real Line. Journal of Mathematical Sciences: Advances and Applications 41 (1).* `http://dx.doi.org/10.18642/jmsaa_7100121692` Area: Descriptive Set Theory
junio 2012	**Booklet** *Merino, A., Cueva, E. and Trujillo J.C. (2012). Single Variable Calculus: Summary and Solved Exercises. Publications Unit of the Faculty of Sciences.* Area: Mathematics Education

Awards and Scholarships

Feb-2025	**Recognition for High Performance in Teaching Practice** *Facultad de Ciencias Exactas, Naturales y Ambientales – PUCE*
dec-2023	**Gratitude Button** *Asociación de Profesores de la Pontificia Universidad Católica del Ecuador*
jul-2021	**UOC Scholarship for Outstanding Students from Ecuador** *Universitat Oberta de Catalunya*
dec-2017	**Municipal Award Pedro Vicente Maldonado for the Best Published Work in the Area of Exact Sciences in 2017** *Municipio del Distrito Metropolitano de Quito* Work: A Primitive Associated to the Cantor Bendixson Derivative on the Real Line