

Marcelo Gallardo

MATHEMATICS · PUCP

San Isidro, Lima, Peru

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Education

Pontificia Universidad Católica del Perú

B.S. AND LIC. MATHEMATICS

- **Master courses:** Optimal Transport, Stochastic Processes, Advanced Microeconomics
- 18.7/20

Lima, Pe

2020 - Present

Q-LAB

PUCP

- **Courses:** Machine Learning for Social Sciences, Time Series and Machine Learning for Macroeconomics, Finance, Applied Econometrics, Asset Pricing, Empirical Industrial Organization

Lima, Pe

January-February 2022, 2023 and 2024

École Polytechnique Fédérale de Lausanne

CYCLE PROPÉDEUTIQUE PHYSICS

- **Courses 2019:** Advanced Real Analysis for Physicists, Advanced Linear Algebra for Physicists, Advanced Mechanics
- **Courses 2020-2021:** Numerical Physics I, Numerical Physics II

Lausanne, SW

September 2019 - January 2020

Experience

Pontificia Universidad Católica del Perú

Teaching Assistant

- **Mathematics for economists 3:** real dynamical systems in continuous and discrete time.
- **Mathematics for economists 4:** basic convex analysis, static and dynamic optimization (optimal control).
- **Optimization I:** linear algebra, topological vector spaces, convex analysis, static optimization, dynamic programming, introduction to game theory.
- **Functional Analysis:** Banach spaces, convex set separation, Hahn-Banach, dual space, inner product vector spaces, weak topology, compact operators.

Lima, Pe

March 2022 - November 2022

Grupo de Análisis para el Desarrollo

RESEARCH ASSISTANT

- Collaborating with Professor Juan L. Jara Almonte.
- Creation of lecture notes for the course Fundamentals of Econometrics.
- Working paper: innovation indicator and relation with other variables. Data collection, processing, k-means clustering and confirmatory factor analysis.
- Explore and eventually develop a statistical package and test to study structural changes in parameters.

Lima, Pe

March 2022 - November 2022 and

October 2023-present

Pontificia Universidad Católica del Perú

RESEARCH ASSISTANT

- Collaborating with Professor Jorge R. Chávez Fuentes.
- Pre-published about Linear Algebra and Static Optimization for Economists.
- Developed several proofs, examples and exercises, above all related to microeconomics.
- Working book about Dynamical Systems and Optimal Control in continuous time.
- Calculus of variations, economic growth models (Solow, Ramsey-Cass-Koopsman).

Lima, Pe

March 2021-present

UNSW Sydney

RESEARCH ASSISTANT

- Collaborating with Professor Juan Carlos Carbajal.
- Literature review (auction theory, game theory, mechanism design), expositions, academic and logistical support.

Sydney, Au

March 2024-present

Working papers, papers and others

Harnessing Twitter and GPT for a Novel Political Uncertainty Index for Peru: Implications for USD/PEN Exchange Rate Fluctuations with Manuel Loaiza and Gabriel Rodríguez.

Innovation in Peruvian universities with Juan L. Jara.

Brouwer fixed point theorem and applications in general equilibrium with Carlos Cosentino and Eduardo Llamoca.

Lecture notes in Optimal Transport: Entropic Regularization and Applications to Economics and Finance with Carlos Cosentino and supervised by Johel Beltrán.

Lecture notes in Econometrics: with Juan L. Jara.

Books

Linear Algebra and Optimization for Economists (pre-published) with Jorge R. Chávez.

Dynamical Systems and Optimal Control Theory in Continuous Time for Economists (working) with Jorge R. Chávez.

Awards, & achievements

12/2018 **Mention d'excellence au BAC, top mark 19.91/20**, Colegio Franco Peruano, Lima PE
05/2019 **Admission to l'X Bachelor Program**, Paris, France
12/2020 **Contest initiation to scientific research**, PUCP Lima, PE
12/2021 **Contest initiation to scientific research**, PUCP Lima, PE
2022-2023 **Ranked first in Economic courses.**, PUCP Lima, PE
2022- **Top 5% Faculty of Sciences and Engineering**, PUCP Lima, PE
2022- **Ranked first in my class in the Mathematics major.**, PUCP Lima, PE

900 s/.
900 s/.

Skills

Programming: Python, \LaTeX , Matlab, STATA

Languages: Spanish (Native), French (Proficient), English (Proficient).

Research interests

Economic theory. Optimization and convex analysis. Optimal control theory. Optimal Transport. Quantitative methods applied to economics.

References

1. **Jorge R. Chávez Fuentes.** Professor of the Mathematics Department at Pontificia Universidad Católica del Perú.
2. **Juan L. Jara Almonte.** Professor of the Economics Department at Pontificia Universidad Católica del Perú and Research Associate at GRADE.
3. **Juan Carlos Carbajal.** Associate Professor Post-Graduate Coordinator (PhD program) School of Economics, UNSW Sydney
4. **Alfredo B. Poirier Schmidt.** Professor of the Mathematics Department at Pontificia Universidad Católica del Perú.
5. **Johel V. Beltrán Ramírez.** Professor of the Mathematics Department at Pontificia Universidad Católica del Perú and Visiting Professor at Fundação Getulio Vargas.
6. **Pavel Coronado.** Professor of the Economics Department at Pontificia Universidad Católica del Perú and Q-LAB director.
7. **Percy Fernandez.** Professor, Faculty Coordinator and Graduate School Director of the Mathematics Department at Pontificia Universidad Católica del Perú.