Academic statement PUCP

Marcelo Gallardo

September 4, 2024

Pontificia Universidad Católica del Perú

marcelo.gallardo@pucp.edu.pe

Below is a list of relevant courses taken during my undergraduate mathematics program at PUCP (Pontificia Universidad Católica del Perú). Some courses are from the Master in Economics or the Master in Mathematics (PUCP). Key information regarding this is as follows. At PUCP, a grade above 15 is considered very high. Grades of 17 or above are uncommon. The passing grade is 11, and the maximum grade is 20. The mathematics program (2024) has approximately 50 students in total. Classes usually do not exceed 10 students and it is considered a selective program at entry, which explains the small number of students. A significant portion of the mathematics faculty are PhDs from IMPA, and while the others have their doctorates from the United States.

Regarding the PUCP Economics program, considered the best in the country according to the QS ranking (see here) it has the same grading scale and standards. That is, a grade above 15 is considered top. The QLab is the first laboratory for Artificial Intelligence and Quantitative Methods for the social sciences in Peru, and is associated to the Economics Deparment. The program's courses are taught by visiting PhDs in Economics, such as Josue Cox, Jorge Tovar, Cristina Tello-Trillo, and Tomas Rau Binder.

In some courses, I have linked my class notes and problem sets in LaTeX (which certainly may have several typos, errors and do no represent necessarily the full content of the course). Syllabi are also available in the folders to which the links lead. I have also included the basic bibliography for each course.

During my undergraduate studies, I served as a Teaching Assistant for various courses. These included Mathematics for Economists III, which covered a basic introduction to continuous and discrete dynamical systems, Mathematics for Economists IV, which focused on nonlinear optimization and an introduction to dynamic optimization, Convex Optimization (for undergraduate mathematicians), Functional Analysis (for undergraduate mathematicians), Microeconomics 2, which explored General Equilibrium, Market Failures, and Asymmetric Information, and Financial Microeconomics (very similar to Microeconomics 2, but exploring more deeply the issues of choice under uncertainty and presenting static and dynamic games with complete information). As a TA, I developed lecture notes, problem sets, their solutions, and assessments for the courses. You can access the material I developed for each course by clicking here.

Finally, this document does not cover the courses from the General Studies Science cycle (corresponding to the first 2 years of university studies). It should be noted that my GPA was 17/20. Also, I have not included my coursework as a student at EPFL, where I attended for one semester as a regular student in the Physics program and the following year, virtually and not as a regular student due to Covid, courses in Computational Physics and Philosophy of Science. I successfully passed the first semester at EPFL (according to 2019 statistics only 5% of students managed to do so directly) and in the virtual courses, I obtained a GPA of 6/6.

Cumulative GPA in Mathematics and Economics courses at PUCP (2024): 18.75/20.

1 Academic Record

1.1 Master of Economics (PUCP)

Course	Grade	Book	Teacher(s)
Advanced Microeconomics General Equilibrium Asymmetric Information Auction Theory Contract Theory	19	Microeconomic Theory by Mas-Colell et al.	Alejandro Lugón, José C. Aguilar Juan C. Carbajal, Mario Bergara

1.2 Master of Mathematics (PUCP)

Course	Grade	Book	Teacher
Introduction to Optimal Transport	20	Optimal Transport Old and New by Cédric Villani	Johel Beltran

1.3 Mathematics Courses at the Faculty of Science and Engineering (PUCP)

Course	Grade	Book(s)	Professor
Abstract Algebra	20	Abstract Algebra by Israel N. Herstein	Alfredo Poirier
General Topology	19	Topology; a first course by James Munkres	Rudy Rosas
Optimization 1	20	Optimization by Emilio Cerdá	Jorge Chávez
Optimization 2	20	Dynamic Optimization by Emilio Cerdá	Jorge Chávez
Measure Theory	19	Real Analysis by Gerald Folland	Johel Beltrán
Advanced Linear and Multilinear Algebra	19	Advanced Linear Algebra by Steven Roman	Christian Figueroa
Galois Theory	20	Galois Theory Through Exercises by Juliusz Brzeziński	Alfredo Poirier
Functional Analysis	19	Fundamentos de análise funcional by Geraldo Botelho	Percy Fernandez
Analysis over Surfaces	17	Curso de Análise Vol. 2 by Elon Lages	Jesus Zapata
Complex Analysis	20	Complex Analysis by Serge Lang	Alfredo Poirier
Differential Geometry	20	Elementary Differential Geometry by Andrew Pressley	Jaime Cuadros
Stochastic Processes	18	Measure Theory, Probability and Stochastic Processes Brownian Motion, Martingales and Stochastic Calculus by J.F. Le Gall (both)	Johel Beltran
Probability Theory	18	Probability by A. N. Shiryaev	Jonathan Farfan
Discrete Mathematics	20	A walk through combinatorics by Milkos Bona	Ricardo Ramos
Applied Differential Equations	20	Differential Equations BVP by Richard Boyce and William di Prima	Fidel Jimenez
Numerical Analysis	Ongoing	Introduction to Numerical Analysis by Josef Stoer	Juan Casavilca
Partial Differential Equations	Ongoing	EDP - Um Curso de Graduacao by Valéria Iório	Marcelo Flamarion
Advanced Topics in Geometry	Ongoing	Aspectos Geométricos del Análisis Complejo by Alfredo Poirier	Alfredo Poirier
Thesis	20	Stable Matching as Transportation by F. Echenique et al. Optimal Transport Methods in Economics by Alfred Galichon Convex Optimization by S. Boyd and L. Vandenberghe	Jorge Chávez

1.4 Economics Courses at the Faculty of Social Sciences (PUCP)

Course	Grade	Book	Teacher
Microeconomics 1	19	Microeconomic Analysis by Hal Varian	José Gallardo
Microeconomics 2	20	Microeconomic Theory by Mas-Colell et al.	Pavel Coronado
Macroeconomics 1	17	Intermediate Macroeconomics for Latam by Waldo Mendoza	Waldo Mendoza
Statistical Inference	19	Statistical Inference by George Casella and Roger Berger	Luis Valdivieso
Introduction to Econometrics	20	Econometrics by Damodar Gujarati and Dawn Porter	Juan León Jara

1.5 Economics Courses at the QLab

Course	Grade	Books	Teacher
Machine Learning for Social Sciences	19	An Introduction to Statistical Learning by Gareth James et al.	Pavel Coronado
Time Series for Macroeconomics and Finance	20	New Introduction to Multiple Time Series Analysis by Helmut Lütkepohl	Josué Cox
Empirical Industrial Organization	20	Empirical IO by Victor Aguirregabiria	Jorge Tovar
Introduction to Asset Pricing	19	Asset Pricing by John Cochrane	Josué Cox
Machine Learning y Causal Inference	Seminar Assistance		Tomás Rau
Advanced Topics in IO	Seminar Assistance		Carlos Noton