Rafael Galleze

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DETAILED TRAINING COURSE

Master 2 - "Maths in Action"   Sep. 2023 –

A program focused on numerical analysis, statistics, optimisation and machine learning.   *University Lyon1*

- Voluntarily following an additional course on the calculus of variations (Petru Mironescu)

Master 2 - Mathematics and interactions   Sep. 2022 – June 2023

Program Analysis, Partial Differential Equations, Probability   *University of Bordeaux*

- Tools for (non-)linear PDE. (Marius Païcu, Franck Sueur and Vincent Bruneau)
  - Application to fluid dynamics, Kato's and Leray's theorems, para-differential calculus, anisotropic/inhomogeneous NS.
  - Spectral theorem and applications.

- Semigroup theory and control. (Marius Tucsnak)

- Harmonic analysis, Calderon-Zygmund Operators, Paley-Littlewood theory. (Philippe Jaming)

- Introduction to discrete holomorphic dynamics. (Jasmin Raissy)

- Stochastic calculus. (Marc Arnaudon)

- Reading seminary on microlocal analysis, pseudo-differential operators and symbolic calculus. (Laurent Michel)

- Reading seminary on complex analysis, Ringe's theorem, analytic continuations and analytic manifolds. (Philippe Thieullen)

- Optimisation in large dimensions, deterministic and stochastic methods. (Jean-François Aujol and Bernard Bercu)

Master 1 - Mathematics and interactions   Sep. 2021 – May 2022

Program Analysis, Partial Differential Equations, Probability   *University of Bordeaux*

- PDE (two semesters) (El Maati Ouhabaz and Marius Tucsnak)
  - Sobolev spaces, usage of Fourier transform, Lax-Milgram, bounded and unbounded operators
  - Heat and wave equations, semigroup theory, Lumer-Phillips' theorem.

- PDE approximation (two semesters), finite differences, finite elements. (Denise Aregba and Afaf Bouharguane)

- Convergence and duality, Fourier transform, distributions. (Jasmin Raissy)

- Numerical PDE approximation project, approximation of Shallow water equations. (Astrid Decoene)

- Supervised research work, curvature flow. (Laurent Bessières)

- Spectral and functional analysis (Philippe Jaming and El Maati Ouhabaz)
  - Baire's theorem and consequences, Hahn-Banach, Arzelà-Ascoli.
  - Fredholm alternative, compact and Hilbert-Schmidt operators.

- Geometry (course followed voluntarily) (Christophe Bavard and Elise Goujard)
  - Riemann manifolds, differential forms, fundamental group and universal covering, algebraic curves.

- Complex analysis. (Philippe Thieullen)

- Probabilities, convergences, conditional expectation, gaussian vectors, statistical estimates. (Marc Arnaudon and Bernard Bercu)

- Hilbertian tools, discrete Fourier transform, Fourier series, Nyquist-Shannon sampling theorem. (Edoardo Provenzi)

Bachelor's Degree in Mathematics   Sep. 2019 – May. 2021

Program Fundamental Mathematics, Semesters 3 to 6   *University of Bordeaux*

Engineering School   Sep. 2018 – Mar. 2019

work-linked engineering training   *CESI, Angoulême, France*

Preparatory courses for engineering schools (CPGE in french)   Sep. 2014 – May. 2016

Program Mathematics-Physics, Option computer science   *Lycée La Martinière Monplaisir, Lyon, France*