

# PhD courses 2020/2021, FCUL & IST

## 1st semester

### FCUL

- Mathematical Analysis
  - Dynamical Systems (Jorge Buescu)
- Algebra
  - Inverse Semigroups (Gracinda Gomes)
  - Representation Theory of Groups (Carlos André)
- Mathematical Physics
  - Mathematical Methods in Physics (Nicolas von Goethem)
- Logic and Computation
  - Mathematical Logic (Fernando Ferreira)

### IST

- Differential Equations and Dynamical Systems
  - Infinite Dimensional Dynamical Systems (João Paulo Teixeira)
  - Evolution Partial Differential Equations (João Teixeira Pinto)
  - Topics in Differential Equations and Dynamical Systems (Hugo Tavares)
- Algebra and Topology
  - Differential Topology (Leonardo Macarini)
- Geometry
  - Differential Geometry (João Pimentel Nunes)
  - Lie Groups and Lie Algebras (Pedro Resende)

- Mathematical Physics
  - Conformal Field Theory (Ricardo Schiappa)
- Real Analysis and Functional Analysis
  - Algebras of Operators (Amélia Bastos)
  - Topics in Operator Theory: Riemann-Hilbert problems (Cristina Câmara)
- Numerical Analysis and Applied Analysis
  - Mathematical and Numerical Methods in Fluid Dynamics (Ana Leonor Silvestre)
- Logic and Computation
  - Functional Logic and Proof Theory (Carlos Caleiro)
  - Computability and Complexity of Learning (José Félix Costa)
  - Modal Logic (João Rasga)
  - Theory of Computability, Complexity and Information (Cristina Sernadas)
  - Advanced Topics in Information Security I (Paulo Mateus)
- Probability and Statistics
  - Advanced Topics in Statistical Inference (Paulo Soares)
  - Advanced Topics in Multivariate Analysis (Rosário Oliveira)

## 2nd semester

### FCUL

- Mathematical Physics
  - Probability in Quantum Mechanics (Jean-Claude Zambrini)
- Mathematical Analysis
  - Calculus of Variations (Manuel Marques)
  - Partial Differential Equations (Manuel Marques)
  - Ergodic Theory (Pedro Miguel Duarte)
- Algebra
  - Universal Algebra (Maria João Gouveia)
  - Introduction to Algebraic Geometry (Carlos André)
- Geometry and Topology
  - Riemann Surfaces and Integrable Models (Davide Masoero)
  - Algebraic Topology (Orlando Neto)
  - Differential Topology (Pedro Miguel Duarte)
- Logic and Computation
  - Model Theory (Mário Edmundo)

### IST

- Real Analysis and Functional Analysis
  - Topics in Operator Algebras (Pedro A. Santos)
- Differential Equations and Dynamical Systems
  - Calculus of Variations and Partial Differential Equations (Margarida Baía)
  - Bifurcation Theory in Differential Equations (Henrique Oliveira)
- Geometry
  - Symplectic Geometry (Miguel Abreu)
  - Algebraic Geometry (Emilio Franco)
  - Knot Theory (Pedro Lopes)

- Mathematical Physics
  - Geometry and Gauge Theory (Roger Picken/John Huerta)
  - Mathematical Relativity (Filipe Mena)
  - String Theory (Gabriel Lopes Cardoso)
- Numerical Analysis and Applied Analysis
  - Inverse Problems for Differential Equations and Medical Imaging (Carlos Alves)
- Probability and Statistics
  - Advanced Topics in Probabilities and Stochastic Processes (Patrícia Gonçalves)