PhD in Economics

MATHEMATICS

Prof. Loretta Mastroeni

50 contact hours: Lectures and Exercises

Course contents

1. Dynamical systems; differential equations; systems of differential equations.
2. Mathematical optimization methods for deriving control policies
   - Calculus of variations
   - Optimal control theory
   - Dynamic programming
3. Stochastic processes
4. Mathematical finance: basic contracts; option pricing (Cox-Ross-Rubinstein, Black-Scholes); how to cope with risks; the Greeks; real options, applications to economics.

Grading

The final grade is composed by a written exam.

References

- Own notes and slides