

DEPARTMENT OF ECONOMICS

Mathematics-PhD course 2017-2018 Prof. Loretta Mastroeni

70 contact hours: Lecture 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 the following categories:
Written Exam determines 85% of the final mark.
Oral Exam determines 15% of the final mark.

References

- Own notes and slides