DIPARTIMENTO MATEMATICA
Dipartimento di Matematica "Tullio Levi-Civita"

Introduction to differential games

PhD Program in Mathematical Sciences

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UNIVERSITÀ DEGLI STUDI DI PADOVA

Course contents (12 hours)

- Recall of basic concepts of game theory, best response strategies, dominating strategies, Nash equilibrium
- Dynamic games: formalization of a differential game
- Simultaneous Noncooperative differential games (Nash equilibrium)
- Hierarchic differential games (Stackelberg equilibrium)

Course requirements

Basic notions of Differential equations and Optimal control

Exam

1. The lecturer will suggest a set of recent scientific publications on differential games
2. Each student will choose a paper among the suggested ones to read, comprehend and present in class

References

- Basar T., and Olsder G.J., *Dynamic Noncooperative Game Theory* Classics in Applied Mathematics.. SIAM 2 Ed., 1999.
- Basar T., Zaccour G., Handbook of dynamic game theory, Springer Nature, 2018.
- Bressan, A. “Noncooperative differential games.” *Milan Journal of Mathematics* 79.2 (2011) 357-427.
- Dockner, E.J. et al., *Differential Games in Economics and Management Science*, Cambridge University Press, 2000.
- Haurie, A., et al, *Games and dynamic games.* Vol.1 World Scientific Publishing Company, 2012.
- Jehle, G. A. and Reny P.J., *Advanced Microeconomic Theory* (Third). Essex: Pearson Education Limited, 2011.
- Van Long, N., *A Survey of Dynamic Games in Economics* Surveys on Theories in Economics and Business Administration, Vol. 1, 2010.

The Moodle Platform Sections

1. **Feedback activities**
2. **Slides**
3. **Tablet Notes and recordings**
4. **Links**