

Knight Foundation School of Computing and Information Sciences

Course Title: Game Theory

Date:

Course Number: CAP 5507

Number of Credits: 3

Subject Area: Game Theory	Subject Area Coordinator: Hadi Amini Email: amini@cs.fiu.edu
Catalog Description: Introduction to major topics of game theory, including game representations, solution concepts, algorithms & complexity, repeated games, learning, auctions, voting, applications to many disciplines.	
Textbook: Game Theory: Decisions, Interaction and Evolution by James Webb, ISBN# 978-1846284236	
References:	
Prerequisites Courses: MAC 2312 OR MAD 2104 OR COT 3100	
Corequisites Courses: None	

Type: Elective for CS

Course Description:

Game theory is the study of strategic interaction. It has been applied to every scientific discipline - - most notably economics, but also political science, business, military, biology, and many others. Recently it has been a major area of research in computer science, as the field of artificial intelligence, which initially studied settings with a single agent, is expanding its scope to domains with multiple strategic (and potentially adversarial) agents. Topics will include game representations, solution concepts, imperfect information, repeated games, learning, auctions, and voting. There will be a project to pursue an application (or theoretical topic) of interest. The class could be of interest to students in computer science, mathematics, physical sciences, business, social sciences, engineering, and life sciences (including medicine). It would be helpful to have familiarity with mathematical proofs, and some problems will involve computational implementation.

Objectives:

Introduce the main concepts of game theory, which has been applied to every scientific field -- most notably economics, but also political science, business, military, and biology.

Evaluation:

The course for comprises of homework, three exams and class project.

Knight Foundation School of Computing and Information Sciences
CAP 5507 Game Theory

Topics:

- Simple Decision Models
- Simple Decision Processes
- Markov Decision Processes
- Static Games
- Finite Dynamic Games
- Games with Continuous Strategy Sets
- Infinite Dynamic Games
- Population Games
- Replicator Dynamics

Student and Instructor Course Outcome Surveys are administered at the conclusion of each offering, and are evaluated as described in the School's Assessment Plan: <https://abet.cs.fiu.edu/csassessment/>