

Course Unit	Game Theory		Field of study	Game Design	
Bachelor in	Game Design		School	School of Public Management, Communication and Tourism	
Academic Year	2021/2022	Year of study	1	Level	1-1
Type	Semestral	Semester	2	ECTS credits	6.0
Code	8309-414-1205-00-21				
Workload (hours)	162	Contact hours	T -	TP 60	PL -
			TC -	S -	E -
			OT -	O -	

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Ines Monteiro Barbedo de Magalhaes, Joana Ines Veiga Guerra da Costa Tavares

### Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Understand what is a game and what are the fundamental concepts associated with it;
2. Understand game theory as an interdisciplinary approach to the study of human behavior;
3. Understand and employ the principles of ludology and narratology;
4. Know the history of digital games and its relationship with other media;
5. Master the fundamental vocabulary of game design;
6. Apply theoretical concepts in the analysis of case studies and design of prototypes.

### Prerequisites

Before the course unit the learner is expected to be able to:  
Not applicable.

### Course contents

MODULE 1: Definition and formal elements of a game; History and evolution of digital games; The (inter)disciplinary area of game studies; Fundamental vocabulary of game design; Genres in digital games. MODULE 2: Rationality; Preferential relationship and strategic interaction; Simultaneous and sequential games (formal models); Finite games and infinite games; Information sets; Analysis of strategies and game balance. MODULES 1 AND 2: prototyping workshops and digital game analysis.

### Course contents (extended version)

1. Definition and formal elements of a game
  - play; pretending; goals; rules
2. Gameplay concept
  - actions; challenges; fairness; symmetry/ asymmetry; competition/ cooperation
3. History and evolution of digital games
4. Some fundamental debates
  - Narratology versus ludology
  - Ethics and digital games
  - Gamification and games in specific contexts
  - Player-centered design (immersion; profiles; player psychology in the game)
5. The interdisciplinary area of game studies
  - 4 dimensions of analysis (game, player, culture, ontology)
6. Genres in digital games
7. Prototyping
8. Playtest
9. Game theory and decision making
10. Simultaneous and sequential games and their representation models
11. Classic game examples
12. Results analysis
  - best play
  - strategies
  - Nash equilibrium
  - iterative method of eliminating dominated strategies
  - retrospective induction
13. Information sets
14. Rational versus random choice / play
15. Design methods
16. Introduction to game analysis and criticism

### Recommended reading

1. Adams, E. & Rollings, A. (2007). Fundamentals of Game Design. New Jersey: Pearson / Prentice Hall. [ISBN: 9780131687479]
2. Donovan, T. (2010). Replay: the history of videogames. East Sussex: Yellow Ant. [ISBN: 9780956507204]
3. Hiwiler, Z. (2016). Players Making Decisions: Game Design Essentials and the Art of Understanding Your Players. New Riders NRG [ISBN: 9780134396750]
4. Osborne, M. (2004). An introduction to game theory. Oxford: Oxford University Press. [ISBN: 9780195128956]
5. Perron, B. & Wolf, M. J. P. (eds.) (2009). The Video Game Theory Reader 2. Nova Iorque & Londres: Routledge. [ISBN: 9780415962834]

### Teaching and learning methods

Contact Hours: Content exposition, with the aid of different audiovisual products. Questioning, in order to develop critical ability. Demonstrative method, with the aid of technical equipment. Active method, when the student solves exercises. Non-contact Hours: Active method, when the student solves proposed assignments.

### Assessment methods

1. DISTRIBUTED EVALUATION (mobility students) - (Regular, Student Worker) (Final)
  - Intermediate Written Test - 25% ((minimum mark 7.0 points in 20)
    - M1: Article reading and comment - 12.5%
    - M2: Exercises - 12.5%
  - Experimental Work - 60% ((minimum mark 7.0 points in 20)
    - 3 Prototypes - 40%

**Assessment methods**

- Intregated Project- 10%
- Interdisciplinary Week- 10%
- Case Studies - 15% ((minimum mark 7. 0 points in 20)
- Analises of one digital game)
- 2. DISTRIBUTED EVALUATION (mobility students) - (Regular, Student Worker) (Supplementary, Special)
- Final Written Exam - 25% ((minimum mark 7. 0 points in 20)
- M1: written assesement- 12,5%
- M2: written assesement- 12,5%)
- Experimental Work - 60% ((minimum mark 7. 0 points in 20)
- 3 Prototypes - 40%
- Intregated Project- 10%
- Interdisciplinary Week- 10%
- Case Studies - 15% ((minimum mark 7. 0 points in 20)
- Analises of one digital game)

**Language of instruction**

1. Portuguese
2. English

**Electronic validation**

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18-03-2022	05-04-2022	07-04-2022	08-04-2022