**SYLLABUS**

1. **General**

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| **College** | Applied Economic and Social Sciences |
| **Department** | Regional and Economic Development |
| **Level of Studies** | Undergraduate |
| **Couse Code** | **6601** | **Semester** | 6 |
| **Course Title** | Game Theory |
| **Faculty Name** | MARINA SELENE KATSAITI |
| **INDEPENDENT TEACHING ACTIVITIES** **where credit is awarded for discrete parts of the course e.g. lectures, laboratory exercises, etc. If credit is awarded for the whole course, indicate the weekly teaching hours and the total number of credits** | **WEEKLY CONTACT HOURS** | **ECTS** |
| Lectures | 4 | 5 |
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| **COURSE TYPE****Background, General Knowledge, Scientific Area, Skills Development** | Scientific Area |
| **Prerequisites** | - |
| **Language of instruction and examinations** | Greek |
| **Course Offered to Erasmus Students** | No |
| **Course Webpage** | https://oeclass.aua.gr/eclass/ |

1. **COURSE LEARNING OUTCOMES**

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| **Learning Outcomes** |
| * *The learning outcomes of the course describe the specific knowledge, skills and competences of an appropriate level that students will acquire after successful completion of the course.*
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| Knowledge:* To understand how social and economic systems operate, governed by behavioural dynamics and interactions between actors, to think strategically,
* To understand the basic concepts and mathematical techniques of Game Theory and Decision Making,
* To understand strategic interactions in real-life situations,
* To use critically the methods of strategic analysis offered by Game Theory,
* To interpret the behaviour and strategies of firms in their microeconomic and spatial context; to use the principles and methods of Game Theory constructively to interpret and model real-world and market economic and business problems,
* To understand the key business decision making issues arising from incomplete information,
* To identify optimal strategies in business operations in markets, in the conduct of international relations and in various policy areas; and
* To propose effective strategies for dealing with decision-making problems in different functional areas of market and social life.

Competencies:* To understand how social and economic systems operate, which are governed by behavioural dynamics and interactions between actors,
* To understand the basic concepts and mathematical techniques of game theory and decision making,
* To understand strategic interactions in real-life situations,
* To understand the key issues of business decision making arising from incomplete information, think strategically,
* To identify optimal strategies in business operations in markets, in the conduct of international relations and in various policy areas,
* To interpret the behaviour and strategies of enterprises in their microeconomic and spatial context,
* To use critically the methods of strategic analysis offered by game theory,
* To use constructively the principles and methods of Game Theory for the interpretation and modelling of economic and business problems in the real world and the market; and
* To propose effective strategies for dealing with decision-making problems in different functional areas of market and social life.

Skills:* To be able to solve numerical and theoretical problems and comment on case studies from the real business world and real government policy.
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| ***General skills*** |
| *Taking into account the general competences that the graduate should have acquired (as listed in the Diploma Supplement and listed below), which one(s) does the course aim at?* |
| *Search, analysis and synthesis of data and information, including the use of the necessary technologies* *Adaptation to new situations* *Decision-making* *Autonomous work* *Group work* *Working in an international environment* *Working in an interdisciplinary environment* *Generating new research ideas* | *Project planning and management* *Respect for diversity and multiculturalism* *Respect for the natural environment* *Demonstrating social, professional and ethical responsibility and gender sensitivity* *Exercise of criticism and self-criticism* *Promotion of free, creative and deductive thinking* |
| To be able to look for data that could verify the models they have been taught.To develop written assignments addressing questions related to the content of the course.To identify the models taught in case studies. |

1. **COURSE CONTENT**

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| Basic concepts of games, Conflicts, games and their strategic form, Dominant strategies and social dilemmas, Pure strategy, Graphical method of game resolution, Nash equilibrium and rational strategies, Mixed extensions of games in strategic form, Nash equilibria in mixed strategies, Game solving with Linear Programming, Bayesian and extended games, Repeated games, Cooperative non-cooperative games, Negotiation, Applications in Economics and Regional Science |

1. **TEACHING AND LEARNING METHODS - ASSESSMENT**

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| **METHOD OF DELIVERY****Face-to-face, Distance learning, etc.** | Lectures and meetings with students  |
| **USE OF TECHNOLOGY, INFORMATION AND COMMUNICATION***Use of ICT in teaching, laboratory training, communication with students* | Computer and interactive whiteboard will be used in the teaching. Communication with students will be on a personal level, also using e-mail and direct telecommunication (e.g. skype) |
| **ORGANISATION OF TEACHING***The way and methods of teaching are described in detail.**Lectures, Seminars, Laboratory Exercise, Field Exercise, Study & Analysis of Literature, Tutorials, Practical (Placement), Clinical Exercise, Artistic Workshop, Interactive teaching, Educational visits, Study visits, Project work, Writing of work / assignments, Artistic creation, etc.**The student's study hours for each learning activity as well as the hours of unguided study are indicated so that the total workload at semester level corresponds to the ECTS standards.* |

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| ***Activity*** | ***Workload*** |
| Lectures | 52 hours |
| Study of course material (material taught) | 52 hours |
| Exercises and practice of in economic applications | 21 hours |
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| Course Total | 125 hours |

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| **STUDENT ASSESSMENT** *Description of the evaluation process**Language of Assessment, Assessment Methods, Formative or Inferential, Multiple Choice Test, Short Answer Questions, Test Development Questions, Problem Solving, Written Work, Report, Oral Examination, Oral Examination, Public Presentation, Laboratory Work, Clinical Examination of a Patient, Artistic Interpretation, Other**Explicitly identified assessment criteria are stated and if and where they are accessible to students.* | Written Final Exams and tentative midterm examinations during the course  |

1. **BIBLIOGRAPHY**

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| Main Textbooks (all in Greek):* McCain Roger A. (2019) Game Theory, Broken Hill Publishers Ltd.
* Fountas E.H., Vlachos A.G. (2013) Mathematical Programming and Game Theory 1, Markella I. Varvarigou.
* Nearchou A., (2016) Introduction to Game Theory, University of Patras Asset Exploitation and Management Company.
* Voliotis, D., (2015) Lectures in Game Theory, Field Publishing.

*Foreign Language Bibliography** Gibbons, R. S. (1992). Game theory for applied economists. Princeton University Press.
* McMillan, J. (2013). Game theory in international economics. Taylor & francis.
* Ordeshook, P. C. (1986). Game theory and political theory. Cambridge Books.
* Ichiishi, T. (2014). Game theory for economic analysis. Elsevier.
* Barron, E. N. (2013). Game theory: an introduction (Vol. 2). John Wiley & Sons.
* Webster, T. J. (2018). Introduction to game theory in business and economics. Routledge.
* Schmidt, C. (Ed.). (2002). Game theory and economic analysis: A quiet revolution in economics. Routledge.

 *Indicative Articles** Roth, A. E. (2002). The economist as engineer: Game theory, experimentation, and computation as tools for design economics. Econometrica, 70(4), 1341-1378.
* Samuelson, L. (2016). Game theory in economics and beyond. Journal of Economic Perspectives, 30(4), 107-30.
* Roth, A. E. (1991). Game theory as a part of empirical economics. The Economic Journal, 101(404), 107-114.
* Buchanan, J. M. (2001). Game theory, mathematics, and economics. Journal of Economic Methodology, 8(1), 27-32.
* Agrawal, R. C., & Heady, E. O. (1968). Applications of game theory models in agriculture. Journal of agricultural economics, 19(2), 207-218.
* Abbott, P. C. (1996). Implications of game theory for international agricultural trade. American Journal of Agricultural Economics, 78(3), 738-744.
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