**COURSE OUTLINE**

1. **GENERAL**

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| **SCHOOL** | School of Business Administration |
| **DEPARTMENT** | Business Administration |
| **EDUCATION LEVEL**  | Higher |
| **COURSE CODE** | ΟΔ0621 | **SEMESTER** | spring |
| **COURSE TITLE** | Systems Thinking for Sustainable Development and Digital Transformation (SYSTEMA) |
| **INDEPENDENT TEACHING ACTIVITIES**in case the credits are awarded in separate parts of the course e.g. Lectures, Laboratory Exercises, etc. If the credits are awarded uniformly for the whole course, indicate the weekly teaching hours and the total number of credits. | **WEEKLY TEACHING HOURS** | **ECTS** |
|  | 3 | 5 |
| **COURSE TYPE** general background, special background, specialization general knowledge, skills development | Skills development |
| **PREREQUISITE COURSES:** | None |
| **TEACHING AND EXAMS LANGUAGE:** | English |
| **THE COURSE IS OFFERED TO ERASMUS STUDENTS:** | Yes (Greek students as well) |
| **COURSE WEBSITE (URL):** | Open e-Class |

1. **LEARNING OUTCOMES**

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| **Learning outcomes** |
| The learning outcomes of the course are described, the specific knowledge, skills and abilities of an appropriate level that students will acquire after the successful completion of the course. Refer to Appendix A. * Description of the Level of Learning Outcomes for each course according to the Qualifications Framework of the European Higher Education Area
* Descriptive Indicators Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Annex B
* Summary Guide for writing Learning Outcomes
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| The course will convey Systems Thinking principles in the contexts of Sustainable Development and Digital Transformation, through a blended educational approach joining classical teaching with training tools like modeling & simulation.During the course, the students will:* Develop key competencies focusing on (a) systems thinking skills to improve information processing, self-direction, problem solving and communication (b) computational and mathematical skills to translate systems thinking into actionable models in the fields of sustainable development and digital transformation
* Increase their abilities to observe and comprehend the circular nature of the world
* Increase their awareness of the role of “systems” structure in determining their behavior
* Understand the role of feedback loops in the behavior of a system
* Understand the presence of non-linearities and time delays, and their impacts on a system’s behavior
* Understand that there are potentially unexpected consequences of actions/decisions
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| **General Abilities** |
| Taking into account the general skills that the graduate must have acquired (as they are listed in the Diploma Supplement and are listed below) which of the following is the aim of the course?. |
| *Search, analysis and synthesis of data and information, using the necessary technologies**Adaptation to new situations* *Decision making* *Autonomous work* *Teamwork* *Working in an international environment* *Work in an interdisciplinary environment**Generation of new research ideas*  | *Project design and management* *Respect for diversity and multiculturalism* *Respect for the natural environment* *Demonstration of social, professional and moral responsibility and sensitivity to gender issues* *Exercise criticism and self-criticism* *Promoting free, creative and inductive thinking* *……* *Other…* *…….* |
| The "SYSTEMA" course aims at equipping students with the following general skills: * Project design and management
* Autonomous work
* Exercise criticism and self-criticism (Critical Thinking) through the use of one or more Interactive Learning Environments
* Improve decision-making through experimentation with simulation models in the context of Sustainable Development and Digital Transformation
* Teamwork, through the interaction during laboratory sessions
* Empowerment of creative and inductive approaches and, most of all, of Systems Thinking
* Develop the ability to identify relationships and interdependencies between the topics of Digital Transformation and Sustainable Development
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1. **COURSE CONTENT**

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| The content of the course has to do with basic concepts of principles and variables of Systems Thinking and System Dynamics with a focus on Sustainable Development and Digital Transformation. As a result, students will come in contact with the many dimensions of these two contexts as well as of their interdependencies, how costly it is to address them and recognize the existence of non-linearities, interdependencies and time delays between actions and impacts. Furthermore, the students will learn that the two topics are not only aimed at directly satisfying customers’ requests or costs optimization (in Digital Transformation) or in directly managing the optimization of one of the Sustainable Development Goals (SDGs), but it is rather oriented towards a real restructuring of organizations and how they are managed, by addressing interdependencies and feedback. Hence, the content of the course will be oriented towards equipping students with the necessary skills to address big problems, that ultimately have been shown to require a completely different (and holistic) approach to be solved. |

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

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| **Course method** Face to face, distance education, etc. | Face to face |
| **USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES**Use of ICT in Teaching, in Laboratory Education, in Communication with students | Yes. |
| **TEACHING ORGANIZATION**The way and methods of teaching are described in detail. Lectures, Seminars, Laboratory Exercise, Field Exercise, Bibliography study & analysis, Tutoring, Internship (Placement), Clinical Exercise, Art Workshop, Interactive teaching, Study visits, Study work, project, creation, etc. Indicate the student study hours for each learning activity as well as the non-guided study hours according to the ECTS principles |

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| ***Activity*** | ***Semester Workload*** |
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| Course total |  |

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| **STUDENT EVALUATION** Description of the evaluation processAssessment Language, Assessment Methods, Formative or Concluding, Multiple Choice Test, Short Answer Questions, Essay Development Questions, Problem Solving, Written Assignment, Report, Oral Exam, Essay, Public Presentation, Lab Report, Others.Explicitly defined evaluation criteria are stated and if and where they are accessible to students. | The evaluation of the course takes place at the end of the semester, in the laboratory. Students are asked to develop exercises in submit at the end of the exam a folder containing the files with their answers. Students are informed during the course about the process of their assessment and are free to see the files they submitted after the exam, after consultation with the instructor. |

1. **RECOMMENDED-BIBLIOGRAPHY**

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| * Adair J. *Decision Making and Problem Solving Strategies*. Kogan Page 2010.
* Peter Senge, *The Fifth Discipline*, Doubleday/Currency, 1990.
* Sterman J. D. *Business dynamics: systems thinking and modeling for a complex world*, Irwin/McGraw-Hill, 2000.
* Meadows, D. H. *Thinking in systems: A primer*. White River Junction, VT, Chelsea Green, 2008.
* Armenia S. *The value of Systems Thinking and System Dynamicsin the management of complex organizations*, Napoli, Editoriale Scientifica, 2020
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