

## COURSE OUTLINE

### (1) General information

<b>FACULTY/SCHOOL</b>	MARITIME AND INDUSTRIAL STUDIES		
<b>DEPARTMENT</b>	MARITIME STUDIES		
<b>LEVEL OF STUDY</b>	UNDERGRADUATE		
<b>COURSE UNIT CODE</b>	<b>NAAIT26</b>		
<b>COURSE TITLE</b>	System Dynamics		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <i>in case credits are awarded for separate components/parts of the course, e.g. in lectures, laboratory exercises, etc. If credits are awarded for the entire course, give the weekly teaching hours and the total credits</i>	<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>	
	4	6	
<i>Add rows if necessary. The organization of teaching and the teaching methods used are described in detail under section 4</i>			
<b>COURSE TYPE</b> <i>Background knowledge, Scientific expertise, General Knowledge, Skills Development</i>	Background knowledge		
<b>PREREQUISITE COURSES:</b>	NO		
<b>LANGUAGE OF INSTRUCTION:</b>	English		
<b>LANGUAGE OF EXAMINATION/ASSESSMENT:</b>			
<b>THE COURSE IS OFFERED TO ERASMUS STUDENTS</b>	YES		
<b>COURSE WEBSITE (URL)</b>	eclass.unipi.gr		

### (2) LEARNING OUTCOMES

#### **Learning Outcomes**

*The course learning outcomes, specific knowledge, skills and competences of an appropriate (certain) level, which students will acquire upon successful completion of the course, are described in detail.*

*It is necessary to consult:*

#### **APPENDIX A**

- *Description of the level of learning outcomes for each level of study, in accordance with the European Higher Education Qualifications' Framework.*
- *Descriptive indicators for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and*

#### **APPENDIX B**

- *Guidelines for writing Learning Outcomes*

The module introduces students to systems theory and systems thinking. Using simulation modelling participants are guided on methods and frameworks which enable them to document, analyze and

solve maritime related problems following a holistic approach.

### General Competences

*Taking into consideration the general competences that students/graduates must acquire (as those are described in the Diploma Supplement and are mentioned below), at which of the following does the course attendance aim?*

<i>Search for, analysis and synthesis of data and information by the use of appropriate technologies,</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for diversity and multiculturalism</i>
<i>Decision-making</i>	<i>Environmental awareness</i>
<i>Individual/Independent work</i>	<i>Social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Group/Team work</i>	<i>Critical thinking</i>
<i>Working in an international environment</i>	<i>Development of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>.....</i>
<i>Introduction of innovative research</i>	<i>(Other.....citizenship, spiritual freedom, social awareness, altruism etc.)</i>
	<i>.....</i>

Upon the completion of the module students will be able to:

- Think holistically
- Use system dynamics methodology to solve modern maritime problems
- Make swift decisions related to the maritime industry

### (3) COURSE CONTENT

- Systems Thinking: System Dynamics
- Causal Loop Diagrams
- Stock and Flow Diagram
- Parameter Estimation and Sensitivity Analysis
- Scenario Planning and Modelling

### (4) TEACHING METHODS--ASSESSMENT

<b>MODES OF DELIVERY</b> <i>Face-to-face, in-class lecturing, distance teaching and distance learning etc.</i>	In-class lecturing	
<b>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</b> <i>Use of ICT in teaching, Laboratory Education, Communication with students</i>	E-CLASS	
<b>COURSE DESIGN</b> <i>Description of teaching techniques, practices and methods: Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, Internship, Art Workshop, Interactive teaching, Educational visits, projects, Essay writing, Artistic creativity, etc.</i>	<b>Activity/Method</b>	<b>Semester workload</b>
	LECTURES	52
	STUDY	98
	Total	150

<p><i>The study hours for each learning activity as well as the hours of self-directed study are given following the principles of the ECTS.</i></p>	
<p><b>STUDENT PERFORMANCE EVALUATION/ASSESSMENT METHODS</b></p> <p><i>Detailed description of the evaluation procedures:</i></p> <p><i>Language of evaluation, assessment methods, formative or summative (conclusive), multiple choice tests, short- answer questions, open-ended questions, problem solving, written work, essay/report, oral exam, presentation, laboratory work, other.....etc.</i></p> <p><i>Specifically defined evaluation criteria are stated, as well as if and where they are accessible by the students.</i></p>	<p>FINAL EXAMS</p>

**(5) SUGGESTED BIBLIOGRAPHY:**

<p><i>-Suggested bibliography:</i></p> <ul style="list-style-type: none"> <li>• Bala, Bilash Kanti, Arshad, Fatimah Mohamed, Noh, Kusairi Mohd, System Dynamics: Modelling and Simulation</li> </ul>
--