COURSE OUTLINE

1. GENERAL

FACULTY	ENGINEERING TECHNOLOGY		
DEPARTMENT	ELECTRICAL ENGINEERING DEPARTMENT		
EDUCATION LEVEL	UNDERGRADUATE		
COURSE CODE	STN13	**SEMESTER**	6TH
COURSE TITLE	**Economic evaluation and complex systems**		

INDEPENDENT TEACHING ACTIVITIES *in the case of credits being awarded in distinct parts of the course eg. Lectures, Laboratory Exercises, etc. If credit units are awarded uniformly for the whole course, indicate the weekly hours of teaching and the total number of credits*	**WEEKLY COURSE HOURS**	**CREDITS**
Lectures and Practice Exercises	2	3
Laboratory	-	-
Add rows if needed. The teaching organization and the teaching methods used are described in detail at 4.		

COURSE TYPE *Background, General Knowledge, Scientific Area, Skills Development*	Scientific Area
PREREQUISITE COURSES:	
LANGUAGE OF COURSE AND EXAMINATIONS:	Greek - English
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBPAGE (URL)	

2. LEARNING RESULTS

Learning Results

The learning outcomes of the course describe the specific knowledge, skills and competences of an appropriate level that students will acquire after successfully completing the course.
Refer to Appendix A.

- *Description of the level of learning outcomes for each cycle of study according to the European Higher Education Area Qualifications Framework*
- *Descriptive Indicators of Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning*
- *and Annex B.*
- *Curriculum Vitae Summary Guide*

The course "Economic Evaluation & Complex Systems" aims to introduce students to the complexity methodology as well as economic evaluations. That is why it includes methodological chapters such as Chaos, Strange Attractors and Bifurcation Tree, Game Theory along with chapters on applications such as Complex Systems in Nanotechnology, etc.
The aim of the course is to create a specialized scientific and professional potential for staffing both research and service sectors in strategic areas for economic development.
Upon successful completion of the course, the student will be able to:

- Understand the behavior of complex systems
- Be aware of the most important challenges in the development and use of complex systems.
- Develop skills in the decision-making process related to strategic decisions to improve the economic behavior of the systems under review.

General Abilities

Considering the general competencies that the graduate must have acquired (as listed in the Diploma Supplement and listed below), which one (s) is the course intended for?

- *Search, analyze and synthesize data and information, using the necessary technologies*
- *Adapt to new situations*
- *Decision making*
- *Autonomous work*
- *Teamwork*

- *Work in an international environment*
- *Working in an interdisciplinary environment*
- *Production of new research ideas*
- *Design and project management*
- *Respect for diversity and multiculturalism*
- *Respect for the natural environment*
- *Demonstration of social, professional and moral responsibility and sensitivity to gender issues*
- *Exercise of criticism and self-criticism*
- *Promote free, creative and inductive thinking*

- Search, analyze and synthesize data and information, using the necessary technologies
- Decision making
- Working in an interdisciplinary environment
- Autonomous Work
- Teamwork
- Design and Project Management
- Production of new Research Ideas

3. COURSE CONTENT

I. Chaos and fractals
Dynamical systems
Types of system behaviour
The Butterfly Effect
Strange Attractors και Bifurcation tree
Fractals

II. Game Theory
Basic Game Concepts
Concepts of gaming solutions, dominant strategies and points of equilibrium
Multiplayer games and game simulations
Dynamic gaming
Mixed strategies
Zero sum games
Finding balance points in general regular games
Social benefit and price of anarchy
Auctions

III. Economic Evaluation
Cost benefit analysis
Financial Efficiency Assessment
Cost
Cost discrimination
Short-term and long-term costs
Economies of scale
Total cost of ownership

4. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY METHOD *Face to face, distance learning etc.*	Class room ,
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES *Use of ICT in Teaching, in Laboratory Education, in Communication with Students*	Presentation of the Theory with the help of slides, Course website with supporting and auxiliary material, Creation of an asynchronous platform.
TEACHING ORGANIZATION *Teaching methods described in detail: Lectures, Seminars, Laboratory Exercise, Field Exercise, Study & Analysis of Bibliography, Tutorial, Practice (Placement), Clinical Exercise, Artistic Lab, Interactive Teaching, Educational Visits, Project Work, etc. .;*	

Activity	***Semester workload***
Lectures	26
Laboratory Exercise	-

The student's study hours for each learning activity and the hours of non-guided study are indicated so that the total workload at the semester corresponds to the ECTS	Written paper	30
	Independent Study	34
	Course Total (30 hours of workload per unit of credit)	***90***
STUDENT EVALUATION *Description of the evaluation process* *Assessment Language, Assessment Methods, Formulation or Conclusion, Multiple Choice Test, Short Response Questions, Test Questions, Problem Solving, Written Paper, Reporting, Oral Examination, Public Presentation, Laboratory Work, Clinical Patient Examination, Artistic Interpretation, Other* *Evaluation criteria are identified and examined to check if they are accessible to students.*	**THEORY** Written work (20%), final exam (80%) that includes theoretical questions, judgement and problem solving questions from different modules of the course.	

5. RECOMMENDED BIBLIOGRAPHY

- Suggested bibliography:
- Related scientific journals:

- Complex Systems and Chaos, ISBN: 978-960-612-051-0
- ECONOMIC EVALUATION OF HEALTH TECHNOLOGY, ISBN: 9789605831820