a) General			
School	ENGINEERING		
Academic unit	MECHANICAL ENGINEERING		
Level of studies	Undergraduate		
Course code	MM005Y05	*Semester*	5
Course title	**Automatic control systems**		

Independent teaching activities	*Weekly teaching hours*	*ECTS*
Lectures	5	6.0
Laboratory exercises		

Course type	Special background
Course category	Compulsory
Prerequisite courses	-
Language of instruction and examinations	Greek
Is the course offered to Erasmus students	Yes (EN)
Course website (url)	https://eclass.uniwa.gr/courses/MECH153/

b) Learning outcomes and general competences

b1. Learning outcomes

Upon successful completion of this course, the student will be able to:

- Recognize the basic theoretical notions of Automatic Control Systems, in open and closed-loop configuration.
- Analyse, formulate as mathematical models and simulate the dynamic response of control systems.
- Identify the mathematical model of a system, its limits, components and functional dependencies.
- Analyse, examine and evaluate the operation of each part of a control system, using mathematical models and computer support earch for, analysis and synthesis of data and information with the use of the necessary technology.

b2. General competences

- Search for, analysis and synthesis of data and information with the use of the necessary technology
- Adapting to new situations
- Decision making
- Working independently
- Team work
- Working in an international environment
- Working in an interdisciplinary environment.

c) Syllabus

Introduction to Automatic Control Systems, mathematical modeling of system dynamics, linear dynamic equations, linearisation, Laplace transform, transfer functions, block diagrams. Analysis of response of 1st and 2nd order systems, analysis of stability, state-space description, frequency response methods, basic controller synthesis.

d) Teaching and learning methods - Evaluation

Delivery	Live lectures
Use of information and communications	- Commercial and free / open source software - Multimedia applications

technology	- MS Teams, eClass	
Teaching methods	*Activity*	*Semester workload*
	Lectures	26
	Tutorials	13
	Laboratory exercises	
	Computational exercises	
	Individual work	26
	Course total	91
Student performance evaluation	Written final examination and student project (coursework).	

e) Suggested bibliography

1. Åström Karl J. & Murray R.M. (2012). *Feedback Systems: An Introduction for Scientists and Engineers*. Princeton University Press, http://www.cds.caltech.edu/~murray/amwiki
2. Ogata K. (2015). *Modern Control Engineering*. Pearson.
3. Dorf R.C. & Bishop R.H. (2017). *Modern Control Systems*. Pearson.