4SA428 ÚVOD DO TEORIE SYSTÉMŮ

Course code	4SA428
Course title in language of instruction	Úvod do teorie systémů
Course title in Czech	Úvod do teorie systémů
Course title in English	Introduction to the Systems Theory
Mode of completion and number of credits	Exam ECTS (3 credits), Exam (2 credits) One ECTS credit corresponds to 26 hours of workload for an average student.
Type of course	Daily attendance: 2/0; Distance form: 2/0 (hours of lectures per week / hours of seminars per week)
Language of instruction	Czech
Level of course and year of study	master continuing: 1
Semester	Sklad FIS – FIS
Name of lecturer	doc. Ing. Prokop Toman, CSc. (supervisor)
Prerequisities	none

Aims of the course

The course concentrates to theoretical questions in relationship between system, information and models. It is dedicated to analyse practical reasons in our systematic world.

Learning outcomes and competences

Upon successful completion of this course, student will be able to apply system thinking on the different situations in the economical environment

Course contents

Definition of the system (structure, behaviour, boundary, levels)
Comparation of the differents systems
Typologie of the systems (mathematical, physical, economical, . . .)
Types of basics problems on the systems
Structure and connection of the systems
Automata, feed-back, category of the systems
Turing's machine, algoritmisation
Statics and dynamics systems
Stability and homeostase
Modeling, approach to the modeling
Four phases of the matematical modeling (idea, analysis, design, realisation)
Decomposition of the system
Examples of the systems and problem solving

Teaching methods and student workload

Type of teaching method	**Hours of workload**	
	daily attendance	**distance form**
Participation in lectures	26	0
Preparation for lectures	13	0
Attendance at seminars/workshops/tutorials	0	6
Preparation for seminars/workshops/tutorials	0	30
Preparation of term paper	13	29
Preparation for final test	26	13
Total	**78**	**78**

Assessment methods

Requirement type	Weight	
	daily attendance	distance form
Active lecture/seminar/workshop/tutorial participation	20 %	20 %
Term paper	20 %	20 %
Presentation	30 %	30 %
Final test	30 %	30 %
Total	**100 %**	**100 %**
Special requirements and details: none		

Recommended reading

Type*	Author	Title	Published in	Publisher	Year	ISBN
R	OBOŇA, J.	Systémy a systémová analýza v praxi			1989	
R	KLIR, G. – VALACH, M.	Kybernetické modelování	Praha	SNTL	1965	
A	WIENER, N.	Kybernetika neboli řízení a sdělování v živých organismech a strojích			1960	
A	ASHBY, W. R.	Kybernetika	Praha	Orbis	1961	

* R – required reading, A – additional reading