

ROMANIAN ACADEMY - SCOSAAR
DOCTORAL SCHOOL OF ENGINEERING, MECHANICAL, COMPUTER SCIENCES

DISCIPLINE SHEET

Name of subject: Automatic learning
Course holder: Cristian Sminchişescu
Year of studies: I

Number of hours per week/Verification/Credits		
Course	Form of examination	Credits
2 hours per week	Exam	15

A. OBJECTIVES OF THE COURSE (The objectives are formulated in terms of professional skills):

General objective of the subject	Acquiring some general knowledge about automatic learning (machine learning)
Specific objectives:	1. Acquiring the material taught in the course; 2. The ability to use the presented results in new contexts; 3. The knowledge and skills acquired in this discipline will form the basis of future scientific and didactic research activities.

B. TERMS (where applicable)

of the course	•
---------------	---

C. SPECIFIC COMPETENCES ACCUMULATED

(Regards the competences ensured by the study program of which the discipline is a part)

Professional skills	- Knowing and mastering the principles of automatic learning - The ability to use the acquired knowledge in subsequent professional activities.
Transversal skills	Knowing the major implications of machine learning in the wider field of computer science, with the preferred application to the field of artificial vision.

D. THE CONTENT OF THE DISCIPLINE

a) Course

Chapter	Contents	Nr. ore
1.	Supervised and unsupervised prediction models	4
2.	Discriminative models vs. generative	6
3.	Deep Neural Networks	4
4.	Convolutional neural networks	4
5.	Self-supervised learning, learning to learn	4
6.	Reinforcement learning	6
Total hours		28

E. ASSESSMENT (The methods, forms of assessment and their weight in determining the final grade are specified. The minimum performance standards are indicated, related to the skills defined in point A. Objectives of the discipline)

Type of activity	Evaluation criterias	Evaluation methods	Weight of the final grade
------------------	----------------------	--------------------	---------------------------

Course	Acquiring the knowledge acquired in the course	Written exam	100
The results of the subject evaluation are expressed by the following qualifications: "Very good"; "Good"; "Satisfactorily"; "Unsatisfactory". The grades "Very good", "Good" and "Satisfactory" allow the doctoral student to obtain the credits.			

F. METHODOLOGICAL REMARKS

Lecture combined with dialogue. Use of modern teaching aids (ppt). Course support.

G. BIBLIOGRAPHY

C. M. Bishop, *Pattern Recognition and Machine Learning*, Springer, 2006

R.S.. Sutton, A. G. Barto, *Reinforcement Learning: An Introduction*, MIT Press, 2014,2015

Course holder:

C.S. I. Dr. Cristian Sminchişescu

Director

**Doctoral School of Engineering, Mechanical,
Computer Sciences**

**Dr. CSI Mihaiela ILIESCU
Institute of Solid Mechanics**