

# 4IZ561 UMĚLÉ NEURONOVÉ SÍŤ

Course code	4IZ561
Course title in language of instruction	Umělé neuronové sítě
Course title in Czech	Umělé neuronové sítě
Course title in English	Artificial Neural Networks
Mode of completion and number of credits	Credit (2 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: 0/2 (hours of lectures per week / hours of seminars per week)
Language of instruction	Czech
Level of course and year of study	master continuing: 2
Semester	Sklad FIS – FIS
Name of lecturer	prof. Ing. Petr Berka, CSc. (supervisor)
Prerequisites	none

## Aims of the course

Students will make familiar with the basic models of artificial neural networks and with their applicability to various problems including time series prediction, clustering, classification and noise reduction.

## Learning outcomes and competences

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

- understand various types of neural networks,
- explain learning algorithms for different types of networks,
- apply neural networks to various types of problems
- use the system ARTINT for building and learning neural networks.

## Course contents

1. Biological neural networks
2. Definition of artificial neural networks
3. Basic types of artificial networks
4. Learning algorithms for artificial neural networks
5. Application of neural networks

## Teaching methods and student workload

Type of teaching method	Hours of workload
	daily attendance
Attendance at seminars/workshops/tutorials	26
Preparation for seminars/workshops/tutorials	13
Preparation of term paper	13
Preparation for final oral exam	26
<b>Total</b>	<b>78</b>

## Assessment methods

Requirement type	Weight
	daily attendance
Term paper	50 %
Final oral exam	50 %
<b>Total</b>	<b>100 %</b>
<b>Special requirements and details:</b> each student must deliver the seminar work and complete the final exam	

## Recommended reading

Type*	Author	Title	Published in	Publisher	Year	ISBN
R		ARTINT – uživatelská příručka				990001388X
R	KŘIVAN, M.	Úvod do umělých neuronových sítí	Praha	Oeconomica	2008	978-80-245-1321-8
A	HOŘEJŠ, J. – KUFUDAKI, O.	Počítače a mozek (neuropočítače)		SOFSEM	1988	990001144X
A	ZURADA, J.	Introduction to Artificial Neural Systems	St. Paul	West Publ. Company	1992	990001145X
A	GROSSBERG, S.	The Adaptive Brain : Vol. I-II	Amsterdam	North Holland	1987	990001146X
A	FABER, J. – KUFUDAKI, O. – NOVÁK, M.	Neuronové sítě a informační systémy živých organismů	Praha	Grada	1993	8085424959

\* R – required reading, A – additional reading