Course title	Neural Networks
Institute/Division	Faculty of Computer Science and Telecommunication/ Department of Computer Science
Course code	F-1.NN
Erasmus subject code	11.3
Number of contact hours**	45 lecture hours (45h)
Course duration	1 semester (Fall)
ECTS credits	6
Course description (max 100 words)	Lecture: Single neurons (perceptron, logistic neuron), Hopfield networks, Boltzmann Machines, Multi-layer perceptrons (MLP), Deep Learning: Convolutional Neural Networks, Generative Adversarial Networks, Autoencoders, Neural Style Transfer, Recurrent Neural Networks Laboratories: single neurons and simple networks in the numpy package, MLP in the scikit-learn package, Deep learning in the tensorflow package
Literature	• Ian Goodfellow, Yoshua Bengio , Aaron Courville, Deep learning, 2016, MIT • Giancarlo Zaccone, Deep Learning with TensorFlow: Explore neural networks with Python • Bharath Ramsundar , TensorFlow for Deep Learning: From Linear Regression to Reinforcement Learning • www.scikit-learn.org • www.tensorflow.org
Course type/organization	Lectures + laboratory classes
Assessment method	1 scikit-learn project, 1 tensorflow project, final test (final score is an average over three grades)
Prerequisites	Basics of statistics, probability theory, algebra, calculus, and Python language
Primary target group	computer science students of the 3rd or 4th year
Contact person	dr hab. inż. Maciej Jaworski, prof. PK
Remarks	

*please insert one of the following codes:
11.0 Mathematics, Informatics
11.1 Mathematics
11.2 Statistics
11.3 Informatics, Computer Science
11.4 Artificial Intelligence
11.5 Actuarial Science
11.9 Others Mathematics, Informatics

**1 lecture hour=45 minutes